# NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

(NASA-SP-7063(05)) NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1987-1990 (NASA) 174 p CSCL 05B 00/82 00

N91-24939 Unclas 0012239

A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS 1987–1990





This document is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161 as PR 890.

# PREFACE

The pursuit of human knowledge through scientific research and technical endeavor has vastly expanded understanding of our world and the universe we live in. The contributions of NASA through scientific and technical research and development affect not only our understanding and use of aeronautics and space but also touch our daily lives. Geologists, oceanographers, meteorologists, archaeologists, aircraft engineers, aerospace decision makers, land-use planners, historians, and rescue teams all make use of the results of NASA's research. The findings of this research and development are published in NASA's scientific and technical report series as a part of NASA's mandate to disseminate the results of the agency's far-reaching work.

This catalog provides a cumulative list of NASA publications from four report series entered into the NASA Scientific and Technical Information Database during the accession years 1987 through 1990. For previous lists, see *Records of Achievement: NASA Special Publications*, NASA SP-470 (accession number N83-33792), *NASA Scientific and Technical Publications: A Catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1977-1986*, NASA SP-7063(01) (accession number N87-30218). Supplements 02, 03, and 04 of this catalog list NASA publications announced in 1987, 1988, and 1989, respectively.

Two semimonthly abstract journals cover all aspects of aeronautics and space research, NASA and non-NASA, nationally and worldwide. *STAR (Scientific and Technical Aerospace Reports),* focuses on scientific and technical reports, and *IAA (International Aerospace Abstracts),* covers the open literature. These are available by subscription from, respectively, the U.S. Government Printing Office and the American Institute of Aeronautics and Astronautics, Inc., (see page vi).

This catalog includes publicly available reports from four NASA report series: Special Publications (SPs), Reference Publications (RPs), Conference Publications (CPs), and Technical Papers (TPs). The scope of each series is defined as follows:

*Special Publications* are often concerned with subjects of substantial public interest. They report scientific and technical information derived from NASA programs for audiences of diverse technical backgrounds.

*Reference Publications* contain compilations of scientific and technical data of continuing reference value.

*Conference Publications* record the proceedings of scientific and technical symposia and other professional meetings sponsored or cosponsored by NASA.

Technical Papers present the results of significant research conducted by NASA scientists and engineers.

Presented here are citations for reports from each of these series. An explanation of the elements in a typical citation follows. Accession numbers (N numbers) at the end of a citation are separate citations to articles within the report. Please use *STAR* to locate these citations.

Also note that some bibliographies in the NASA SP-7000 series are issued periodically. This catalog lists only the last accessioned report in each bibliography series. The periodicity of each bibliography is as follows:

NASA	SP-7011	Aerospace Medicine and Biology: A Continuing Bibliography with Indexes	Monthly plus annual cumulative index
NASA	SP-7037	Aeronautical Engineering: A Continuing Bibliography with Indexes	Monthly plus annual cumulative index
NASA	SP-7039	NASA Patent Abstracts Bibliography: A Continuing Bibliography Section 1: Abstracts; Section 2: Indexes	Semiannual

iii

NASA SP-7046	Technology for Large Space Systems: A Bibliography with Indexes	Semiannual
NASA SP-7056	Space Station Systems: A Bibliography with Indexes	Semiannual
NASA SP-7500	Management: A Bibliography for NASA Managers	Annual

Please note that the reports cited in this catalog are available for purchase from the U.S. Government Printing Office for a limited time after publication, depending on public demand, and from the National Technical Information Service (NTIS) with no time limit. They are also available at any Federal Regional Depository Library. Additional availability information follows, including current NTIS price schedules, which are keyed to the price code in the citation.

# **TYPICAL CITATION AND ABSTRACT**



# **TYPICAL CITATION AND SUBJECT TERMS**



# SOURCES OF NASA PUBLICATIONS

ĩ

The source from which a publication is available to the public is given in each citation. Addresses for these organizations are given below.

# **U.S. Government Printing Office**

Superintendent of Documents U.S. Government Printing Office Washington, DC 20402

(202) 783-3238 Price and order information

Publications are available from GPO in hardcopy for a limited time after publication and initial distribution. The price and order number are given following the availability line.

# **National Technical Information Service**

National Technical Information Service 5285 Port Royal Rd. Springfield, VA 22161 (703) 487-4780 Information or document accession number

(703) 487-4650 Sales desk, price information

(703) 487-4630 Subscription information for subscription bibliographies (in the SP-7000 series)

Prices for hardcopy and microfiche are indicated by a price code preceded by the letters HC or MF in the citation. Current values for the price codes are given in the NTIS Price Schedules. Publications available on microfiche are identified by a # symbol following the accession number. Note: The # symbol is used without regard to the source or quality of the microfiche.

# Public Collections of NASA Documents

*Federal Depository Library Program:* In order to provide the general public with greater access to U.S. Governent publications, Congress established the Federal Depository Library Program under the Government Printing Office (GPO), with 51 regional depositories responsible for permanent retention of material, inter-library loan, and reference services. At least one copy of nearly every NASA publication, either in printed or microfiche format, is received and retained by the 51 regional depositories. A list of the regional GPO libraries, arranged alphabetically by state, follows. These libraries are *not* sales outlets. A local library can contact a Regional Depository to help locate specific reports, or direct contact may be made by an individual.

*Other Domestic:* NASA publications are also available to the public for reference purposes at the library maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, NY 10019, (212) 247-6500.

*European:* An extensive collection of NASA publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England for public access. European requesters may purchase facsimile copy or microfiche of NASA documents, those identified by both the symbols # and \*, from ESA, Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

# NASA Scientific and Technical Information Facility

NASA publications are available to NASA personnel, NASA contractors, other government agencies and their contractors, and universities through local technical libraries. The NASA Scientific and Technical Information Facility makes these publications available to registered users, but not to the general public.

For registration information contact:

NASA STI Facility P.O. Box 8757 BWI Airport, MD 21240 (301) 621-0153 Registration information

# **NTIS PRICE SCHEDULES**

(Effective January 1, 1991)

### Schedule A STANDARD PRICE DOCUMENTS AND MICROFICHE\*\*

PRICE CODE	NORTH AMERICAN PRICE	FOREIGN PRICE
A01	\$ 8.00	\$ 16.00
A02	11.00	22.00
A03	15.00	30.00
A04-A05	17.00	34.00
A06-A09	23.00	46.00
A10-A13	31.00	62.00
A14-A17	39.00	78.00
A18-A21	45.00	90.00
A22-A25	53.00	106.00
A99	*	*
N01	60.00	120.00
N02	59.00	118.00
N03	20.00	40.00

# Schedule E EXCEPTION PRICE DOCUMENTS AND MICROFICHE\*\*

PRICE CODE	NORTH AMERICAN PRICE	FOREIGN PRICE
E01	\$10.00	\$ 20.00
E02	12.00	24.00
E03	14.00	28.00
E04	16.50	33.00
E05	18.50	37.00
E06	21.50	43.00
E07	24.00	48.00
E08	27.00	54.00
E09	29.50	59.00
E10	32.50	65.00
E11	35.00	70.00
E12	38.50	77.00
E13	41.00	82.00
E14	45.00	90.00
E15	48.50	97.00
E16	53.00	106.00
E17	57.50	115.00
E18	62.00	124.00
E19	69.00	138.00
E20	80.00	160.00
E99	*	*

\* Contact NTIS for price quote.

\*\* Effective January 1, 1991, the microfiche copy of any new document entering the NTIS collection will be priced the same as the paper copy of the document.

# **IMPORTANT NOTICE**

NTIS Shipping and Handling Charges U.S., Canada, Mexico — ADD \$3.00 per TOTAL ORDER All Other Countries — ADD \$4.00 per TOTAL ORDER

Exceptions — Does NOT apply to: ORDERS REQUESTING NTIS RUSH HANDLING ORDERS FOR SUBSCRIPTION OR STANDING ORDER PRODUCTS ONLY

NOTE: Each additional delivery address on an order requires a separate shipping and handling charge.

# FEDERAL REGIONAL DEPOSITORY LIBRARIES

#### ALABAMA

AUBURN UNIV. AT MONTGOMERY LIBRARY Documents Department Montgomery, AL 36193 (205) 279-9110 ext.253

UNIV. OF ALABAMA LIBRARY **Reference** Department/Documents

Box S Tuscaloosa, AL 35486 (205) 348-6046

### ARIZONA

DEPT. OF LIBRARY, ARCHIVES, AND PUBLIC RECORDS Third Floor State Capitol 1700 West Washington Phoenix, AZ 85007 (602) 255-4121

# ARKANSAS

ARKANSAS STATE LIBRARY Documents Service Section One Capitol Mall Little Rock, AR 72201 (501) 371-2090

### CALIFORNIA

CALIFORNIA STATE LIBRARY Govt. Publications Section 914 Capitol Mall Sacramento, CA 95814 (916) 322-4572

# COLORADO

UNIV. OF COLORADO Norlin Library Government Publications Division Campus Box 184 Boulder, CO 80309 (303) 492-8834

DENVER PUBLIC LIBRARY Govt. Pub. Department 1357 Broadway Denver, CO 80203 (303) 571-2346

CONNECTICUT CONNECTICUT STATE LIBRARY 231 Capitol Avenue Hartford, CT 06106 (203) 566-4971

### **FLORIDA** UNIV. OF FLORIDA LIBRARIES Documents Department Library West Gainesville, FL 32611 (904) 392-0367

# GEORGIA

UNIV. OF GEORGIA LIBRARIES Government Documents Dept. Athens, GA 30602 (404) 542-8949

#### HAWAII

UNIV. OF HAWAII Hamilton Library Government Documents Collection 2550 The Mall Honolulu, HI 96822 (808) 948-8230

#### **IDAHO**

UNIV. OF IDAHO LIBRARY Documents Section Moscow, ID 83843 (208) 885-6344

# ILLINOIS

ILLINOIS STATE LIBRARY Federal Documents Centennial Building Springfield, IL 62756 (217) 782-5012

#### INDIANA

INDIANA STATE LIBRARY Serials Section 140 North Senate Avenue Indianapolis, IN 46204 (317) 232-3686

#### IOWA

UNIV. OF IOWA LIBRARIES Government Publications Dept. Iowa City, IA 52242 (319) 335-5926

### KANSAS

UNIVERSITY OF KANSAS Spencer Research Library Government Documents Lawrence, KS 66045 (913) 864-4662

#### KENTUCKY

UNIV. OF KENTUCKY LIBRARIES Government Publications/Maps Dept. Lexington, KY 40506 (606) 257-8400

# LOUISIANA

LOUISIANA STATE UNIVERSITY Middleton Library Government Documents Dept. Baton Rouge, LA 70803 (504) 388-2570

LOUISIANA TECHNICAL UNIV. Prescott Memorial Library Government Documents Dept. Ruston, LA 71272 (318) 257-4962

# MAINE UNIVERSITY OF MAINE Raymond H. Fogler Library Govt. Documents & Microforms Dept. Orono, ME 04469 (207) 581-1680

MARYLAND UNIVERSITY OF MARYLAND McKeldin Library Documents/Maps Room College Park, MD 20742 (301) 454-3034

#### MASSACHUSETTS BOSTON PUBLIC LIBRARY Government Documents Dept. 666 Boylston Street Boston, MA 02117

**MICHIGAN** DETROIT PUBLIC LIBRARY 5201 Woodward Avenue Detroit, MI 48202 (313) 833-1409

#### LIBRARY OF MICHIGAN

(617) 536-5400 ext.226

Government Documents P.O. Box 30007 735 E. Michigan Avenue Lansing, MI 48909 (517) 373-1593

#### MINNESOTA UNIVERSITY OF MINNESOTA Wilson Library Government Publications 309 Nineteenth Avenue South Minneapolis, MN 55455 (612) 373-7813

# MISSISSIPPI

UNIV. OF MISSISSIPPI LIB. Government Documents Dept. 106 Old Gym Bidg. University, MS 38677 (601) 232-5857

#### MISSOURI

University of Missouri at Columbia Library Government Documents Columbia, MO 65201 (314) 882-6733

#### MONTANA

UNIV. OF MONTANA Mansfield Library **Documents Division** Missoula, MT 59812 (406) 243-6700

#### NEBRASKA

**UNIVERSITY OF NEBRASKA -**LINCOLN Love Memorial Library **Documents Department** Lincoln, NE 68588 (402) 472-2562

#### NEVADA

UNIV. OF NEVADA-RENO LIB. Govt. Pub. Department Reno, NV 89557 (702) 784-6579

#### NEW JERSEY

NEWARK PUBLIC LIBRARY U.S. Documents Division 5 Washington Street P.O. Box 630 Newark, NJ 07101 (201) 733-7812

# NEW MEXICO UNIVERSITY OF NEW MEXICO

General Library Government Publications/Maps Dept. Albuquerque, NM 87131 (505) 277-5441

NEW MEXICO STATE LIBRARY 325 Don Gaspar Avenue Santa Fe, NM 87501 (505) 827-3826

#### NEW YORK NEW YORK STATE LIBRARY Documents Sect, Cultural Educ, Ctr. Empire State Plaza Albany, NY 12230 (518) 474-5563

NORTH CAROLINA UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL Davis Library 080A **BA/SS Department Documents** Chapel Hill, NC 27514 (919) 962-1151

# NORTH DAKOTA

NORTH DAKOTA STATE UNIVERSITY LIBRARY Government Documents Dept. Fargo, ND 58105 (701) 237-8352 In cooperation with Univ. of North Dakota, Chester Fritz Library Grand Forks

# OHIO

STATE LIBRARY OF OHIO Documents Section 65 South Front Street Columbus, OH 43266 (614) 644-7051

#### **OKLAHOMA**

OKLAHOMA DEPT. OF LIBRARIES Government Documents 200 NE 18th Street Oklahoma City, OK 73105 (405) 521-2502, ext. 252

OKLAHOMA STATE UNIV. LIB. Documents Department Stillwater, OK 74078 (405) 624-0489

# OREGON

PORTLAND STATE UNIV. Millar Library 934 SW Harrison - P.O. Box 1151 Portland, OR 97207 (503) 229-3673

#### PENNSYLVANIA

STATE LIBRARY OF PENN. **Government Publications Section** Box 1601 Walnut St. & Commonwealth Ave. Harrisburg, PA 17105 (717) 787-3752

#### SOUTH CAROLINA

CLEMSON UNIV. COOPER LIB. **Documents Department** Clemson, SC 29634 (803) 656-5174 In cooperation with Univ. of South Carolina, Thomas Cooper Library, Columbia

#### TEXAS

TEXAS STATE LIBRARY Public Services Department P.O. Box 12927 - 1201 Brazos Austin, TX 78711 (512) 463-5455

TEXAS TECH. UNIV. LIBRARY Documents Department Lubbock, TX 79409 (806) 742-2268

# UTAH

UTAH STATE UNIVERSITY Merrill Library & Learning Resources Center, UMC-30 **Documents Department** Logan, UT 84322 (801) 750-2682

#### VIRGINIA

UNIVERSITY OF VIRGINIA Alderman Library Government Documents Charlottesville, VA 22903 (804) 924-3133

# WASHINGTON

WASHINGTON STATE LIBRARY Document Section Olympia, WA 98504 (206) 753-4027

# WEST VIRGINIA

WEST VIRGINIA UNIV. LIB. Government Documents Section P.O. Box 6069 Morgantown, WV 26506 (304) 293-3640

#### WISCONSIN

ST. HIST SOC. OF WISCONSIN LIB. Government Pub. Section 816 State Street Madison, WI 53706 (608) 262-2781 In cooperation with Univ. of Wisconsin-Madison, Memorial Library

#### MILWAUKEE PUBLIC LIBRARY **Documents Division**

814 West Wisconsin Avenue Milwaukee, WI 53233 (414) 278-3065

#### **WYOMING**

WYOMING STATE LIBRARY Supreme Court & Library Bldg. Cheyenne, WY 82002 (307) 777-5919

# NASA Scientific and Technical Publications 1987-1990 TABLE OF CONTENTS

**AERONAUTICS** For related information see also Astronautics.

01 AERONAUTICS (GENERAL)
02 AERODYNAMICS
<b>03 AIR TRANSPORTATION AND SAFETY</b>
<b>04 AIRCRAFT COMMUNICATIONS AND NAVIGATION 13</b> Includes digital and voice communication with aircraft; air navigation systems (satellite and ground based); and air traffic control. For related information see also <i>17 Space Communications, Spacecraft Communications, Command and Tracking</i> and <i>32 Communications and Radar.</i>
<b>05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE</b> 13 Includes aircraft simulation technology. For related information see also 18 Spacecraft Design, Testing and Performance and 39 Structural Mechanics. For land transportation vehicles see 85 Urban Technology and Transportation.
<b>06 AIRCRAFT INSTRUMENTATION 16</b> Includes cockpit and cabin display devices; and flight instruments. For related information see also <i>19 Space craft Instrumentation</i> and <i>35 Instrumentation and Photography.</i>
<b>07 AIRCRAFT PROPULSION AND POWER</b>
<b>08 AIRCRAFT STABILITY AND CONTROL</b>
<b>09 RESEARCH AND SUPPORT FACILITIES (AIR)</b>
ASTRONAUTICS For related information see also Aeronautics.
12 ASTRONAUTICS (GENERAL)
13 ASTRODYNAMICS
14 GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)
Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators. For related information see also 09 Research and Support Facilities (Air).
<ul> <li>Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators. For related information see also <i>09 Research and Support Facilities (Air)</i>.</li> <li><b>15 LAUNCH VEHICLES AND SPACE VEHICLES</b></li></ul>
Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators. For related information see also <i>09 Research and Support Facilities (Air)</i> . <b>15 LAUNCH VEHICLES AND SPACE VEHICLES</b> 23         Includes boosters; operating problems of launch/space vehicle systems; and reusable vehicles. For related information see also <i>20 Spacecraft Propulsion and Power</i> .       24 <b>16 SPACE TRANSPORTATION</b> 24         Includes passenger and cargo space transportation, e.g., shuttle operations; and space rescue techniques. For related information see also <i>03 Air Transportation and Safety</i> and <i>18 Spacecraft Design, Testing and Performance</i> . For space suits see <i>54 Man/System Technology and Life Support</i> .

**17 SPACE COMMUNICATIONS, SPACECRAFT COMMUNICATIONS, COMMAND AND TRACKING**. **N.A.** Includes telemetry; space communications networks; astronavigation and guidance; and radio blackout. For related information see also *04 Aircraft Communications and Navigation* and *32 Communications and Radar.* 

N.A.-no abstracts were assigned to this category for this issue.

<b>18 SPACECRAFT DESIGN, TESTING AND PERFORMANCE</b> 24 Includes satellites; space platforms; space stations; spacecraft systems and components such as thermal and environmental controls; and attitude controls. For life support systems see 54 Man/System Technology and Life Support. For related information see also 05 Aircraft Design, Testing and Performance, 39 Structural Mechanics, and 16 Space Transportation.
<b>19 SPACECRAFT INSTRUMENTATION</b>
20 SPACECRAFT PROPULSION AND POWER
CHEMISTRY AND MATERIALS
23 CHEMISTRY AND MATERIALS (GENERAL)
24 COMPOSITE MATERIALS
Includes physical, chemical, and mechanical properties of laminates and other composite materials. For ceramic materials see 27 Nonmetallic Materials.
25 INORGANIC AND PHYSICAL CHEMISTRY
Includes chemical analysis, e.g., chromatography; combustion theory; electrochemistry; and photochemistry. For related information see also 77 Thermodynamics and Statistical Physics.
26 METALLIC MATERIALS
27 NONMETALLIC MATERIALS
28 PROPELLANTS AND FUELS
29 MATERIALS PROCESSING
Includes space-based development of products and processes for commercial application. For biological materials see 55 Space Biology.
ENGINEERING For related information see also Physics.
31 ENGINEERING (GENERAL)
Includes vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.
32 COMMUNICATIONS AND RADAR
<b>33 ELECTRONICS AND ELECTRICAL ENGINEERING</b>
<b>34 FLUID MECHANICS AND HEAT TRANSFER</b>
<b>35 INSTRUMENTATION AND PHOTOGRAPHY</b>
36 LASERS AND MASERS       40         Includes parametric amplifiers. For related information see also 76 Solid-State Physics.

-

<b>37 MECHANICAL ENGINEERING</b>
38 QUALITY ASSURANCE AND RELIABILITY
<b>39 STRUCTURAL MECHANICS</b>
<b>GEOSCIENCES</b> For related information see also Space Sciences.
42 GEOSCIENCES (GENERAL)
43 EARTH RESOURCES AND REMOTE SENSING
44 ENERGY PRODUCTION AND CONVERSION 50 Includes specific energy conversion systems, e.g., fuel cells; global sources of energy; geophysical conversion and windpower. For related information see also 07 Aircraft Propulsion and Power, 20 Spacecraft Propulsion and Power, and 28 Propellants and Fuels.
45 ENVIRONMENT POLLUTION
<b>46 GEOPHYSICS</b>
47 METEOROLOGY AND CLIMATOLOGY
<b>48 OCEANOGRAPHY</b>
LIFE SCIENCES
51 LIFE SCIENCES (GENERAL)
52 AEROSPACE MEDICINE
53 BEHAVIORAL SCIENCES
54 MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT
55 SPACE BIOLOGY
MATHEMATICAL AND COMPUTER SCIENCES
59 MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)61
60 COMPUTER OPERATIONS AND HARDWARE
61 COMPUTER PROGRAMMING AND SOFTWARE
62 COMPUTER SYSTEMS

.

6: In se	<b>3 CYBERNETICS</b>
64 In	4 NUMERICAL ANALYSIS
6: In	5 STATISTICS AND PROBABILITY
<b>6</b> 0 In	65 SYSTEMS ANALYSIS
61 In	7 THEORETICAL MATHEMATICS
Р	PHYSICS For related information see also Engineering.
70 Fe	66 or precision time and time interval (PTTI) see 35 Instrumentation and Photography; for geophysics, strophysics or solar physics see 46 Geophysics, 90 Astrophysics, or 92 Solar Physics.
7 <sup>-</sup> In	66 ncludes sound generation, transmission, and attenuation. For noise pollution see 45 Environment Pollution.
7: In	2 ATOMIC AND MOLECULAR PHYSICS
7: In	<b>3 NUCLEAR AND HIGH-ENERGY PHYSICS</b> 68 Includes elementary and nuclear particles; and reactor theory. For space radiation see 93 Space Radiation.
74 In	68 A COPTICS A Contract of the second
75 In pl	<b>5 PLASMA PHYSICS</b>
76 In La	6 SOLID-STATE PHYSICS
77 In al	7 THERMODYNAMICS AND STATISTICAL PHYSICS
S	OCIAL SCIENCES
<b>80</b> In	N.A. N.A. N.A. N.A.
81 In	1 ADMINISTRATION AND MANAGEMENT
<b>82</b> In ar	<b>2 DOCUMENTATION AND INFORMATION SCIENCE</b>
83 In	3 ECONOMICS AND COST ANALYSIS
<b>84</b> In cc	4 LAW, POLITICAL SCIENCE AND SPACE POLICY
85 In ar Tr	<b>5 URBAN TECHNOLOGY AND TRANSPORTATION 72</b> cludes applications of space technology to urban problems; technology transfer; technology assessment; and surface and mass transportation. For related information see 03 Air Transportation and Safety, 16 Space ransportation, and 44 Energy Production and Conversion.

•

•

SPACE SCIENCES For related information see also Geosciences.
88 SPACE SCIENCES (GENERAL)
<b>B9 ASTRONOMY</b>
<b>90 ASTROPHYSICS</b>
<b>91 LUNAR AND PLANETARY EXPLORATION</b>
92 SOLAR PHYSICS
<b>93 SPACE RADIATION 79</b> Includes cosmic radiation; and inner and outer earth's radiation belts. For biological effects of radiation see <i>52 Aerospace Medicine</i> . For theory see <i>73 Nuclear and High-Energy Physics</i> .
GENERAL
Includes aeronautical, astronautical, and space science related histories, biographies, and pertinent reports too broad for categorization; histories or broad overviews of NASA programs.
99 GENERAL
SUBJECT INDEX
PERSONAL AUTHOR INDEX

Έ.

# 01

# **AERONAUTICS (GENERAL)**

**N87-18520\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1983

FREDERICK R. MORRELL, comp. Mar. 1987 80 p Conference held in Atlantic City, N.J., 16 Dec. 1983; sponsored by NASA and FAA

(NASA-CP-2451; L-16254; NAS 1.55:2451) Avail: NTIS HC A05/MF A01 CSCL 01B

AIR NAVIGATION, AIR TRANSPORTATION, AIRCRAFT GUIDANCE, AVIONICS, CONFERENCES, FLIGHT CONTROL

**N87-22604\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1984

FREDERICK R. MORRELL, comp. May 1987 165 p Meeting held in Hampton, Va., 18 Jan. 1985

(NASA-CP-2452; L-16255; NAS 1.55:2452) Avail: NTIS HC A08/MF A01 CSCL 01B

AIR TRANSPORTATION, AIRCRAFT CONTROL, AIRCRAFT GUIDANCE, AVIONICS, CONTROL THEORY, SURFACE NAVIGATION

**N87-25267\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

WIND SHEAR/TURBULENCE INPUTS TO FLIGHT

SIMULATION AND SYSTEMS CERTIFICATION

ROLAND L. BOWLES, ed. and WALTER FROST, ed. (FWG Associates, Inc., Tullahoma, Tenn.) Jul. 1987 272 p Workshop held in Hampton, Va., 30 May - 1 Jun. 1984

(NASA-CP-2474; L-16329; NAS 1.55:2474) Avail: NTIS HC A12/MF A02 CSCL 01B

AIRCRAFT PERFORMANCE, AVIONICS, FLIGHT SAFETY, FLIGHT SIMULATION, PILOT PERFORMANCE, WIND SHEAR

**N87-27596\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1985

FREDERICK R. MORRELL, comp. Jul. 1987 100 p Conference held in Atlantic City, N.J., 30 Jan. 1986

(NAS 1.55:2453; NASA-CP-2453) Avail: NTIS HC A05/MF A01 CSCL 01B

AIR TRAFFIC CONTROL, AIR TRANSPORTATION, CONFERENCES, FAULT TOLERANCE, FLIGHT CONTROL, GLOBAL POSITIONING SYSTEM, INERTIAL NAVIGATION

N87-27613\* National Aeronautics and Space Administration, Washington, DC.

AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 217) Sep. 1987 134 p

(NASA-SP-7037(217); NAS 1.21:7037(217)) Avail: NTIS HC A07 CSCL 01B

This bibliography lists 450 reports, articles, and other documents introduced into the NASA scientific and technical information system in August, 1987. Author

**N88-14926\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LANGLEY SYMPOSIUM ON AERODYNAMICS, VOLUME 1

SHARON H. STACK, comp. Dec. 1986 592 p Symposium held in Hampton, Va., 23-25 Apr. 1985

(NASA-CP-2397; L-16031; NAS 1.55:2397) Avail: NTIS HC A25/MF A04 CSCL 01B

AERODYNAMIC CONFIGURATIONS, AIRCRAFT DESIGN, AIRCRAFT MANEUVERS, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES

**N88-16625\***# National Aeronautics and Space Administration, Washington, DC.

NASA/ARMY ROTORCRAFT TECHNOLOGY. VOLUME 1:

AERODYNAMICS, AND DYNAMICS AND AEROELASTICITY Feb. 1988 537 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987

(NASA-CP-2495-VOL-1; NAS 1.55:2495-VOL-1) Avail: NTIS HC A23/MF A03 CSCL 01B

AEROELASTICITY, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, FLIGHT CONTROL, HELICOPTERS, ROTOR AERODYNAMICS

N88-16632\*# National Aeronautics and Space Administration, Washington, DC.

NASA/ĂRMY ROTORCRAFT TECHNOLOGY. VOLUME 2: MATERIALS AND STRUCTURES, PROPULSION AND DRIVE SYSTEMS, FLIGHT DYNAMICS AND CONTROL, AND ACOUSTICS

Feb. 1988 587 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987

(NASA-CP-2495-VOL-2; NAS 1.55:2495-VOL-2) Avail: NTIS HC A25/MF A04 CSCL 01B

AEROACOUSTICS, AIRCRAFT DESIGN, CONFERENCES, CONTROLLABILITY, ENGINE DESIGN, FRACTURE MECHANICS, HELICOPTERS, ROTOR AERODYNAMICS

**N88-16650\*#** National Aeronautics and Space Administration, Washington, DC.

NASA/ÅRMY ROTORCRAFT TECHNOLOGY. VOLUME 3: SYSTEMS INTEGRATION, RESEARCH AIRCRAFT, AND INDUSTRY

Feb. 1988 387 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987

(NASA-CP-2495-VOL-3; NAS 1.55:2495-VOL-3) Avail: NTIS HC A17/MF A03 CSCL 01B

AIRCRAFT DESIGN, FLIGHT TESTS, HELICOPTER PERFORMANCE, ROTARY WING AIRCRAFT, SYSTEMS INTEGRATION

# 01 AERONAUTICS (GENERAL)

N88-19407\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

**GENERAL EQUILIBRIUM CHARACTERISTICS OF A DUAL-LIFT HELICOPTER SYSTEM** 

L. S. CICOLANI and G. KANNING Jul. 1986 86 p (NASA-TP-2615; A-86114; NAS 1.60:2615) Avail: NTIS HC A05/MF A01 CSCL 01B

CARGO AIRCRAFT, EQUILIBRIUM, LIFT HEAVY HELICOPTERS, SUSPENDING (HANGING), TETHERING

National Aeronautics and Space Administration. N88-23715\*# Langley Research Center, Hampton, VA.

#### JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION **RESEARCH, 1986**

FREDERICK R. MORRELL, comp. Apr. 1988 115 p Meeting held in Hampton, Va., 8-9 Jan. 1987; sponsored by NASA, Langley Research Cetner, Hampton, Va. and FAA, Washington, D.C. Sponsored by NASA, Washington

(NASA-CP-2502; L-16406; NAS 1.55:2502) Avail: NTIS HC A06/MF A01 CSCL 01B

AERODYNAMICS. AIRCRAFT CONTROL. AIRCRAFT GUIDANCE, AVIONICS, SURFACE NAVIGATION

N88-27148\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### INTEGRATED TECHNOLOGY ROTOR METHODOLOGY **ASSESSMENT WORKSHOP**

MICHAEL J. MCNULTY, ed. and WILLIAM G. BOUSMAN, ed. Jun. 1988 381 p Workshop held in Moffett Field, Calif., 21-22 Jun. 1983; sponsored by NASA, Ames Research Center and the Army Prepared in cooperation with Army Aviation Systems Command, Moffett Field, Calif. Sponsored by NASA, Washington, D.C. (NASA-CP-10007; A-86381; NAS 1.55:10007;

USAAVSCOM-CP-88-A-001; AD-A200007) Avail: NTIS HC A17/MF A03 CSCL 01/2

AERODYNAMIC STABILITY, AEROELASTICITY, CON-FERENCES, MATHEMATICAL MODELS, ROTOR AERODY-NAMICS, ROTOR BODY INTERACTIONS

N88-27163\* National Aeronautics and Space Administration, Washington, DC.

#### **AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES**

Aug. 1988 126 p

(NASA-SP-7037(229); NAS 1.21:7037(229)) Avail: NTIS HC A07 CSCL 01B

This bibliography lists 455 reports, articles, and other documents introduced into the NASA scientific and technical information system in July, 1988. Author

N89-19230\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1987

FREDERICK R. MORRELL, comp. Apr. 1989 118 p Presented at a conference held in Atlantic City, NJ, 14-15 Jan. 1988 (NASA-CP-3028; L-16547; NAS 1.55:3028) Avail: NTIS HC A06/MF A01 CSCL 01B

AVIONICS, COMPUTER TECHNIQUES, CONTROL THEORY, **GUIDANCE (MOTION), SURFACE NAVIGATION** 

N89-22568\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### EVALUATION OF THE RIDE QUALITY OF A LIGHT TWIN ENGINE AIRPLANE USING A RIDE QUALITY METER ERIC C. STEWART Jun. 1989 27 p

(NASA-TP-2913; L-16524; NAS 1.60:2913) Avail: NTIS HC

A03/MF A01 CSCL 01B AIRCRAFT COMPARTMENTS, AIRCRAFT NOISE, NOISE TOLERANCE, SOUND TRANSMISSION, VIBRATION

N89-29304\* National Aeronautics and Space Administration, Washington, DC.

AERONAUTICAL ENGINEERING: A CONTINUING **BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 242)** Aug. 1989 132 p

(NASA-SP-7037(242); NAS 1.21:7037(242)) Avail: NTIS HC A07; NTIS standing order as PB89-914100, \$10.50 domestic, \$21.00 foreign CSCL 01A

This bibliography lists 466 reports, articles, and other documents introduced into the NASA scientific and technical information system in July, 1989. Subject coverage includes: design, construction and testing of aircraft and aircraft engines; aircraft components, equipment and systems; ground support systems; and theoretical and applied aspects of aerodynamics and general fluid dynamics. Author

N90-20921\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION **RESEARCH, 1988-1989**

FREDERICK R. MORRELL, comp. Mar. 1990 202 p Research program held during 1988-1989; sponsored by NASA, Langley Research Center and FAA

(NASA-CP-3063; L-16740; NAS 1.55:3063) Avail: NTIS HC A10/MF A02 CSCL 01C

NAVIGATION, AIR AIR TRAFFIC CONTROL, AIR TRANSPORTATION, AIRCRAFT CONTROL. AVIONICS. CONFERENCES, CONTROL SYSTEMS DESIGN, CONTROL THEORY, PSYCHOLOGY, UNIVERSITIES, WARNING SYSTEMS, WIND SHEAR

N90-20942\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### LASER-VELOCIMETER-MEASURED FLOW FIELD AROUND AN ADVANCED, SWEPT, EIGHT-BLADE PROPELLER AT MACH 0.8

HARVEY E. NEUMAN, JOHN A. SERAFINI, DANIEL Y. WHIPPLE, and BRIAN T. HOWARD May 1985 100 p

(NASA-TP-2462; E-2429; NAS 1.60:2462) Avail: Issuing Activity CSCL 01B

FLOW DISTRIBUTION, LASER DOPPLER VELOCIMETERS, PROPELLERS, WIND TUNNEL TESTS

N90-27648\* National Aeronautics and Space Administration, Washington, DC.

**AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 255)** Aug. 1990 153 p

(NASA-SP-7037(255); NAS 1.21:7037(255)) Avail: NTIS HC A08; NTIS standing order as PB90-914100, \$11.50 domestic, \$23.00 foreign CSCL 01A

This bibliography lists 529 reports, articles, and other documents introduced into the NASA scientific and technical information system in June 1990. Subject coverage includes: design, construction and testing of aircraft and aircraft engines; aircraft components, equipment and systems; ground support systems; and theoretical and applied aspects of aerodynamics and general fluid dynamics. Author

# 02

# **AERODYNAMICS**

Includes aerodynamics of bodies, combinations, wings, rotors, and control surfaces; and internal flow in ducts and turbomachinery.

National Aeronautics and Space Administration. N77-85474\* Hugh L. Dryden Flight Research Center, Edwards, CA. SUPERCRITICAL WING TECHNOLOGY: A REPORT ON

FLIGHT EVALUATIONS 1972 133 p (NASA-SP-301; C72-71337)

N87-10039\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. WIND-TUNNEL INVESTIGATION OF THE FLIGHT CHARACTERISTICS OF A CANARD GENERAL-AVIATION

AIRPLANE CONFIGURATION D. R. SATRAN Oct. 1986 60 p

(NASA-TP-2623; L-15929; NAS 1.60:2623) Avail: NTIS HC A04/MF A01 CSCL 01A

CANARD CONFIGURATIONS, FLIGHT CHARACTERISTICS, GENERAL AVIATION AIRCRAFT, WIND TUNNEL TESTS

N87-10042\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SUPERSONIC, NONLINEAR, ATTACHED-FLOW WING DESIGN FOR HIGH LIFT WITH EXPERIMENTAL VALIDATION

J. L. PITTMAN, D. S. MILLER, and W. H. MASON (Grumman Aerospace Corp., Bethpage, N.Y.) Aug. 1984 221 p (NASA-TP-2336; L-15787; NAS 1.60:2336) Avail: NTIS HC A10/MF A02 CSCL 01A

CAMBERED WINGS, REATTACHED FLOW, SUPERCRITICAL FLOW, SUPERSONIC AIRFOILS, SUPERSONIC FLOW

N87-10838\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EFFECTS OF TAIL SPAN AND EMPENNAGE ARRANGEMENT ON DRAG OF A TYPICAL SINGLE-ENGINE FIGHTER AFT END

J. R. BURLEY, II and B. L. BERRIER Sep. 1984 136 p (NASA-TP-2352; L-15742; NAS 1.60:2352) Avail: NTIS HC A07/MF A01 CSCL 01A

AERODYNAMIC DRAG, AIRCRAFT CONFIGURATIONS, SKIN FRICTION, TAIL ASSEMBLIES, TRANSONIC SPEED

N87-10839\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. STATIC INTERNAL PERFORMANCE OF

SINGLE-EXPANSION-RAMP NOZZLES WITH THRUST-VECTORING CAPABILITY UP TO 60 DEG

B. L. BERRIER and L. D. LEAVITT Oct. 1984 144 p (NASA-TP-2364; L-15766; NAS 1.60:2364) Avail: NTIS HC A07/MF A01 CSCL 01A

AXISYMMETRIC BODIES, NOZZLE FLOW, THRUST VECTOR CONTROL

N87-10841\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA. TRANSONIC FLOW ANALYSIS FOR ROTORS. PART 2:

# THREE-DIMENSIONAL, UNSTEADY, FULL-POTENTIAL CALCULATION

I. C. CHANG Jan. 1985 27 p

(NASA-TP-2375-PT-2; A-9682; NAS 1.60:2375-PT-2) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC STABILITY, HELICOPTER PERFORMANCE, ROTORS, TIP VANES, TRANSONIC FLOW

N87-10843\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PILOTED SIMULATION STUDY OF THE EFFECTS OF AN AUTOMATED TRIM SYSTEM ON FLIGHT CHARACTERISTICS OF A LIGHT TWIN-ENGINE AIRPLANE WITH ONE ENGINE INOPERATIVE

E. C. STEWART, P. W. BROWN, and K. R. YENNI Nov. 1986 41 p

(NASA-TP-2633; L-16147; NAS 1.60:2633) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC BALANCE, AUTOMATIC FLIGHT CONTROL, ENGINE FAILURE, LIGHT AIRCRAFT

N87-11702\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

FORWARD-SWEPT WING CONFIGURATION DESIGNED FOR HIGH MANEUVERABILITY BY USE OF A TRANSONIC COMPUTATIONAL METHOD

M. J. MANN and C. E. MERCER Nov. 1986 185 p (NASA-TP-2628; L-16120; NAS 1.60:2628) Avail: NTIS HC A09/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, HIGHLY MANEU-VERABLE AIRCRAFT, SWEPT FORWARD WINGS, TRAN-SONIC SPEED

N87-12541\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF PORT CORNER GEOMETRY ON THE INTERNAL PERFORMANCE OF A ROTATING-VANE-TYPE THRUST REVERSER

B. L. BERRIER and F. J. CAPONE Dec. 1986 51 p (NASA-TP-2624; L-16135; NAS 1.60:2624) Avail: NTIS HC A04/MF A01 CSCL 01A

CORNER FLOW, NOZZLE GEOMETRY, PORTS (OPENINGS), ROTATING BODIES, THRUST REVERSAL, VANES, WIND TUNNEL TESTS

N87-14284\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH,

PROPAGATION OF SOUND WAVES IN TUBES OF NONCIRCULAR CROSS SECTION

W. B. RICHARDS (Oberlin Coll., Ohio) Aug. 1986 33 p (NASA-TP-2601; E-2690; NAS 1.60:2601) Avail: NTIS HC A03/MF A01 CSCL 01A

ELLIPTICAL CYLINDERS, PIPES (TUBES), SOUND WAVES, WAVE PROPAGATION

N87-15174\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

APPLICABILITY OF LINEARIZED-THEORY ATTACHED-FLOW METHODS TO DESIGN AND ANALYSIS OF FLAP SYSTEMS AT LOW SPEEDS FOR THIN SWEPT WINGS WITH SHARP LEADING EDGES

HARRY W. CARLSON and CHRISTINE M. DARDEN Jan. 1987 54 p

(NASA-TP-2653; L-16151; NAS 1.60:2653) Avail: NTIS HC A04/MF A01 CSCL 01A

FLAPS (CONTROL SURFACES), DESIGN ANALYSIS, LINEARITY, LOW SPEED, SHARP LEADING EDGES, SWEPT WINGS, THIN WINGS, VORTEX FLAPS

N87-15183\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFICIENT SOLUTIONS TO THE EULER EQUATIONS FOR SUPERSONIC FLOW WITH EMBEDDED SUBSONIC REGIONS ROBERT W. WALTERS and DOUGLAS L. DWOYER Jan. 1987 18 p

(NASA-TP-2523; L-15975; NAS 1.60:2523) Avail: NTIS HC A03/MF A01 CSCL 01A

EMBEDDING, EULER EQUATIONS OF MOTION, PROBLEM SOLVING, SUBSONIC FLOW, SUPERSONIC FLOW

N87-15184\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SUBSONIC MANEUVER CAPABILITY OF A SUPERSONIC CRUISE FIGHTER WING CONCEPT

GREGORY D. RIEBE and CHARLES H. FOX, JR. Jan. 1987 74 p

(NASA-TP-2642; L-16097; NAS 1.60:2642) Avail: NTIS HC A04/MF A01 CSCL 01A

FIGHTER AIRCRAFT, MANEUVERS, SUBSONIC SPEED, SUPERSONIC CRUISE AIRCRAFT RESEARCH, WINGS

N87-17665\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. PRELIMINARY DESIGN OF TURBOPUMPS AND RELATED MACHINERY

# 02 AERODYNAMICS

GEORGE F. WISLICENUS Oct. 1986 397 p (NAS3-13475) (NASA-RP-1170; E-7389; NAS 1.61:1170) Avail: NTIS HC A17/MF A03 CSCL 01A

Pumps used in large liquid-fuel rocket engines are examined. The term preliminary design denotes the initial, creative phases of design, where the general shape and characteristics of the machine are determined. This compendium is intended to provide the design engineer responsible for these initial phases with a physical understanding and background knowledge of the numerous special fields involved in the design process. Primary attention is directed to the pumping part of the turbopump and hence is concerned with essentially incompressible fluids. However, compressible flow principles are developed. As much as possible, the simplicity and reliability of incompressible flow considerations are retained by treating the mechanics of compressible fluids as a departure from the theory of incompressible fluids. Five areas are discussed: a survey of the field of turbomachinery in dimensionless form; the theoretical principles of the hydrodynamic design of turbomachinery; the hydrodynamic and gas dynamic design of axial flow turbomachinery; the hydrodynamic and gas dynamic design of radial and mixed flow turbomachinery; and some mechanical design considerations of turbomachinery. Theoretical considerations are presented with a relatively elementary mathematical treatment. Author

N87-17668\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

WIND-TUNNEL INVESTIGATION AT SUPERSONIC SPEEDS OF A REMOTE-CONTROLLED CANARD MISSILE WITH A FREE-ROLLING-TAIL BRAKE TORQUE SYSTEM

A. B. BLAIR, JR. Mar. 1985 38 p (NASA-TP-2401; L-15882; NAS 1.60:2401) Avail: NTIS HC A03/MF A01 CSCL 01A

BRAKING, CANARD CONFIGURATIONS, FINS, MISSILE CONFIGURATIONS, REMOTE CONTROL, ROLLING MOMENTS, SUPERSONIC SPEED, TAIL ASSEMBLIES, TORQUE, WIND TUNNEL TESTS

N87-17669\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### COMBINED AERODYNAMIC AND STRUCTURAL DYNAMIC PROBLEM EMULATING ROUTINES (CASPER): THEORY AND IMPLEMENTATION

WILLIAM H. JONES Feb. 1985 75 p

(NASA-TP-2418; E-2278; NAS 1.60:2418) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC COEFFICIENTS, COMPUTATIONAL FLUID COMPUTERIZED DYNAMICS, SIMULATION, DYNAMIC STRUCTURAL ANALYSIS

N87-18537\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

HELICOPTER BLADE-VORTEX INTERACTION LOCATIONS: SCALE-MODEL ACOUSTICS AND FREE-WAKE ANALYSIS RESULTS

DANNY R. HOAD Apr. 1987 106 p

(DA PROJ. 1L1-62209-AH-76-A)

(NASA-TP-2658; L-16214; AVSCOM-TM-87-B-1; NAS 1.60:2658; AD-A179379) Avail: NTIS HC A06/MF A01 CSCL 01/1 ACOUSTICS, BLADE-VORTEX INTERACTION, FREE FLOW,

HELICOPTERS, ROTORS, VORTICES, WAKES

N87-19351\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# NUMERICAL SIMULATION OF CHANNEL FLOW TRANSITION, RESOLUTION REQUIREMENTS AND STRUCTURE OF THE HAIRPIN VORTEX

STEVEN E. KRIST (Joint Inst. for Advancement of Flight Sciences, Hampton, Va.) and THOMAS A. ZANG Apr. 1987 71 p (NASA-TP-2667; L-16204; NAS 1.60:2667) Avail: NTIS HC A04/MF A01 CSCL 01A

BOUNDARY LAYER STABILITY, BOUNDARY LAYER TRANSITION, BOUNDARY VALUE PROBLEMS, CHANNEL FLOW, COMPUTATIONAL FLUID DYNAMICS, SPECTRAL METHODS

N87-20233\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INVESTIGATION OF LEADING-EDGE FLAP PERFORMANCE ON DELTA AND DOUBLE-DELTA WINGS AT SUPERSONIC SPEEDS

PETER F. COVELL, RICHARD M. WOOD, and DAVID S. MILLER Apr. 1987 125 p

(NASA-TP-2656; L-16143; NAS 1.60:2656) Avail: NTIS HC A06/MF A01 CSCL 01A

DELTA WINGS, EXPERIMENT DESIGN, LEADING EDGE FLAPS, SUPERSONIC SPEED

N87-20238\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

LEWIS INVERSE DESIGN CODE (LINDES): USERS MANUAL JOSE M. SANZ Mar. 1987 67 p (NASA-TP-2676; E-3221; NAS 1.60:2676) Avail: NTIS HC

A04/MF A01 CSCL 01A

AIRFOILS, CODING, DESIGN ANALYSIS, HODOGRAPHS, INVERSIONS, TURBINE BLADES, USER MANUALS (COMPUTER PROGRAMS)

N87-20966\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA. IN-FLIGHT SURFACE OIL-FLOW PHOTOGRAPHS WITH COMPARISONS TO PRESSURE DISTRIBUTION AND BOUNDARY-LAYER DATA

ROBERT R. MEYER, JR. and LISA A. JENNETT Apr. 1985 27 p Original contains color illustrations

(NASA-TP-2395; H-1184; NAS 1.60:2395) Avail: NTIS HC A03/MF A01 CSCL 01A

BOUNDARY LAYER FLOW, FLOW VISUALIZATION, IN-FLIGHT MONITORING, OILS, PHOTOGRAPHY, PRESSURE DISTRIBUTION

N87-21855\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

WIND-TUNNEL FREE-FLIGHT INVESTIGATION OF A 0.15-SCALE MODEL OF THE F-106B AIRPLANE WITH **VORTEX FLAPS** 

LONG P. YIP May 1987 46 p

(NASA-TP-2700; L-16202; NAS 1.60:2700) Avail: NTIS HC A03/MF A01 CSCL 01A

F-106 AIRCRAFT, FREE FLIGHT, VORTEX FLAPS, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N87-21871\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

NEW METHODS AND RESULTS FOR QUANTIFICATION OF LIGHTNING-AIRCRAFT ELECTRODYNAMICS

FELIX L. PITTS, LARRY D. LEE, RODNEY A. PERALA, and TERENCE H. RUDOLPH (Electro Magnetic Applications, Inc.,

Lakewood, Colo.) Jun. 1987 67 p (NASA-TP-2737; L-16281; NAS 1.60:2737) Avail: NTIS HC A04/MF A01 CSCL 01A

ELECTRODYNAMICS, F-106 AIRCRAFT, FLIGHT TESTS, LIGHTNING, RESEARCH AIRCRAFT

N87-21873\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECTS OF AFTERBODY BOATTAIL DESIGN AND EMPENNAGE ARRANGEMENT ON AEROPROPULSIVE CHARACTERISTICS OF A TWIN-ENGINE FIGHTER MODEL AT TRANSONIC SPEEDS

LINDA S. BANGERT, LAURENCE D. LEAVITT, and DAVID E. REUBUSH Jun. 1987 134 p

(NASA-TP-2704; L-16227; NAS 1.60:2704) Avail: NTIS HC A07/MF A01 CSCL 01A

AFTERBODIES, AXISYMMETRIC FLOW, BOATTAILS, DRAG,

FIGHTER AIRCRAFT, NOZZLES, PROPULSIVE EFFICIENCY, TAIL ASSEMBLIES

N87-22626\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EXPERIMENTAL CAVITY PRESSURE DISTRIBUTIONS AT

SUPERSONIC SPEEDS

ROBERT L. STALLINGS, JR. and FLOYD J. WILCOX, JR. Jun. 1987 79 p

(NASA-TP-2683; L-16215; NAS 1.60:2683) Avail: NTIS HC A05/MF A01 CSCL 01A

CAVITIES, FLUID FLOW, PRESSURE DISTRIBUTION, SUPERSONIC SPEED

N87-23586\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ON MINIMIZING THE NUMBER OF CALCULATIONS IN DESIGN-BY-ANALYSIS CODES

RAYMOND L. BARGER and ANUTOSH MOITRA Jun. 1987 16 p

(NASA-TP-2706; L-16226; NAS 1.60:2706) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, APPROXIMATION, DESIGN ANALYSIS, NUMERICAL ANALYSIS, PRESSURE DISTRIBUTION

**N87-23592\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MACH 6 EXPERIMENTAL AND THEORETICAL STABILITY AND PERFORMANCE OF A CRUCIFORM MISSILE AT ANGLES OF ATTACK UP TO 65 DEGREES

EDWARD R. HARTMAN (Arnold Engineering Development Center, Arnold Air Force Station, Tenn.) and PATRICK J. JOHNSTON Jul. 1987 41 p

(NASA-TP-2733; L-16287; NAS 1.60:2733) Avail: NTIS HC A03/MF A01 CSCL 01A

ANGLE OF ATTACK, CRUCIFORM WINGS, EXPERIMEN-TATION, HYPERSONIC SPEED, MACH NUMBER, MISSILES

**N87-23593\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF A TRADE BETWEEN BOATTAIL ANGLE AND WEDGE SIZE ON THE PERFORMANCE OF A NONAXISYMMETRIC WEDGE NOZZLE

GEORGE T. CARSON, JR., E. ANN BARE, and JAMES R. BURLEY, II Jul. 1987 67 p

(NASA-TP-2717; L-16248; NAS 1.60:2717) Avail: NTIS HC A04/MF A01 CSCL 01A

AXISYMMETRIC BODIES, BOATTAILS, NOZZLE GEOMETRY, PERFORMANCE TESTS, TRADEOFFS, WEDGES

**N87-23597\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STUDY OF LEE-SIDE FLOWS OVER CONICALLY CAMBERED DELTA WINGS AT SUPERSONIC SPEEDS, PART 1

RICHARD M. WOOD and CAROLYN B. WATSON Jul. 1987 212 p

(NASA-TP-2660-PT-1; L-16192; NAS 1.60:2660-PT-1) Avail: NTIS HC A10/MF A02 CSCL 01A

CONICAL CAMBER, DELTA WINGS, FLOW DISTRIBUTION, LEE WAVES, STRUCTURAL DESIGN, SUPERSONIC FLOW, VORTICES

**N87-24410\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

PROCEEDINGS OF THE 1985 NASA AMES RESEARCH CENTER'S GROUND-EFFECTS WORKSHOP

KERRY MITCHELL, ed. Feb. 1987 448 p Workshop held at Moffett Field, Calif., 20-21 Aug. 1985

(NASA-CP-2462; A-86391; NAS 1.55:2462) Avail: NTIS HC A19/MF A03 CSCL 01A

GROUND EFFECT (AERODYNAMICS), INGESTION

(ENGINES), POWERED LIFT AIRCRAFT, V/STOL AIRCRAFT, VERTICAL LANDING

**N87-24432\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STATIC INTERNAL PERFORMANCE OF A TWO-DIMENSIONAL CONVERGENT-DIVERGENT NOZZLE WITH THRUST VECTORING

E. ANN BARE and DAVID E. REUBUSH Jul. 1987 115 p (NASA-TP-2721; L-16240; NAS 1.60:2721) Avail: NTIS HC A06/MF A01 CSCL 01A

CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, THRUST VECTOR CONTROL, TWO DIMENSIONAL FLOW

**N87-24433\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MULTIAXIS CONTROL POWER FROM THRUST VECTORING FOR A SUPERSONIC FIGHTER AIRCRAFT MODEL AT MACH 0.20 TO 2.47

FRANCIS J. CAPONE and E. ANN BARE Jul. 1987 264 p (NASA-TP-2712; L-16213; NAS 1.60:2712) Avail: NTIS HC A12/MF A02 CSCL 01A

FIGHTER AIRCRAFT, MACH NUMBER, SUPERSONIC CRUISE AIRCRAFT RESEARCH, THRUST VECTOR CONTROL

**N87-25301\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STUDY OF LEE-SIDE FLOWS OVER CONICALLY CAMBERED DELTA WINGS AT SUPERSONIC SPEEDS, PART 2 RICHARD M. WOOD and CAROLYN B. WATSON Jul. 1987

404 p

(NASA-TP-2660-PT-2; L-16192; NAS 1.60:2660-PT-2) Avail: NTIS HC A18/MF A03 CSCL 01A

CONICAL CAMBER, DELTA WINGS, FLOW DISTRIBUTION, FLOW VISUALIZATION, SUPERSONIC FLOW, WING LOADING

**N87-25998\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

SUPERCOMPUTING IN AEROSPACE

PAUL KUTLER and HELEN YEE Mar. 1987 299 p Symposium held at Moffett Field, Calif., 10-12 Mar. 1987

(NASA-CP-2454; A-87082; NAS 1.55:2454) Avail: NTIS HC A13/MF A02 CSCL 01A

COMPUTATIONAL ASTROPHYSICS, COMPUTATIONAL CHEMISTRY, COMPUTATIONAL FLUID DYNAMICS, COMPUTATIONAL GRIDS, COMPUTERIZED SIMULATION, CONFERENCES, INTERACTIONAL AERODYNAMICS, NAVIER-STOKES EQUATION, SUPERCOMPUTERS

**N87-26031\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF REYNOLDS NUMBER VARIATION ON AERODYNAMICS OF A HYDROGEN-FUELED TRANSPORT CONCEPT AT MACH 6

JIM A. PENLAND and DON C. MARCUM, JR. Aug. 1987 28 p (NASA-TP-2728; L-16286; NAS 1.60:2728) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, HYDROGEN FUELS, HYPERSONIC AIRCRAFT, MACH NUMBER, REYNOLDS NUMBER, TRANSPORT AIRCRAFT

**N87-26032\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STEADY AND UNSTEADY AERODYNAMIC FORCES FROM THE SOUSSA SURFACE-PANEL METHOD FOR A FIGHTER WING WITH TIP MISSILE AND COMPARISON WITH EXPERIMENT AND PANAIR

HERBERT J. CUNNINGHAM Aug. 1987 29 p (NASA-TP-2736; L-16262; NAS 1.60:2736) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC FORCES, FIGHTER AIRCRAFT, PANEL METHOD (FLUID DYNAMICS), UNSTEADY AERODYNAMICS, UNSTEADY FLOW, WINGS

# 02 AERODYNAMICS

**N87-26874\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SUBSONIC LONGITUDINAL AND LATERAL-DIRECTIONAL CHARACTERISTICS OF A FORWARD-SWEPT-WING FIGHTER CONFIGURATION AT ANGLES OF ATTACK UP TO 47 DEG MICHAEL J. MANN, JARRETT K. HUFFMAN, and CHARLES H. FOX, JR. Sep. 1987 103 p

(NASA-TP-2727; L-16206; NAS 1.60:2727) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, ANGLE OF ATTACK, FIGHTER AIRCRAFT, LATERAL CONTROL, LATERAL STABILITY, SUBSONIC AIRCRAFT, SWEPT FORWARD WINGS

**N87-26883\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AN EXPERIMENTAL INVESTIGATION OF AN ADVANCED TURBOPROP INSTALLATION ON A SWEPT WING AT SUBSONIC AND TRANSONIC SPEEDS

JOHN R. CARLSON and ODIS C. PENDERGRAFT, JR. Sep. 1987 242 p

(NASA-TP-2729; L-16043; NAS 1.60:2729) Avail: NTIS HC A11/MF A02 CSCL 01A

AERODYNAMICS, ENGINE AIRFRAME INTEGRATION, SUBSONIC SPEED, SWEPT WINGS, TRANSONIC SPEED, TURBOPROP ENGINES

N87-27622\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. CALCULATION OF VISCOUS EFFECTS ON TRANSONIC

FLOW FOR OSCILLATING AIRFOILS AND COMPARISONS WITH EXPERIMENT

JAMES T. HOWLETT and SAMUEL R. BLAND Sep. 1987 77 p

(NASA-TP-2731; L-16289; NAS 1.60:2731) Avail: NTIS HC A05/MF A01 CSCL 01A

AIRFOILS, COMPARISON, INVISCID FLOW, OSCILLATIONS, TRANSONIC FLOW, VISCOUS FLOW

N87-27626\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. DRAG MEASUREMENTS OF BLUNT STORES TANGENTIALLY

MOUNTED ON A FLAT PLATE AT SUPERSONIC SPEEDS FLOYD J. WILCOX, JR. Sep. 1987 68 p

(NASA-TP-2742; L-16284; NAS 1.60:2742) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC DRAG, BLUNT BODIES, EXTERNAL STORES, FLAT PLATES, MOUNTING, SUPERSONIC SPEED, TANGENTS

**N87-27643\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PRESSURE MEASUREMENTS ON A THICK CAMBERED AND TWISTED 58 DEG DELTA WING AT HIGH SUBSONIC SPEEDS JULIO CHU and JOHN E. LAMAR Sep. 1987 233 p (NASA-TP-2713; L-16224; NAS 1.60:2713) Avail: NTIS HC A11/ME A02 CSCI 01A

A11/MF A02 CSCL 01A CAMBER, DELTA WINGS, PRESSURE MEASUREMENT, SUBSONIC SPEED, THICKNESS, TWISTED WINGS

**N87-29432\***# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

# AUTOMATED REDUCTION OF DATA FROM IMAGES AND HOLOGRAMS

G. LEE, ed., JAMES D. TROLINGER, ed. (Spectron Development Labs., Inc., Costa Mesa, Calif.), and Y. H. YU, ed. May 1987 614 p Workshop held at Moffett Field, Calif., 10-11 Jan. 1985 (NASA-CP-2477; A-87135; NAS 1.55:2477) Avail: NTIS HC A99/MF A04 CSCL 01A

COMBUSTIBLE FLOW, DIGITAL TECHNIQUES, HOLO-GRAPHIC INTERFEROMETRY, IMAGE ANALYSIS, PARTICLE SIZE DISTRIBUTION **N87-29462\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LOW-SPEED AERODYNAMIC CHARACTERISTICS OF A TWIN-ENGINE GENERAL AVIATION CONFIGURATION WITH AFT-FUSELAGE-MOUNTED PUSHER PROPELLERS

DANA MORRIS DUNHAM, GARL L. GENTRY, JR., GREGORY S. MANUEL, ZACHARY T. APPLIN, and P. FRANK QUINTO Oct. 1987 116 p

(NASA-TP-2763; L-16331; NAS 1.60:2763) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, GENERAL AVIATION AIRCRAFT, LOW SPEED, PROPELLERS, PROPULSION SYSTEM CONFIGURATIONS, PYLON MOUNTING, TURBOPROP ENGINES

**N88-10009\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

WIND-TUNNEL INVESTIGATION OF A FULL-SCALE GENERAL AVIATION AIRPLANE EQUIPPED WITH AN ADVANCED NATURAL LAMINAR FLOW WING

DANIEL G. MURRI and FRANK L. JORDAN, JR. Nov. 1987 136 p

(NASA-TP-2772; L-16283; NAS 1.60:2772) Avail: NTIS HC A07/MF A01 CSCL 01A

GENERAL AVIATION AIRCRAFT, LAMINAR FLOW AIRFOILS, WIND TUNNEL TESTS, WINGS

**N88-10765\***# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA. **COMPARISON OF WIND TUNNEL AND FLIGHT TEST** 

AFTERBODY AND NOZZLE PRESSURES FOR A TWIN-JET FIGHTER AIRCRAFT AT TRANSONIC SPEEDS

JACK NUGENT and ODIS C. PENDERGRAFT, JR. Mar. 1987 125 p

(NASA-TP-2588; H-1214; NAS 1.60:2588) Avail: NTIS HC A06/MF A01 CSCL 01A

AFTERBODIES, FIGHTER AIRCRAFT, FLIGHT TESTS, NOZZLE THRUST COEFFICIENTS, TRANSONIC SPEED, WIND TUNNEL MODELS, WIND TUNNEL TESTS

**N88-10771\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF EMPENNAGE ARRANGEMENT ON

SINGLE-ENGINE NOZZLE/AFTERBODY STATIC PRESSURES AT TRANSONIC SPEEDS

WILLIAM P. HENDERSON and JAMES R. BURLEY, II Nov. 1987 230 p

(NASA-TP-2753; L-16223; NAS 1.60:2753) Avail: NTIS HC A11/MF A02 CSCL 01A

AFTERBODIES, AXISYMMETRIC FLOW, JET AIRCRAFT, JET ENGINES, NOZZLES, STATIC PRESSURE, TAIL ASSEMBLIES, TRANSONIC SPEED

**N88-12454\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PLANFORM EFFECTS ON THE SUPERSONIC

AERODYNAMICS OF MULTIBODY CONFIGURATIONS NAOMI MCMILLIN and RICHARD M. WOOD 1987 138 p (NASA-TP-2762; L-16312; NAS 1.60:2762) Avail: NTIS HC A07/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC DRAG, AIRCRAFT CONFIGURATIONS, FINENESS RATIO, PLANFORMS, SUPERSONICS, ZERO LIFT

**N88-12455\*** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECTS OF THE INSTALLATION AND OPERATION OF JET-EXHAUST YAW VANES ON THE LONGITUDINAL AND LATERAL-DIRECTIONAL CHARACTERISTICS OF THE F-14 AIRPLANE

DAVID E. REUBUSH and BOBBY L. BERRIER Dec. 1987 121 p

(NASA-TP-2769; L-16302; NAS 1.60:2769) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC STABILITY, AIRCRAFT CONTROL. DIRECTIONAL STABILITY, F-14 AIRCRAFT, JET VANES. LATERAL STABILITY, LONGITUDINAL STABILITY, THRUST VECTOR CONTROL, WIND TUNNEL STABILITY TESTS

National Aeronautics and Space Administration. N88-16662\*# Langley Research Center, Hampton, VA.

A SIMPLIFIED APPROACH TO AXISYMMETRIC

**DUAL-REFLECTOR ANTENNA DESIGN** 

RAYMOND L. BARGER Mar. 1988 14 p

(NASA-TP-2797; L-16392; NAS 1.60:2797) Avail: NTIS HC A03/MF A01 CSCL 20N

ANTENNA DESIGN, ANTENNA RADIATION PATTERNS. REFLECTOR ANTENNAS, REFLECTORS, STIMULATED EMISSION

N88-17586\*# National Aeronautics and Space Administration. Arnes Research Center, Moffett Field, CA. PROCEEDINGS OF THE CIRCULATION-CONTROL

WORKSHOP, 1986

JACK N. NIELSEN, comp. May 1987 591 p Workshop held at Moffett Field, Calif., 19-21 Feb. 1986 Original contains color illustrations

(NASA-CP-2432; A-86314; NAS 1.55:2432) Avail: NTIS HC

A25/MF A04 CSCL 01A AIRCRAFT CONTROL, CIRCULATION CONTROL AIRFOILS, CIRCULATION CONTROL ROTORS, COANDA EFFECT, X WING ROTORS

N88-17614\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### A TRANSONIC-SMALL-DISTURBANCE WING DESIGN METHODOLOGY

PAMELA S. PHILLIPS, EDGAR G. WAGGONER, and RICHARD L. CAMPBELL Mar. 1988 32 p

(NASA-TP-2806; L-16393; NAS 1.60:2806) Avail: NTIS HC A03/MF A01 CSCL 01A

CODING, COMPUTER PROGRAMS, DESIGN ANALYSIS, SMALL PERTURBATION FLOW, TRANSONIC FLOW, WINGS

National Aeronautics and Space Administration. N88-17615\*# Langley Research Center, Hampton, VA.

SUPERSONIC AERODYNAMICS OF DELTA WINGS

RICHARD M. WOOD Mar. 1988 106 p

(NASA-TP-2771; L-16212; NAS 1.60:2771) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMICS, DELTA WINGS. INVISCID FLOW, SUPERSONIC AIRFOILS, SUPERSONIC SPEED

N88-18552\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A PERFORMANCE INDEX APPROACH TO AERODYNAMIC DESIGN WITH THE USE OF ANALYSIS CODES ONLY

RAYMOND L. BARGER and ANUTOSH MOITRA (High Technology Corp., Hampton, Va.) Mar. 1988 21 p

(NASA-TP-2805; L-16379; NAS 1.60:2805) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, CODING, COMPUTER PROGRAMS, DESIGN ANALYSIS, INDEXES (DOCUMENTATION), PERFORMANCE TESTS

National Aeronautics and Space Administration. N88-18567\*# Hugh L. Dryden Flight Research Center, Edwards, CA. EFFECTS OF WINGLETS ON A FIRST-GENERATION JET TRANSPORT WING. 7: SIDESLIP EFFECTS ON WINGLET LOADS AND SELECTED WING LOADS AT SUBSONIC SPEEDS FOR A FULL-SPAN MODEL

ROBERT R. MEYER, JR. and PETER F. COVELL Sep. 1986 60 p

(NASA-TP-2619; H-1193; NAS 1.60:2619) Avail: NTIS HC A04/MF A01 CSCL 01A

SIDESLIP, SUBSONIC SPEED, WIND TUNNEL MODELS, WINGLETS

N88-19412\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

TRAJECTORY CHARACTERISTICS AND HEATING OF HYPERVELOCITY PROJECTILES HAVING LARGE BALLISTIC COEFFICIENTS

MICHAEL E. TAUBER Aug. 1986 21 p

(NASA-TP-2614; A-86187; NAS 1.60:2614) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC HEATING, BALLISTIC TRAJECTORIES, HYPERVELOCITY PROJECTILES, TRAJECTORY ANALYSIS

N88-19416\* National Aeronautics and Space Administration, Washington, DC.

AERONAUTICAL ENGINEERING: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY

Jan. 1988 499 p

(NASA-SP-7037(222); NAS 1.21:7037(222)) Avail: NTIS HC \$14.50 domestic, \$29.00 foreign CSCL 01A

This bibliography is a cumulative index to the abstracts contained in NASA SP-7037(210) through NASA SP-7037(221) of Aeronautical Engineering: A Continuing Bibliography. NÁSA SP-7037 and its supplements have been compiled through the cooperative efforts of the American Institute of Aeronautics and Astronautics (AIAA) and the National Aeronautics and Space Administration (NASA). This cumulative index includes subject, personal author, corporate source, foreign technology, contract number, report number, and accession number indexes. Author

N88-19420\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AERODYNAMIC CHARACTERISTICS OF WINGS DESIGNED WITH A COMBINED-THEORY METHOD TO CRUISE AT A MACH NUMBER OF 4.5

ROBERT J. MACK Apr. 1988 60 p Sponsored by NASA, Washington

(NASA-TP-2799; L-16333; NAS 1.60:2799) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT DESIGN, CAMBERED WINGS, DESIGN ANALYSIS, HYPERSONIC SPEED, SUPERSONIC SPEED

N88-20257\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

AN EXPERIMENTAL INVESTIGATION OF THE

FLAP-LAG-TORSION AEROELASTIC STABILITY OF A SMALL-SCALE HINGELESS HELICOPTER ROTOR IN HOVER DAVID L. SHARPE Jan. 1986 86 p Prepared in cooperation

with Army Aviation Research and Development Command, Moffett Field, Calif.

(NASA-TP-2546; REPT-85142; NAS 1.60:2546;

AVSCOM-TR-85-A-9) Avail: NTIS HC A05/MF A01 CSCL 01A AEROELASTICITY, FLAPS (CONTROL SURFACES) SURFACES). HELICOPTERS, HOVERING, RIGID ROTORS, STABILITY, TORSION

N88-20264\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A REVIEW OF TECHNOLOGIES APPLICABLE TO LOW-SPEED FLIGHT OF HIGH-PERFORMANCE AIRCRAFT INVESTIGATED IN THE LANGLEY 14- X 22-FOOT SUBSONIC TUNNEL

JOHN W. PAULSON, JR., P. FRANK QUINTO, DANIEL W. BANKS, GUY T. KEMMERLY, and GREGORY M. GATLIN May 1988 94 p

(NASA-TP-2796; L-16364; NAS 1.60:2796) Avail: NTIS HC A05/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, FLIGHT TESTS, LOW SPEED, RESEARCH FACILITIES, SHORT TAKEOFF AIRCRAFT, TECHNOLOGY ASSESSMENT, V/STOL AIRCRAFT, WIND TUNNEL TESTS

# 02 AERODYNAMICS

**N88-20280\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STATIC PERFORMANCE OF AN AXISYMMETRIC NOZZLE WITH POST-EXIT VANES FOR MULTIAXIS THRUST VECTORING

BOBBY L. BERRIER and MARY L. MASON May 1988 54 p (NASA-TP-2800; L-16371; NAS 1.60:2800) Avail: NTIS HC A04/MF A01 CSCL 01A

AXISYMMETRIC BODIES, CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, THRUST VECTOR CONTROL, VANES

**N88-21117\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE NASA LANGLEY LAMINAR-FLOW-CONTROL (LFC) EXPERIMENT ON A SWEPT, SUPERCRITICAL AIRFOIL: DESIGN OVERVIEW

CHARLES D. HARRIS, WILLIAM D. HARVEY, and CUYLER W. BROOKS, JR. May 1988 128  $\ensuremath{\mathsf{p}}$ 

(NASA-TP-2809; L-16324; NAS 1.60:2809) Avail: NTIS HC A07/MF A01 CSCL 01A

BOUNDARY LAYER CONTROL, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, SUPERCRITICAL AIRFOILS, SWEPT WINGS

**N88-21118\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# STATIC PERFORMANCE OF NONAXISYMMETRIC NOZZLES WITH YAW THRUST-VECTORING VANES

MARY L. MASON and BOBBY L. BERRIER May 1988 79 p (NASA-TP-2813; L-16389; NAS 1.60:2813) Avail: NTIS HC A05/MF A01 CSCL 01A

CONVERGENT NOZZLES, CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, STATIC THRUST, THRUST VECTOR CONTROL

**N88-23735\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# NUMERICAL SIMULATION OF SCRAMJET INLET FLOW FIELDS

AJAY KUMAR May 1986 29 p

(NASA-TP-2517; L-16000; NAS 1.60:2517) Avail: NTIS HC A03/MF A01 CSCL 01A

APPLICATIONS PROGRAMS (COMPUTERS), COMPUTA-TIONAL FLUID DYNAMICS, INLET FLOW, NAVIER-STOKES EQUATION, SUPERSONIC COMBUSTION RAMJET ENGINES, THREE DIMENSIONAL FLOW, TURBULENT FLOW

**N88-23737\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### LAMINAR FLOW AIRCRAFT CERTIFICATION LOUIS J. WILLIAMS, comp. May 1986 325 p. Workshop held

in Wichita, Kans., 15-16 Apr. 1985; sponsored by NASA, AIAA, SAE and FAA Sponsored by NASA, Washington (NASA-CP-2413; L-16111; NAS 1.55:2413) Avail: NTIS HC A14/MF A02 CSCL 01A AIRCRAFT DESIGN, CERTIFICATION, CONFERENCES,

AIRCRAFT DESIGN, CERTIFICATION, CONFERENCES, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

**N88-23757\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AEROPROPULSIVE CHARACTERISTICS OF ISOLATED COMBINED TURBOJET/RAMJET NOZZLES AT MACH NUMBERS FROM 0 TO 1.20

GEORGE T. CARSON, JR. and MILTON LAMB Jun. 1988 174 p

(NASA-TP-2814; L-16390; NAS 1.60:2814) Avail: NTIS HC A08/MF A01 CSCL 01A

MACH NUMBER, NOZZLE EFFICIENCY, NOZZLE GEOMETRY, RAMJET ENGINES, ROCKET NOZZLES, TURBINE ENGINES **N88-23760\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SENSITIVITY OF F-106B LEADING-EDGE-VORTEX IMAGES TO FLIGHT AND VAPOR-SCREEN PARAMETERS

JOHN E. LAMAR and THOMAS D. JOHNSON, JR. (Planning Research Corp., Hampton, Va.) Jun. 1988 80 p Original contains color illustrations

(NASA-TP-2818; L-16395; NAS 1.60:2818) Avail: NTIS HC A05/MF A01 CSCL 01A

F-106 AIRCRAFT, IMAGE PROCESSING, LEADING EDGES, SCREEN EFFECT, TRANSONIC FLIGHT, VAPORS, VORTICES, WINGS

N88-28895\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STEADY AND UNSTEADY TRANSONIC PRESSURE

MEASUREMENTS ON A CLIPPED DELTA WING FOR PITCHING AND CONTROL-SURFACE OSCILLATIONS

ROBERT W. HESS, F. W. CAZIER, JR., and ELEANOR C. WYNNE Washington, D.C. Oct. 1986 118 p MF as supplement

(NASA-TP-2594; L-16082; NAS 1.60:2594) Avail: NTIS HC A06/MF A01 CSCL 01A

CONTROL SURFACES, DELTA WINGS, LONGITUDINAL CONTROL, OSCILLATIONS, PRESSURE MEASUREMENT, STEADY STATE, WIND TUNNEL TESTS

**N88-29752\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AERODYNAMICS IN GROUND EFFECT AND PREDICTED LANDING GROUND ROLL OF A FIGHTER CONFIGURATION WITH A SECONDARY-NOZZLE THRUST REVERSER DANIEL W. BANKS Oct. 1988 131 p

(NASA-TP-2834; L-16435; NAS 1.60:2834) Avail: NTIS HC A07/MF A01 CSCL 01A

CASCADE FLOW, GROUND EFFECT (AERODYNAMICS), NOZZLE FLOW, ROLL, SHORT TAKEOFF AIRCRAFT, THRUST REVERSAL

N89-10020\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. WEAK-WAVE ANALYSIS OF SHOCK INTERACTION WITH A SLIPSTREAM RAYMOND L. BARGER Nov. 1988 20 p

(NASA-TP-2848; L-16469; NAS 1.60:2848) Avail: NTIS HC A03/MF A01 CSCL 01A

COUNTERFLOW, SHOCK WAVE INTERACTION, SLIPSTREAMS

**N89-10024\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### VALIDATION OF A PAIR OF COMPUTER CODES FOR ESTIMATION AND OPTIMIZATION OF SUBSONIC AERODYNAMIC PERFORMANCE OF SIMPLE HINGED-FLAP SYSTEMS FOR THIN SWEPT WINGS

HARRY W. CARLSON (PRC Systems Services Co., Hampton, Va.) and CHRISTINE M. DARDEN Washington Nov. 1988 118 p (NASA-TP-2828; L-16428; NAS 1.60:2828) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMICS, COMPUTER PROGRAMS, FLAPPING HINGES, OPTIMIZATION, SUBSONIC FLOW, SWEPT WINGS

N89-10844\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. THREE COMPONENT LASER ANEMOMETER MEASUREMENTS IN AN ANNULAR CASCADE OF CORE TURBINE VANES WITH CONTOURED END WALL LOUIS J. GOLDMAN and RICHARD G. SEASHOLTZ Nov. 1988 44 p (NASA-TP-2846; E-4183; NAS 1.60:2846) Avail: NTIS HC A03/MF A01 CSCL 20D ANNULAR FLOW, CASCADE FLOW, FABRY-PEROT INTERFEROMETERS, FLOW MEASUREMENT, LASER ANEMOMETERS, STATOR BLADES, VELOCITY MEASUREMENT

**N89-10849\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

THE 1987 GROUND VORTEX WORKSHOP

RICHARD J. MARGASON, ed. Feb. 1988 216 p Workshop held at Moffett Field, Calif., 22-23 Apr. 1987 (NASA-CP-10008; A-88008; NAS 1.55:10008) Avail: NTIS HC

A10/MF A02 CSCL 01A

CONFERENCES, EXHAUST GASES, GROUND EFFECT (AERODYNAMICS), SHORT TAKEOFF AIRCRAFT, VATOL AIRCRAFT, VERTICAL TAKEOFF AIRCRAFT, VORTICES

N89-12543\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. A SPECTRAL COLLOCATION SOLUTION TO THE

COMPRESSIBLE STABILITY EIGENVALUE PROBLEM

MICHELE G. MACARAEG, CRAIG L. STREETT, and M. YOUSUFF HUSSAINI Washington, D.C. Dec. 1988 42 p (NASA-TP-2858; L-16470; NAS 1.60:2858) Avail: NTIS HC

A03/MF A01 CSCL 01A

BOUNDARY LAYER FLOW, COMPRESSIBLE FLOW, COMPUTATIONAL GRIDS, FLOW DISTRIBUTION, FLOW STABILITY, SHEAR FLOW

N89-14213\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. THRUST-REVERSER FLOW INVESTIGATION ON A

TWIN-ENGINE TRANSPORT

GREGORY M. GATLIN and P. FRANK QUINTO Washington, DC Dec. 1988 156 p

(NASA-TP-2856; L-16426; NAS 1.60:2856) Avail: NTIS HC A08/MF A01 CSCL 01A

ENGINE TESTS, FREE FLOW, GROUND EFFECT (AERODYNAMICS), REVERSED FLOW, THRUST REVERSAL, TRANSPORT AIRCRAFT

**N89-15888\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INTEGRATION EFFECTS OF PYLON GEOMETRY ON A HIGH-WING TRANSPORT AIRPLANE

JOHN R. CARLSON and MILTON LAMB Washington, DC Feb. 1989 78 p

(NASA-TP-2877; L-16489; NAS 1.60:2877) Avail: NTIS HC A05/MF A01 CSCL 01A

INSTALLING, NACELLES, PYLONS, TRANSPORT AIRCRAFT, WINGS

**N89-17568\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

NASA SC(2)-0714 AIRFOIL DATA CORRECTED FOR SIDEWALL BOUNDARY-LAYER EFFECTS IN THE LANGLEY 0.3-METER TRANSONIC CRYOGENIC TUNNEL

RENALDO V. JENKINS Washington, DC Mar. 1989 58 p (NASA-TP-2890; L-16385; NAS 1.60:2890) Avail: NTIS HC A04/MF A01 CSCL 01A

BOUNDARY LAYERS, CRYOGENIC WIND TUNNELS, SUPERCRITICAL AIRFOILS, WIND TUNNEL WALLS

**N89-17579\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

TIP AERODYNAMICS AND ACOUSTICS TEST: A REPORT AND DATA SURVEY

JEFFREY L. CROSS and MICHAEL E. WATTS Dec. 1988 463 p

(NASA-RP-1179; A-87128; NAS 1.61:1179) Avail: NTIS HC A20/MF A03 CSCL 01A

In a continuing effort to understand helicopter rotor tip aerodynamics and acoustics, a flight test was conducted by NASA Ames Research Center. The test was performed using the NASA White Cobra and a set of highly instrumented blades. All aspects of the flight test instrumentation and test procedures are explained. Additionally, complete data sets for selected test points are presented and analyzed. Because of the high volume of data acquired, only selected data points are presented. However, access to the entire data set is available to the researcher on request. Author

**N89-19232\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DRAG MEASUREMENTS ON A LAMINAR-FLOW BODY OF REVOLUTION IN THE 13-INCH MAGNETIC SUSPENSION AND BALANCE SYSTEM

DAVID A. DRESS 1989 37 p

(NASA-TP-2895; L-16483; NAS 1.60:2895) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC BALANCE, BODIES OF REVOLUTION, DRAG MEASUREMENT, LAMINAR FLOW, MAGNETIC SUSPENSION

**N89-19234\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

TRANSONIC UNSTEADY AERODYNAMICS AND AEROELASTICITY 1987, PART 1

SAMUEL R. BLAND, comp. Washington, DC Feb. 1989 261 p Symposium held in Hampton, VA, 20-22 May 1987 (NASA-CP-3022-PT-1; L-16532-PT-1; NAS 1.55:3022-PT-1) Avail: NTIS HC A12/MF A02 CSCL 01A

AEROELASTICITY, AIRCRAFT CONFIGURATIONS, COMPUTATIONAL FLUID DYNAMICS, FLUTTER ANALYSIS, TRANSONIC FLOW, UNSTEADY AERODYNAMICS

**N89-19247\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

TRANSONIC UNSTEADY AERODYNAMICS AND AEROELASTICITY 1987, PART 2

SAMUEL R. BLAND, comp. Washington, DC Feb. 1989 379 p Symposium held in Hampton, VA, 20-22 May 1987 (NASA-CP-3022-PT-2; L-16532-PT-2; NAS 1.55:3022-PT-2) Avail: NTIS HC A17/MF A03 CSCL 01A AEROELASTICITY. AIRCRAFT STABILITY. FLOW

Avail: NTIS HU AT THIS FOR A CONTRICT OF A CONTRIBUTION, A CONTRIBUTION, TRANSONIC FLOW, UNSTEADY A CONTRIBUTION, VISCOUS FLOW

**N89-20925\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

TRANSONIC SYMPOSIUM: THEORY, APPLICATION, AND EXPERIMENT, VOLUME 1, PART 1

JEROME T. FOUGHNER, JR., comp. Mar. 1989 416 p Symposium held in Hampton, VA, 19-21 Apr. 1988; sponsored by NASA, Washington Original contains color illustrations (NASA-CP-3020-VOL-1-PT-1; L-16501-VOL-1-PT-1; NAS 1.55:3020-VOL-1-PT-1) Avail: NTIS HC A18/MF A03 CSCL 01A

AIRCRAFT DESIGN, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, FLIGHT TESTS, GRID GENERATION (MATHEMATICS), WIND TUNNEL TESTS

**N89-20942\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

TRANSONIC SYMPOSIUM: THEORY, APPLICATION, AND EXPERIMENT, VOLUME 1, PART 2

JEROME T. FOUGHNER, JR., comp. Mar. 1989 511 p Symposium held in Hampton, VA, 19-21 Apr.1988; sponsored by NASA, Washington Original contains color illustrations (NASA-CP-3020-VOL-1-PT-2; L-16501-VOL-1-PT-2; NAS

1.55:3020-VOL-1-PT-2) Avail: NTIS HC A22/MF A03 CSCL 01A

COMPUTATIONAL FLUID DYNAMICS, COMPUTERIZED SIMULATION, GRID GENERATION (MATHEMATICS), INTERACTIONAL AERODYNAMICS, TRANSONIC FLOW, WIND TUNNEL TESTS

N89-23415\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. STATUS OF SONIC BOOM METHODOLOGY AND UNDERSTANDING

# 02 AERODYNAMICS

CHRISTINE M. DARDEN, CLEMANS A. POWELL, WALLACE D. HAYES, ALBERT R. GEORGE, and ALLAN D. PIERCE (Pennsylvania State Univ., University Park.) Washington Jun. 1989 32 p Presented at the Sonic Boom Workshop, Hampton, VA, Jan. 1988

(NASA-CP-3027; L-16567; NAS 1.55:3027) Avail: NTIS HC A03/MF A01 CSCL 01A

NOISE PREDICTION (AIRCRAFT), SONIC BOOMS, SUPERSONIC FLIGHT

**N89-24264\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF ADVANCED ROTORCRAFT AIRFOIL SECTIONS ON THE HOVER PERFORMANCE OF A SMALL-SCALE ROTOR MODEL

SUSAN L. ALTHOFF (Army Aviation Systems Command, Hampton, VA.) Sep. 1988 35 p

(DA PROJ. 1L1-61102-AH-45-A)

(NASA-TP-2832; L-16407; NAS 1.60:2832;

AVSCOM-TP-88-B-001) Avail: NTIS HC A03/MF A01 CSCL 01A

AIRFOIL PROFILES, FLIGHT TESTS, HOVERING, ROTARY WINGS, ROTORCRAFT AIRCRAFT

N89-25117\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### EFFECT OF MILLING MACHINE ROUGHNESS AND WING DIHEDRAL ON THE SUPERSONIC AERODYNAMIC CHARACTERISTICS OF A HIGHLY SWEPT WING

CHRISTINE M. DARDEN Washington Aug. 1989 88 p (NASA-TP-2918; L-16546; NAS 1.60:2918) Avail: NTIS HC A05/MF A01 CSCL 01A

DIHEDRAL ANGLE, LIFT DRAG RATIO, MILLING (MACHINING), SUPERSONIC SPEED, SURFACE ROUGHNESS EFFECTS, SWEPT WINGS

N89-25118\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### INTERACTIONS OF TOLLMIEN-SCHLICHTING WAVES AND DEAN VORTICES. COMPARISON OF DIRECT NUMERICAL SIMULATION AND A WEAKLY NONLINEAR THEORY

BART A. SINGER (High Technology Corp., Hampton, VA.) and THOMAS A. ZANG Washington Aug. 1989 21 p (NASA-TP-2919; L-16559; NAS 1.60:2919) Avail: NTIS HC A03/MF A01 CSCL 01A

CHANNEL FLOW, COMPUTERIZED SIMULATION, NONLINEAR SYSTEMS, TOLLMIEN-SCHLICHTING WAVES, VORTICES, WAVE INTERACTION

**N89-25951\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### STEADY-STATE AND TRANSITIONAL AERODYNAMIC CHARACTERISTICS OF A WING IN SIMULATED HEAVY RAIN

BRYAN A. CAMPBELL and GAUDY M. BEZOS Washington Aug. 1989 95 p

(NASA-TP-2932; L-16576; NAS 1.60:2932) Avail: NTIS HC A05/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC STALLING, AIRFOILS, RAIN, STEADY STATE, TRANSIENT RESPONSE, WINGS

**N89-26811\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A PROCEDURE FOR COMPUTING SURFACE WAVE TRAJECTORIES ON AN INHOMOGENEOUS SURFACE RAYMOND L. BARGER Washington Aug. 1989 14 p (NASA-TP-2929; L-16558; NAS 1.60:2929) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, COMPUTATIONAL FLUID DYNAMICS, HYDRODYNAMICS, INHOMOGENEITY, MATHEMATICAL MODELS, SURFACE WAVES **N89-27634\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

STATIC INTERNAL PERFORMANCE OF A NONAXISYMMETRIC VANED THRUST REVERSER WITH FLOW SPLAY CAPABILITY

LINDA S. BANGERT and LAURENCE D. LEAVITT Washington Sep. 1989 89 p

(NASA-TP-2933; L-16552; NAS 1.60:2933) Avail: NTIS HC A05/MF A01 CSCL 01A

DEFLECTORS, FLOW DEFLECTION, STATIC TESTS, THRUST REVERSAL, THRUST VECTOR CONTROL, WIND TUNNEL TESTS

**N90-10829\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MEASUREMENTS OF PRESSURES ON THE TAIL AND AFT FUSELAGE OF AN AIRPLANE MODEL DURING ROTARY MOTIONS AT SPIN ATTITUDES

JAMES S. BOWMAN, JR., RANDY S. HULTBERG, and COLIN A. MARTIN (Aeronautical Research Labs., Melbourne, Australia) Washington Nov. 1989 85 p

(NASA-TP-2939; L-16570; NAS 1.60:2939) Avail: NTIS HC A05/MF A01 CSCL 01A

AIRCRAFT MODELS, FUSELAGES, PRESSURE MEASUREMENT, SPIN TESTS, TAIL ASSEMBLIES

**N90-10830\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### LOW-SPEED, HIGH-LIFT AERÓDYNAMIC CHARACTERISTICS OF SLENDER, HYPERSONIC ACCELERATOR-TYPE CONFIGURATIONS

GREGORY M. GATLIN Washington Nov. 1989 46 p (NASA-TP-2945; L-16537; NAS 1.60:2945) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AEROSPACE PLANES, AIRCRAFT DESIGN, BODY-WING CONFIGURATIONS, HYPERSONIC FLOW, LIFT

**N90-12503\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# RESEARCH IN NATURAL LAMINAR FLOW AND

LAMINAR-FLOW CONTROL, PART 1

JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 322 p Symposium held in Hampton, VA, 16-19 Mar. 1987

(NASA-CP-2487-PT-1; L-16350-PT-1; NAS 1.55:2487-PT-1)

Avail: NTIS HC A14/MF A02 CSCL 01A

BOUNDARY LAYER CONTROL, BOUNDARY LAYER TRANSITION, CONFERENCES, FLOW STABILITY, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

**N90-12519\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# RESEARCH IN NATURAL LAMINAR FLOW AND

# LAMINAR-FLOW CONTROL, PART 2

JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 328 p Symposium held in Hampton, VA, 16-19 Mar. 1987

(NASA-CP-2487-PT-2; L-16350-PT-2; NAS 1.55:2487-PT-2) Avail: NTIS HC A15/MF A02 CSCL 01A

AIRCRAFT DESIGN, BOUNDARY LAYER CONTROL, BOUNDARY LAYER TRANSITION, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, LAMINAR FLOW AIRFOILS, WIND TUNNEL TESTS

**N90-12539\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### RESEARCH IN NATURAL LAMINAR FLOW AND LAMINAR-FLOW CONTROL, PART 3

JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 399 p Symposium held in Hampton, VA, 16-19 Mar. 1987

(NASA-CP-2487-PT-3; L-16350-PT-3; NAS 1.55:2487-PT-3) Avail: NTIS HC A17/MF A03 CSCL 01A

AIRCRAFT DESIGN, BOUNDARY LAYER CONTROL BOUNDARY LAYER STABILITY, BOUNDARY LAYER TRANSITION, CONFERENCES, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

N90-14185\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MEASURED AND PREDICTED AERODYNAMIC COEFFICIENTS AND SHOCK SHAPES FOR AEROASSIST FLIGHT **EXPERIMENT (AFE) CONFIGURATION** 

WILLIAM L. WELLS 1989 52 p (NASA-TP-2956; L-16644; NAS 1.60:2956) Avail: NTIS HC A04/MF A01 CSCL 01A

AEROASSIST, AERODYNAMIC CHARACTERISTICS, AERO-DYNAMIC COEFFICIENTS, AERODYNAMIC CONFIGURA-TIONS, BLUNT BODIES, HYPERSONIC FLOW, HYPERSONIC VEHICLES, NORMAL SHOCK WAVES, WIND TUNNEL TESTS

N90-14187\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

VALIDATION OF A COMPUTER CODE FOR ANALYSIS OF SUBSONIC AERODYNAMIC PERFORMANCE OF WINGS WITH FLAPS IN COMBINATION WITH A CANARD OR HORIZONTAL TAIL AND AN APPLICATION TO OPTIMIZATION

HARRY W. CARLSON (PRC Systems Services Co., Hampton, VA.), CHRISTINE M. DARDEN, and MICHAEL J. MANN Jan. 1990 125 p

(NASA-TP-2961; L-16611; NAS 1.60:2961) Avail: NTIS HC A06/MF A01 CSCL 01A

CANARD CONFIGURATIONS, COMPUTER PROGRAMS, FLAPS (CONTROL SURFACES), HORIZONTAL TAIL SURFACES, **PROGRAM VERIFICATION (COMPUTERS)** 

N90-15882\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ROTOR INDUCED-INFLOW-RATIO MEASUREMENTS AND **CAMRAD CALCULATIONS**

DANNY R. HOAD Washington Jan. 1990 28 p Original contains color illustrations

(DA PROJ. 1L1-62211-A-47-AA)

(NASA-TP-2946; L-16594; NAS 1.60:2946;

AVSCOM-TM-89-B-010: AD-A219296) Avail: NTIS HC A03/MF A01 CSCL 01/1

BLADE TIPS, BLADE-VORTEX INTERACTION, COMPUTER PROGRAMS, FLOW MEASUREMENT, HELICOPTER WAKES, INLET FLOW, MATHEMATICAL MODELS

National Aeronautics and Space Administration. N90-16710\*# Langley Research Center, Hampton, VA. NASA SUPERCRITICAL AIRFOILS: A MATRIX OF

FAMILY-RELATED AIRFOILS

CHARLES D. HARRIS Washington Mar. 1990 73 p (NASA-TP-2969; L-16625; NAS 1.60:2969) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT DESIGN, SUPERCRITICAL AIRFOILS

National Aeronautics and Space Administration. N90-19193\*# Langlev Research Center, Hampton, VA. STATIC INVESTIGATION OF A TWO-DIMENSIONAL CONVERGENT-DIVERGENT EXHAUST NOZZLE WITH MULTIAXIS THRUST-VECTORING CAPABILITY JOHN G. TAYLOR Washington Apr. 1990 104 p (NASA-TP-2973; L-16632; NAS 1.60:2973) Avail: NTIS HC A06/MF A01 CSCL 01A CONVERGENT-DIVERGENT NOZZLES, EXHAUST NOZZLES,

NOZZLE DESIGN, NOZZLE EFFICIENCY, STATIC TESTS, THRUST VECTOR CONTROL

N90-19200\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INTERNAL PERFORMANCE OF TWO NOZZLES UTILIZING **GIMBAL CONCEPTS FOR THRUST VECTORING** 

BOBBY L. BERRIER and JOHN G. TAYLOR Washington Apr. 1990 128 p

(NASA-TP-2991; L-16722; NAS 1.60:2991) Avail: NTIS HC A07/MF A01 CSCL 01A

CONVERGENT-DIVERGENT NOZZLES, GIMBALS, NOZZLE EFFICIENCY, NOZZLE GEOMETRY, THRUST VECTOR CONTROL

N90-20046\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EXPERIMENTAL AND THEORETICAL AERODYNAMIC CHARACTERISTICS OF A HIGH-LIFT SEMISPAN WING MODEL

ZACHARY T. APPLIN and GARL L. GENTRY, JR. Washington May 1990 111 p

(NASA-TP-2990; L-16441; NAS 1.60:2990) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, **AERODYNAMIC** CONFIGURATIONS, AIRFOIL PROFILES, BOUNDARY LAYER CONTROL, COMPUTER PROGRAMS, LAMINAR BOUNDARY LAYER, PANEL METHOD (FLUID DYNAMICS), SEMISPAN MODELS

N90-20946\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. DISCRETE-VORTEX MODEL FOR THE SYMMETRIC-VORTEX

FLOW ON CONES

THOMAS G. GAINER Washington May 1990 29 p (NASA-TP-2989; L-16586; NAS 1.60:2989) Avail: NTIS HC A03/MF A01 CSCL 01A

CONICAL BODIES, FLOW DISTRIBUTION, MATHEMATICAL MODELS, POTENTIAL FLOW, VORTICES

N90-22531\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

**DYNAMIC GROUND-EFFECT MEASUREMENTS ON THE F-15** STOL AND MANEUVER TECHNOLOGY DEMONSTRATOR (S/MTD) CONFIGURATION

GUY T. KEMMERLY Washington Jun. 1990 31 p (NASA-TP-3000; L-16555; NAS 1.60:3000) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT CON-FIGURATIONS, AIRCRAFT LANDING, F-15 AIRCRAFT, GROUND EFFECT (AERODYNAMICS), GROUND TESTS, SHORT TAKE-OFF AIRCRAFT

N90-24239\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

**AERODYNAMIC CHARACTERISTICS OF TWO ROTORCRAFT** AIRFOILS DESIGNED FOR APPLICATION TO THE INBOARD **REGION OF A MAIN ROTOR BLADE** 

KEVIN W. NOONAN (Army Aerostructures Directorate, Hampton, VA.) Washington Jul. 1990 89 p

(DA PROJ. 1L1-62211-A-47-AA)

(NASA-TP-3009; L-16737; NAS 1.60:3009;

AVSCOM-TR-90-B-005) Avail: NTIS HC A05/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC COEFFICIENTS, ROTARY WINGS, ROTORCRAFT AIRCRAFT

N90-25938\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF TAIL SIZE REDUCTIONS ON LONGITUDINAL **AERODYNAMIC CHARACTERISTICS OF A THREE SURFACE** F-15 MODEL WITH NONAXISYMMETRIC NOZZLES

MARK C. FRASSINELLI (Air Force Wright Aeronautical Labs., Wright-Patterson AFB, OH.) and GEORGE T. CARSON, JR. Washington Aug. 1990 59 p

# 02 AERODYNAMICS

(NASA-TP-3036; L-16800; NAS 1.60:3036) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, CANARD CONFIGURATIONS, F-15 AIRCRAFT, NOZZLE FLOW, NOZZLE GEOMETRY, TAIL ASSEMBLIES, TRANSONIC WIND TUNNELS

**N90-27649\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE LANGLEY 14- BY 22-FOOT SUBSONIC TUNNEL:

DESCRIPTION, FLOW CHARACTERISTICS, AND GUIDE FOR USERS

GARL L. GENTRY, JR., P. FRANK QUINTO, GREGORY M. GATLIN, and ZACHARY T. APPLIN Washington Sep. 1990 73 p

(NASA-TP-3008; L-16731; NAS 1.60:3008) Avail: NTIS HC A04/MF A01 CSCL 01A

DATA ACQUISITION, FLOW CHARACTERISTICS, GROUND EFFECT (AERODYNAMICS), SUBSONIC WIND TUNNELS, USER REQUIREMENTS, WIND TUNNEL APPARATUS

**N90-28503\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### THE EFFECTS OF STRUCTURAL FLAP-LAG AND PITCH-LAG COUPLING ON SOFT INPLANE HINGELESS ROTOR STABILITY IN HOVER

WILLIAM G. BOUSMAN Washington May 1990 65 p Sponsored by Army Aviation Systems Command, Saint Louis, MO Prepared in cooperation with Army Aviation Systems Command, Moffett Field, CA

(NASA-TP-3002; A-89093; NAS 1.60:3002;

AVSCOM-TR-89-A-002; AD-A226087) Avail: NTIS HC A04/MF A01 CSCL 01/1

COUPLING, HOVERING, HOVERING STABILITY, MATHEMATICAL MODELS, RIGID ROTORS, ROTARY WINGS

# 03

### AIR TRANSPORTATION AND SAFETY

Includes passenger and cargo air transport operations; and aircraft accidents.

**N87-10054\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# DOPPLER RADAR DETECTION OF WIND SHEAR

V. E. DELNORE, Comp. (PRC Kentron, Inc., Hampton, Va.) and V. A. MCCLELLAN (Research Triangle Inst., Research Triangle Park, N.C.) Sep. 1985 118 p Presented at a Meeting, Hampton, Va., 24-25 Sep., 1985; sponsored in part by FAA

(NASA-CP-2435; NAS 1.55:2435; FAA/PM-86/31) Avail: NTIS HC A06/MF A01 CSCL 01C

AIRCRAFT HAZARDS, AVIATION METEOROLOGY, CONFERENCES, DOPPLER RADAR, MICROBURSTS (METEOROLOGY), RADAR MEASUREMENT, WIND SHEAR

**N87-22634\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

COCKPIT RESOURCE MANAGEMENT TRAINING

HARRY W. ORLADY, ed. (Orlady Associates, Inc., Los Gatos, Calif.) and H. CLAYTON FOUSHEE, ed. May 1987 308 p Workshop held in San Francisco, Calif., 6-8 May 1986; sponsored by NASA. Ames Research Center and Air Force Military Airlift (NASA-CP-2455; A-87038; NAS 1.55:2455) Avail: NTIS HC A14/MF A02 CSCL 01C

FLIGHT CREWS, FLIGHT SIMULATION, FLIGHT TRAINING, GROUP DYNAMICS, PERSONNEL MANAGEMENT

**N87-29469\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

JET TRANSPORT FLIGHT OPERATIONS USING COCKPIT DISPLAY OF TRAFFIC INFORMATION DURING INSTRUMENT METEOROLOGICAL CONDITIONS: SIMULATION EVALUATION DAVID H. WILLIAMS and DOUGLAS C. WELLS May 1986 50 p

(NASA-TP-2567; L-16091; NAS 1.60:2567) Avail: NTIS HC A03/MF A01 CSCL 01C

AIR TRAFFIC CONTROL, COCKPIT SIMULATORS, DISPLAY DEVICES, INSTRUMENT APPROACH, JET AIRCRAFT, TRANSPORT AIRCRAFT, VIDEO COMMUNICATION, WORKLOADS (PSYCHOPHYSIOLOGY)

N88-14970\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. WIND SHEAR DETECTION. FORWARD-LOOKING SENSOR TECHNOLOGY

E. M. BRACALENTE, comp. and V. E. DELNORE, comp. (PRC Kentron, Inc., Hampton, Va.) Oct. 1987 282 p Presented at the 1st Industry Review, Hampton, Va., 24-25 Feb. 1987 (NASA-CP-10004; NAS 1.55:10004; DOT/FAA/PS-87/2) Avail: NTIS HC A13/MF A02 CSCL 01C

AEROSPACE INDUSTRY, CONFERENCES, DOPPLER RADAR, FLIR DETECTORS, REMOTE SENSING, WIND SHEAR

N88-17616\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. AIRBORNE WIND SHEAR DETECTION AND WARNING

SYSTEMS: FIRST COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE

AMOS A. SPADY, JR., comp., ROLAND L. BOWLES, comp., and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, D.C.) Jan. 1988 558 p Conference held in Hampton, Va., 22-23 Oct. 1987

(NASA-CP-10006; NAS 1.55:10006; DOT/FAA/PS-88/7) Avail: NTIS HC A24/MF A03 CSCL 01C

AIRBORNE EQUIPMENT, AIRCRAFT CONTROL, CONFERENCES, DETECTION, DOPPLER RADAR, INFORMATION TRANSFER, OPTICAL RADAR, WARNING SYSTEMS, WIND SHEAR

N88-21144\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

INVESTIGATION OF THE MISFUELING OF RECIPROCATING PISTON AIRCRAFT ENGINES

J. HOLLAND SCOTT, JR. Mar. 1988 82 p

(NASA-TP-2803; NAS 1.60:2803) Avail: NTIS HC A05/MF A01 CSCL 01C

AIRCRAFT ENGINES, ERRORS, GENERAL AVIATION AIRCRAFT, PISTON ENGINES, REFUELING

N88-26344\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. INFLUENCE OF WIND SHEAR ON THE AERODYNAMIC

CHARACTERISTICS OF AIRPLANES

DAN D. VICROY Aug. 1988 62 p Sponsored by NASA, Washington, D.C. and DOT, Washington, D.C.

(NASA-TP-2827; L-16439; NAS 1.60:2827; DOT/FAA/PS-88/15) Avail: NTIS HC A04/MF A01 CSCL 01C

AERODYNAMIC CHARACTERISTICS, AIRCRAFT CONTROL, MICROBURSTS (METEOROLOGY), SHEAR FLOW, WIND SHEAR

### AIRCRAFT COMMUNICATIONS AND NAVIGATION

Includes digital and voice communication with aircraft; air navigation systems (satellite and ground based); and air traffic control.

N89-11726\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. A SIMULATOR INVESTIGATION OF THE USE OF DIGITAL

# DATA LINK FOR PILOT/ATC COMMUNICATIONS IN A SINGLE PILOT OPERATION

DAVID A. HINTON and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, Fla.) Jun. 1988 41 p (NASA-TP-2837; L-16457; NAS 1.60:2837) Avail: NTIS HC A03/MF A01 CSCL 17B

TRANSMISSION, DATA DIGITAL DATA. PILOT PERFORMANCE, RADIO COMMUNICATION. SIMULATION. VOICE COMMUNICATION

N89-15900\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### A PILOTED SIMULATION STUDY OF DATA LINK ATC MESSAGE EXCHANGE

MARVIN C. WALLER and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, FL.) Washington, DC Feb. 1989 38 p

(NASA-TP-2859; L-16450; NAS 1.60:2859) Avail: NTIS HC A03/MF A01 CSCL 17B

AIR TRAFFIC CONTROL, DATA LINKS, FLIGHT SIMULATION, MESSAGE PROCESSING

N89-15901\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SIMULATION EVALUATION OF TIMER. A TIME-BASED. TERMINAL AIR TRAFFIC, FLOW-MANAGEMENT CONCEPT LEONARD CREDEUR and WILLIAM R. CAPRON (PRC Kentron, Inc., Hampton, VA.) Washington, DC Feb. 1989 69 p (NASA-TP-2870; L-16386; NAS 1.60:2870) Avail: NTIS HC A04/MF A01 CSCL 17G

AIR TRAFFIC CONTROL, AUTOMATIC CONTROL. EVALUATION, MANAGEMENT PLANNING, SCHEDULING, SIMULATION, TERMINAL FACILITIES

N90-18378\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DELIVERY PERFORMANCE OF CONVENTIONAL AIRCRAFT BY TERMINAL-AREA, TIME-BASED AIR TRAFFIC CONTROL: A REAL-TIME SIMULATION EVALUATION

LEONARD CREDEUR, JACOB A. HOUCK, WILLIAM R. CAPRON, and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, FL.) Washington Apr. 1990 66 p (NASA-TP-2978; L-16615; NAS 1.60:2978) Avail: NTIS HC

A04/MF A01 CSCL 17G

AIR TRAFFIC CONTROL, AIR TRAFFIC CONTROLLERS (PERSONNEL), COMPUTERIZED SIMULATION, FLIGHT CREWS, PILOT PERFORMANCE, REAL TIME OPERATION

05

### AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes aircraft simulation technology.

N87-11717\*# National Aeronautics and Space Administration. Landlev Research Center, Hampton, VA RECENT EXPERIENCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 1 J. SOBIESKI, comp. 1984 517 p Symposium held in Hampton, Va., 24-26 Apr. 1984 (NASA-CP-2327-PT-1; NAS 1.55:2327-PT-1) Avail: NTIS HC A22/MF A03 CSCL 01C AIRCRAFT COMPUTER DESIGN, AIDED DESIGN CONFERENCES, DESIGN ANALYSIS, OPTIMIZATION. STRUCTURAL DESIGN

N87-11750\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. RECENT EXPERIENCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 2

J. SOBIESKI, comp. 1984 509 p Symposium held in Hampton, Va., 24-26 Apr. 1984

(NASA-CP-2327-PT-2; L-15830; NAS 1.55:2327-PT-2) Avail: NTIS HC A22/MF A03 CSCL 01C

DESIGN, AIRCRAFT COMPUTER AIDED DESIGN. HELICOPTERS, OPTIMIZATION

N87-15959\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

LARGE-SCALE STATIC INVESTIGATION OF CIRCULATION-CONTROL-WING CONCEPTS APPLIED TO UPPER SURFACE-BLOWING AIRCRAFT

M. D. SHOVLIN, R. J. ENGLAR (Naval Ship Research and Development Center, Bethesda, Md.), J. C. EPPEL, and J. H. NICHOLS, JR. Jan. 1987 65 p

(NASA-TP-2684; NAS 1.60:2684) Avail: NTIS HC A04/MF A01 CSCL 01C

CIRCULATION CONTROL AIRFOILS, GROUND TESTS, LIFT AUGMENTATION, SHORT TAKEOFF AIRCRAFT, STATIC TESTS, THRUST CONTROL, TURBOFAN ENGINES, UPPER SURFACE BLOWING

N87-16815\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

FLIGHT INVESTIGATION OF THE EFFECT OF TAIL CONFIGURATION ON STALL, SPIN, AND RECOVERY CHARACTERISTICS OF A LOW-WING GENERAL AVIATION **RESEARCH AIRPLANE** 

H. PAUL STOUGH, III, JAMES M. PATTON, JR., and STEVEN M. SLIWA Feb. 1987 125 p

(NASA-TP-2644; L-16194; NAS 1.60:2644) Avail: NTIS HC A06/MF A01 CSCL 01C

AERODYNAMIC CONFIGURATIONS, AERODYNAMIC STALLING, AIRCRAFT SPIN, GENERAL AVIATION AIRCRAFT, RESEARCH AIRCRAFT, TAIL ASSEMBLIES

N87-17690\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EXPLOITING SYMMETRIES IN THE MODELING AND **ANALYSIS OF TIRES** 

AHMED K. NOOR (Joint Inst. for Advancement of Flight Sciences, Hampton, Va.), CARL M. ANDERSEN (College of William and Mary, Hampton, Va.), and JOHN A. TANNER Mar. 1987 63 p (NCC1-40)

(NASA-TP-2649; L-16185; NAS 1.60:2649) Avail: NTIS HC A04/MF A01 CSCL 01C

FINITE ELEMENT METHOD, MATHEMATICAL MODELS. SYMMETRY, TIRES

# 05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE

N87-17693\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECTS OF EMPENNAGE SURFACE LOCATION ON **AERODYNAMIC CHARACTERISTICS OF A TWIN-ENGINE** AFTERBODY MODEL WITH NONAXISYMMETRIC NOZZLES FRANCIS J. CAPONE and GEORGE T. CARSON, JR. Feb. 1985 79 p

(NASA-TP-2392; L-15825; NAS 1.60:2392) Avail: NTIS HC A05/MF A01 CSCL 01C

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC DRAG, AFTERBODIES, AXISYMMETRIC BODIES, FIGHTER AIRCRAFT, NOZZLE GEOMETRY, TAIL ASSEMBLIES, TAIL SURFACES

N87-20990\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

SUMMARY OF STUDIES TO REDUCE WING-MOUNTED PROPFAN INSTALLATION DRAG ON AN M = 0.8 TRANSPORT

RONALD C. SMITH, ALAN D. LEVIN, and RICHARD D. WOOD May 1987 29 p

(NASA-TP-2678; A-86242; NAS 1.60:2678) Avail: NTIS HC A03/MF A01 CSCL 01C

DRAG REDUCTION, HIGH SPEED, PROP-FAN TECHNOLOGY, TRANSPORT AIRCRAFT, WIND TUNNEL TESTS

N87-23614\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. FLIGHT INVESTIGATION OF THE EFFECTS OF AN OUTBOARD WING-LEADING-EDGE MODIFICATION ON

STALL/SPIN CHARACTERISTICS OF A LOW-WING, SINGLE-ENGINE, T-TAIL LIGHT AIRPLANE

H. PAUL STOUGH, III, DANIEL J. DICARLO, and JAMES M. PATTON, JR. Jul. 1987 117 p

(NASA-TP-2691; L-16243; NAS 1.60:2691) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC STALLING, FLIGHT TESTS, INVESTIGATION, LEADING EDGES, REVISIONS, SPIN, WINGS

N87-24458\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MEASUREMENTS OF FLOW RATE AND TRAJECTORY OF AIRCRAFT TIRE-GENERATED WATER SPRAY

ROBERT H. DAUGHERTY and SANDY M. STUBBS Jul. 1987 118 p

(NASA-TP-2718; L-16195; NAS 1.60:2718) Avail: NTIS HC A06/MF A01 CSCL 01C AIRCRAFT TIRES, ENGINE INLETS, FLOW VELOCITY,

INGESTION (ENGINES), SPLASHING, SPRAYING

N87-26041\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EVALUATION OF INSTALLED PERFORMANCE OF A WING-TIP-MOUNTED PUSHER TURBOPROP ON A SEMISPAN WING

JAMES C. PATTERSON, JR. and GLYNN R. BARTLETT Aug. 1987 30 p

(NASA-TP-2739; L-16252; NAS 1.60:2739) Avail: NTIS HC A03/MF A01 CSCL 01C

INSTALLING, PROPELLERS, SEMISPAN MODELS. TURBOFAN ENGINES, TURBOPROP ENGINES, WING TIP VORTICES

N87-29497\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

QUALITATIVE EVALUATION OF A FLUSH AIR DATA SYSTEM AT TRANSONIC SPEEDS AND HIGH ANGLES OF ATTACK TERRY J. LARSON, STEPHEN A. WHITMORE, EHERNBERGER, J. BLAIR JOHNSON, and PAUL M. SIEMERS, III Washington NASA Apr. 1987 64 p (NASA-TP-2716; H-1277; NAS 1.60:2716) Avail: NTIS HC A04/MF A01 CSCL 01C

AIR DATA SYSTEMS, ANGLE OF ATTACK, FLOW

DISTRIBUTION, ORIFICE FLOW, PITOT TUBES, STAGNATION PRESSURE, TRANSONIC SPEED

N87-29499\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.

APPLICATION OF PARAMETER ESTIMATION TO AIRCRAFT STABILITY AND CONTROL: THE OUTPUT-ERROR APPROACH RICHARD E. MAINE and KENNETH W. ILIFF Jun. 1986 175 p Submitted for publication

(NASA-RP-1168; H-1299; NAS 1.61:1168) Avail: NTIS HC A08/MF A01 CSCL 01C

The practical application of parameter estimation methodology to the problem of estimating aircraft stability and control derivatives from flight test data is examined. The primary purpose of the document is to present a comprehensive and unified picture of the entire parameter estimation process and its integration into a flight test program. The document concentrates on the output-error method to provide a focus for detailed examination and to allow us to give specific examples of situations that have arisen. The document first derives the aircraft equations of motion in a form suitable for application to estimation of stability and control derivatives. It then discusses the issues that arise in adapting the equations to the limitations of analysis programs, using a specific program for an example. The roles and issues relating to mass distribution data, preflight predictions, maneuver design, flight scheduling, instrumentation sensors, data acquisition systems, and data processing are then addressed. Finally, the document discusses evaluation and the use of the analysis results. Author

N88-12480\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF MOTION CUES DURING COMPLEX CURVED APPROACH AND LANDING TASKS: A PILOTED SIMULATION STUDY

CHARLES H. SCANLON (Arkansas State Univ., State University.) Dec. 1987 28 p

(NCC1-107) (NASA-TP-2773; L-16351; NAS 1.60:2773) Avail: NTIS HC A03/MF A01 CSCL 01C

APPROACH, CUES, LANDING, MICROWAVE LANDING SYSTEMS, MOTION, PILOT PERFORMANCE, TRACKING (POSITION), WORKLOADS (PSYCHOPHYSIOLOGY)

N88-18583\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CORNERING CHARACTERISTICS OF THE MAIN-GEAR TIRE OF THE SPACE SHUTTLE ORBITER

ROBERT H. DAUGHERTY, SANDY M. STUBBS, and MARTHA P. ROBINSON Mar. 1988 29 p

(NASA-TP-2790; L-16370; NAS 1.60:2790) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC LOADS, COEFFICIENTS, LANDING GEAR, SPACE SHUTTLES, TIRES, YAWING MOMENTS

National Aeronautics and Space Administration. N88-19467\*# Ames Research Center, Moffett Field, CA.

A PERSPECTIVE ON 15 YEARS OF PROOF-OF-CONCEPT AIRCRAFT DEVELOPMENT AND FLIGHT RESEARCH AT AMES-MOFFETT BY THE ROTORCRAFT AND POWERED-LIFT FLIGHT PROJECTS DIVISION, 1970-1985 DAVID D. FEW Aug. 1987 55 p

(NASA-RP-1187; A-86404; NAS 1.61:1187) Avail: NTIS HC A04/MF A01 CSCL 01C

A proof-of-concept (POC) aircraft is defined and the concept of interest described for each of the six aircraft developed by the Ames-Moffet Rotorcraft and Powered-Lift Flight Projects Division from 1970 through 1985; namely, the OV-10, the C-8A Augmentor Wing, the Quiet Short-Haul Research Aircraft (QSRA), the XV-15 Tilt Rotor Research Aircraft (TRRA), the Rotor Systems Research Aircraft (RSRA)-compound, and the yet-to-fly RSRA/X-Wing Aircraft. The program/project chronology and most noteworthy features of the concepts are reviewed. The paper discusses the significance of each concept and the project demonstrating it; it

briefly looks at what concepts are on the horizon as potential POC research aircraft and emphasizes that no significant advanced concept in aviation technology has ever been accepted by civilian or military users without first completing a demonstration through flight testing. Author

N88-21153\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.

DEVELOPMENT AND FLIGHT TEST OF AN EXPERIMENTAL MANEUVER AUTOPILOT FOR A HIGHLY MANEUVERABLE AIRCRAFT

EUGENE L. DUKE, FRANK P. JONES, and RALPH B. RONCOLI Sep. 1986 61 p

(NASA-TP-2618; H-1258; NAS 1.60:2618) Avail: NTIS HC A04/MF A01 CSCL 01C

AUTOMATIC CONTROL, AUTOMATIC PILOTS, FLIGHT TESTS, HIGHLY MANEUVERABLE AIRCRAFT

National Aeronautics and Space Administration. N88-21157\*# Langley Research Center, Hampton, VA.

STATIC MECHANICAL PROPERTIES OF 30 X 11.5 - 14.5.

TYPE 8 AIRCRAFT TIRES OF BIAS-PLY AND RADIAL-BELTED DESIGN

PAMELA A. DAVIS and MERCEDES C. LOPEZ May 1988 24 p

(NASA-TP-2810; L-16374; NAS 1.60:2810) Avail: NTIS HC

A03/MF A01 CSCL 01C AIRCRAFT TIRES, MECHANICAL PROPERTIES, STATIC TESTS

N88-22031\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SHAPE SENSITIVITY ANALYSIS OF WING STATIC **AEROELASTIC CHARACTERISTICS** 

JEAN-FRANCOIS M. BARTHELEMY and FRED D. BERGEN (Virginia Polytechnic Inst. and State Univ., Blacksburg.) Mav 1988 30 p

(NASA-TP-2808; L-16418; NAS 1.60:2808) Avail: NTIS HC A03/MF A01 CSCL 01C

AEROELASTICITY, DYNAMIC RESPONSE, SENSITIVITY, WING LOADING, WING PROFILES

N88-24623\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### NONLINEAR PROGRAMMING EXTENSIONS TO RATIONAL FUNCTION APPROXIMATION METHODS FOR UNSTEADY **AERODYNAMIC FORCES**

SHERWOOD H. TIFFANY and WILLIAM M. ADAMS, JR. .hut 1988 55 p Previously announced in IAA as A87-33694 Sponsored by NASA, Washington

(NASA-TP-2776; L-16205; NAS 1.60:2776) Avail: NTIS HC A04/MF A01 CSCL 01C

AERODYNAMIC FORCES, AERODYNAMICS, APPROXI-MATION, EQUATIONS OF MOTION, FLEXIBLE BODIES, NON-LINEAR PROGRAMMING, OPTIMIZATION

N89-23448\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

HOT-JET SIMULATION IN CRYOGENIC WIND TUNNELS

KEISUKE ASAI (National Aerospace Lab., Tokyo, Japan ) Washington Jul. 1989 49 p

(NASA-RP-1220; L-16564; NAS 1.61:1220) Avail: NTIS HC A03/MF A01 CSCL 01C

In order to evaluate hot jet simulation capability in cryogenic wind tunnel testing, simple theoretical calculations were performed. The similarity parameters, isentropic flow properties, and normal shock relations were calculated for a variety of jet simulation techniques. The results were compared with those estimated for a full scale flight condition. It was shown that the cryogenic wind tunnel testing provides an opportunity for the most accurate hot iet simulation technique. By using a compressed nitrogen gas at ambient or moderately elevated temperatures as a jet gas, most all of the relevant similarity parameters including the jet temperature

## 05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE

and velocity ratios and the Reynolds numbers, can be set to the full scale flight values. The only exception is the ratio of specific heats for jet flow. In an attempt to match the ratio of specific heats for the turbojet flow, gases other than pure nitrogen were considered. It was found that a nitrogen/methane mixture at moderately elevated temperature behaves like the real combustion gas. Using this mixture as a jet gas, complete simulation of the full scale turbojet exhaust becomes possible in cryogenic wind tunnels. Author

N89-25146\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND **OPTIMIZATION, PART 1**

JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. 1989 527 p Symposium held in Hampton, VA, 28-30 Sep. 1988; sponsored by NASA, Langley Research Center, NASA, LeResear Center, and Wright Research Development Center (NASA-CP-3031-PT-1; L-16568-PT-1; NAS 1.55:3031-PT-1)

Avail: NTIS HC A23/MF A03 CSCL 01C

AIRCRAFT DESIGN, COMPUTATIONAL FLUID DYNAMICS, COMPUTER AIDED DESIGN, CONFERENCES, EXPERT SYSTEMS, OPTIMIZATION, STRUCTURAL ENGINEERING

N89-25173\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND **OPTIMIZATION, PART 2**

JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. 1989 501 p Symposium held in Hampton, VA, 28-30 Sep. 1988; sponsored by NASA, Langley Research Center, NASA, Lewis Research Center, and Wright Research Development Center (NASA-CP-3031-PT-2; L-16568-PT-2; NAS 1.55:3031-PT-2) Avail: NTIS HC A22/MF A03 CSCL 01C

AIRCRAFT DESIGN, ARTIFICIAL INTELLIGENCE, COMPUTER DESIGN AIDED DESIGN, CONFERENCES, ANALYSIS. OPTIMIZATION, STRUCTURAL ANALYSIS, STRUCTURAL DESIGN

N89-25201\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND

# **OPTIMIZATION, PART 3**

JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. Symposium held in Hampton, VA, 28-30 Sep. 1989 513 p 1988; sponsored by NASA, Langley Research Center, NASA, Lewis Research Center, and Wright Research Development Center (NASA-CP-3031-PT-3; L-16568-PT-3; NAS 1.55:3031-PT-3)

Avail: NTIS HC A22/MF A03 CSCL 01C

AIRCRAFT DESIGN, COMPUTER AIDED DESIGN. COMPUTERIZED SIMULATION, CONFERENCES, CONTROL THEORY, DESIGN ANALYSIS, FLEXIBLE SPACECRAFT, LARGE SPACE STRUCTURES, OPTIMIZATION, SPACECRAFT DESIGN, STRUCTURAL DESIGN, STRUCTURAL ENGINEERING, SYSTEMS ENGINEERING

National Aeronautics and Space Administration. N89-26844\*# Ames Research Center, Moffett Field, CA.

#### METHOD FOR EXPERIMENTAL DETERMINATION OF FLUTTER SPEED BY PARAMETER IDENTIFICATION

E. NISSIM (Technion - Israel Inst. of Tech., Haifa.) and GLENN Washington 44 p B. GILYARD Jun. 1989 Previously announced in IAA as A89-30801

(NASA-TP-2923; H-1510; NAS 1.60:2923) Avail: NTIS HC A03/MF A01 CSCL 01C

AEROELASTICITY, DYNAMIC PRESSURE, FLIGHT TESTS, FLUTTER, PARAMETER IDENTIFICATION

National Aeronautics and Space Administration. N90-12589\*# Ames Research Center, Moffett Field, CA. **POWERED-LIFT AIRCRAFT TECHNOLOGY** 

W. H. DECKERT and J. A. FRANKLIN 1989 36 p Original

# 05 AIRCRAFT DESIGN, TESTING AND PERFORMANCE

contains color illustrations

(NASA-SP-501; NAS 1.21:501; LC-89-39482) Avail: SOD HC \$4.25 as 033-000-01062-1; NTIS HC A03/MF A01 CSCL 01C

Powered lift aircraft have the ability to vary the magnitude and direction of the force produced by the propulsion system so as to control the overall lift and streamwise force components of the aircraft, with the objective of enabling the aircraft to operate from minimum sized terminal sites. Power lift technology has contributed to the development of the jet lift Harrier and to the forth coming operational V-22 Tilt Rotor and the C-17 military transport. This technology will soon be expanded to include supersonic fighters with short takeoff and vertical landing capability, and will continue to be used for the development of short- and vertical-takeoff and landing transport. An overview of this field of aeronautical technology is provided for several types of powered lift aircraft. It focuses on the description of various powered lift concepts and their operational capability. Aspects of aerodynamics and flight controls pertinent to powered lift are also discussed. Author

**N90-14220\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### GLOBAL STRATOSPHERIC CHANGE: REQUIREMENTS FOR A VERY-HIGH-ALTITUDE AIRCRAFT FOR ATMOSPHERIC RESEARCH

1989 41 p Workshop held in Truckee, CA, 15-16 Jul. 1989 (NASA-CP-10041; A-89243; NAS 1.55:10041) Avail: NTIS HC A03/MF A01 CSCL 01C

ATMOSPHERIC CHEMISTRY, FLIGHT CHARACTERISTICS, METEOROLOGICAL FLIGHT, REMOTE SENSING, STRATOSPHERE, U-2 AIRCRAFT

**N90-15100\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

THE EFFECTIVENESS OF VANE-AILERON EXCITATION IN THE EXPERIMENTAL DETERMINATION OF FLUTTER SPEED BY PARAMETER IDENTIFICATION

ELI NISSIM (Technion - Israel Inst. of Tech., Haifa.) Jan. 1990 23 p

(NASA-TP-2971; H-1516; NAS 1.60:2971) Avail: NTIS HC A03/MF A01 CSCL 01C

EXCITATION, FLUTTER, PARAMETER IDENTIFICATION, VANES

**N90-15902\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EVALUATION OF TWO TRANSPORT AIRCRAFT AND SEVERAL GROUND TEST VEHICLE FRICTION MEASUREMENTS OBTAINED FOR VARIOUS RUNWAY SURFACE TYPES AND CONDITIONS. A SUMMARY OF TEST RESULTS FROM JOINT FAA/NASA RUNWAY FRICTION PROGRAM

THOMAS J. YAGER, WILLIAM A. VOGLER (PRC Kentron, Inc., Hampton, VA.), and PAUL BALDASARE Washington Feb. 1990 301 p

(NASA-TP-2917; L-16536; NAS 1.60:2917) Avail: NTIS HC A14/MF A02 CSCL 01C

AIRCRAFT TIRES, ASPHALT, CONCRETES, FRICTION MEASUREMENT, GROUND TESTS, RUNWAY CONDITIONS, TRANSPORT AIRCRAFT

**N90-17627\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SIMULATED-AIRLINE-SERVICE FLIGHT TESTS OF LAMINAR-FLOW CONTROL WITH PERFORATED-SURFACE SUCTION SYSTEM

DAL V. MADDALON and ALBERT L. BRASLOW (Analytical Services and Materials, Inc., Hampton, VA.) Washington Mar. 1990 40 p

(NASA-TP-2966; L-16589; NAS 1.60:2966) Avail: NTIS HC A03/MF A01 CSCL 01C

BOUNDARY LAYER CONTROL, C-140 AIRCRAFT, LAMINAR FLOW, LEADING EDGES, PERFORATION, SUCTION **N90-18385\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

FUSELAGE DESIGN FOR A SPECIFIED MACH-SLICED AREA DISTRIBUTION

RAYMOND L. BARGER and MARY S. ADAMS Washington Feb. 1990 88 p

(NASA-TP-2975; L-16651; NAS 1.60:2975) Avail: NTIS HC A05/MF A01 CSCL 01C

AIRCRAFT CONFIGURATIONS, AIRCRAFT DESIGN, FUSELAGES, MACH NUMBER, NOISE REDUCTION

N90-25134\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA. EVALUATION OF VARIOUS THRUST CALCULATION TECHNIQUES ON AN F404 ENGINE RONALD J. RAY Apr. 1990 31 p (NASA-TP-3001; H-1505; NAS 1.60:3001) Avail: NTIS HC A03/MF A01 CSCL 21E CALIBRATING, ENGINE TESTS, FLIGHT TESTS, DEPENDENTION DEAL TIME OPERATION

PERFORMANCE PREDICTION, REAL TIME OPERATION, THRUST

N90-26823\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EVALUATION OF ENERGY ABSORPTION OF NEW CONCEPTS OF AIRCRAFT COMPOSITE SUBFLOOR INTERSECTIONS LISA E. JONES (PRC Kentron, Inc., Hampton, VA.) and HUEY D. CARDEN Washington Nov. 1989 33 p (NASA-TP-2951; L-16628; NAS 1.60:2951) Avail: NTIS HC A03/MF A01 CSCL 01C AIRCRAFT CONSTRUCTION MATERIALS, CRASHWORTH-INESS, FLOORS, LAMINATES, STRUCTURAL ANALYSIS, STRUCTURAL FAILURE, SUBSTRUCTURES

# 06

# AIRCRAFT INSTRUMENTATION

Includes cockpit and cabin display devices; and flight instruments.

**N87-10864\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

GROUND-BASED TIME-GUIDANCE ALGORITHM FOR CONTROL OF AIRPLANES IN A TIME-METERED AIR TRAFFIC CONTROL ENVIRONMENT: A PILOTED SIMULATION STUDY C. E. KNOX and N. IMBERT (Office National d'Etudes et de Recherches Aerospatiales, Toulouse, France) Nov. 1986 36 p (NASA-TP-2616; L-16116; NAS 1.60:2616) Avail: NTIS HC A03/MF A01 CSCL 01D

AIR TRAFFIC CONTROL, ENERGY CONSERVATION, FLIGHT MANAGEMENT SYSTEMS, FLIGHT SIMULATION, FUEL CONSUMPTION, PILOTS (PERSONNEL), TIMING DEVICES

N87-13438\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DEVELOPMENT AND EVALUATION OF AN AIRPLANE ELECTRONIC DISPLAY FORMAT ALIGNED WITH THE INERTIAL VELOCITY VECTOR

G. G. STEINMETZ Dec. 1986 23 p

(NASA-TP-2648; L-16168; NAS 1.60:2648) Avail: NTIS HC A03/MF A01 CSCL 01D

ALIGNMENT, DIRECTIONAL CONTROL, DISPLAY DEVICES, ELECTRONIC EQUIPMENT, FLIGHT TESTS, INERTIAL NAVIGATION, PERFORMANCE TESTS, VELOCITY

N87-19393\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. A SIMULATION EVALUATION OF A PILOT INTERFACE WITH AN AUTOMATIC TERMINAL APPROACH SYSTEM

# 07 AIRCRAFT PROPULSION AND POWER

DAVID A. HINTON Apr. 1987 21 p

(NASA-TP-2669; L-16222; NAS 1.60:2669) Avail: NTIS HC A03/MF A01 CSCL 17G

APPROACH CONTROL, AUTOMATIC CONTROL, AUTOMATIC PILOTS, GENERAL AVIATION AIRCRAFT, MAN MACHINE SYSTEMS

**N87-29533\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

# ANALOG SIGNAL CONDITIONING FOR FLIGHT-TEST INSTRUMENTATION

DONALD W. VEATCH and RODNEY K. BOGUE Washington NASA Jan. 1986 173 p Presented at the AGARD Flight Mechanics Panel, Flight-test Techniques Working Group, AGARDograph 160, Flight-Test Instrumentation Series Previously announced as N86-29816

(NASA-RP-1159; H-1191; NAS 1.61:1159) Avail: NTIS HC A08/MF A01 CSCL 01D

The application of analog signal conditioning to flight-tests data acquisition systems is discussed. Emphasis is placed on practical applications of signal conditioning for the most common flight-test data-acquisition systems. A limited amount of theoretical discussion is included to assist the reader in a more complete understanding of the subject matter. Nonspecific signal conditioning, such as amplification, filtering, and multiplexing, is discussed. Signal conditioning for various specific transducers and data terminal devices is also discussed to illustrate signal conditioning that is unique to particular types of transducers. The purpose is to delineate for the reader the various signal-conditioning technique options, together with tradeoff considerations, for commonly encountered flight-test situations. Author

**N88-12487\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECTS OF COMBINING VERTICAL AND HORIZONTAL INFORMATION INTO A PRIMARY FLIGHT DISPLAY

TERENCE S. ABBOTT, MARK NATAUPSKY, and GEORGE G. STEINMETZ Dec. 1987 21  $\mbox{p}$ 

(NASA-TP-2783; L-16366; NAS 1.60:2783) Avail: NTIS HC A03/MF A01 CSCL 01D

COCKPITS, CONSOLIDATION, DISPLAY DEVICES, HORIZONTAL ORIENTATION, POSITION INDICATORS, VERTICAL ORIENTATION

**N89-16820\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PILOTED-SIMULATION EVALUATION OF ESCAPE GUIDANCE FOR MICROBURST WIND SHEAR ENCOUNTERS M.S. Thesis -George Washington Univ.

DAVID A. HINTON Washington, DC Mar. 1989 57 p Sponsored in part by FAA, Washington, DC

(NASA-TP-2886; L-16498; NAS 1.60:2886; DOT/FAA/DS-89/06) Avail: NTIS HC A04/MF A01 CSCL 01D

FLIGHT HAZARDS, FLIGHT SIMULATION, MICROBURSTS (METEOROLOGY), PILOT PERFORMANCE, WIND SHEAR

**N90-13384\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

FLIGHT DECK AUTOMATION: PROMISES AND REALITIES SUSAN D. NORMAN, ed. and HARRY W. ORLADY, ed. (Orlady Associates, Inc., Los Gatos, CA.) Sep. 1989 200 p Proceedings of a NASA/FAA/Industry Workshop, Carmel Valley, CA, 1-4 Aug. 1988

(NASA-CP-10036; A-89196; NAS 1.55:10036) Avail: NTIS HC A09/MF A02 CSCL 01D

AIR TRAFFIC CONTROL, AIR TRANSPORTATION, AUTOMATIC CONTROL, COCKPITS, CONFERENCES, MAN-COMPUTER INTERFACE

**N90-18393\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A SIMULATION EVALUATION OF THE ENGINE MONITORING AND CONTROL SYSTEM DISPLAY TERENCE S. ABBOTT Washington Feb. 1990 39 p Original contains color illustrations

(NASA-TP-2960; L-16637; NAS 1.60:2960) Avail: NTIS HC A03/MF A01; 6 functional color pages CSCL 01D

AIRCRAFT INSTRUMENTS, DISPLAY DEVICES, ENGINE MONITORING INSTRUMENTS, FLIGHT INSTRUMENTS

**N90-21004\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### STEREOPSIS CUEING EFFECTS ON HOVER-IN-TURBULENCE PERFORMANCE IN A SIMULATED ROTORCRAFT

RUSSELL V. PARRISH and STEVEN P. WILLIAMS (Army Aviation Systems Command, Hampton, VA.) Washington May 1990 62 p

(DA PROJ. 1L1-61102-AH-45)

(NASA-TP-2980; L-16652; NAS 1.60:2980;

AVSCOM-TR-90-B-002; AD-A224484) Avail: NTIS HC A04/MF A01 CSCL 01/4

CUES, DISPLAY DEVICES, FLIGHT SIMULATION, HOVERING, PILOT PERFORMANCE, ROTARY WING AIRCRAFT, TURBULENCE

**N90-25980\*#** National Aeronautics and Space Administration, Washington, DC.

SPACE TRANSPORTATION AVIONICS TECHNOLOGY SYMPOSIUM. VOLUME 1: EXECUTIVE SUMMARY

Aug. 1990 24 p Symposium held in Williamsburg, VA, 7-9 Nov. 1989

(NASA-CP-3081-VOL-1; NAS 1.55:3081-VOL-1) Avail: NTIS HC A03/MF A01 CSCL 01D

AVIONICS, CONFERENCES, SPACE TRANSPORTATION

# 07

#### AIRCRAFT PROPULSION AND POWER

Includes prime propulsion systems and systems components, e.g., gas turbine engines and compressors; and onboard auxiliary power plants for aircraft.

**N87-17699\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DESIGN OF 9.271-PRESSURE-RATIO 5-STAGE CORE COMPRESSOR AND OVERALL PERFORMANCE FOR FIRST 3 STAGES

RONALD J. STEINKE May 1986 35 p

(NASA-TP-2597; E-2589; NAS 1.60:2597) Avail: NTIS HC A03/MF A01 CSCL 21E

COMPRESSORS, DESIGN ANALYSIS, FLOW DISTRIBUTION, PERFORMANCE TESTS, ROTOR BLADES (TURBOMACHINERY)

**N87-20267\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

NASA-CHINESE AERONAUTICAL ESTABLISHMENT (CAE) SYMPOSIUM

1986 230 p Symposium held in Cleveland, Ohio, 23-27 Sep. 1985

(NASA-CP-2433; E-3033; NAS 1.55:2433) Avail: NTIS HC A11/MF A02 CSCL 21E

COMBUSTION, FLUID DYNAMICS, THERMODYNAMICS

N87-24481\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. LOW-COST FM OSCILLATOR FOR CAPACITANCE TYPE OF BLADE TIP CLEARANCE MEASUREMENT SYSTEM JOHN P. BARRANGER Jul. 1987 16 p (NASA-TP-2746; E-3455; NAS 1.60:2746) Avail: NTIS HC A03/MF A01 CSCL 21E

# 07 AIRCRAFT PROPULSION AND POWER

BLADE TIPS, ERROR ANALYSIS, FREQUENCY MODULATION, NONDESTRUCTIVE TESTS, OSCILLATORS, ROTOR BLADES (TURBOMACHINERY)

**N88-15785\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

AEROPROPULSION '87. SESSION 2: AEROPROPULSION STRUCTURES RESEARCH

Nov. 1987 52 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication

(NASA-CP-10003-SESS-2; E-3798-SESS-2; NAS

1.55:10003-SESS-2) Avail: NTIS HC A04/MF A01 CSCL 21E CONTROL SYSTEMS DESIGN. DESIGN ANALYSIS.

PROPULSION SYSTEM CONFIGURATIONS, STRUCTURAL ANALYSIS

**N88-15790\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

AEROPROPULSION '87. SESSION 3: INTERNAL FLUID MECHANICS RESEARCH

Nov. 198775 pConference held in Cleveland, Ohio, 17-19Nov. 1987Submitted for publication

(NASA-CP-10003-SESS-3; E-3798-SESS-3; NAS

1.55:10003-SESS-3) Avail: NTIS HC A04/MF A01 CSCL 21E CHEMICAL REACTIONS, DUCTS, FLUID MECHANICS, INLET FLOW, NOZZLES, PREDICTION ANALYSIS TECHNIQUES, PROPULSION, TURBOMACHINERY

**N88-15794\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

AEROPROPULSION '87. SESSION 4: INSTRUMENTATION AND CONTROLS RESEARCH

Nov. 1987 77 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication

(NASA-CP-10003-SESS-4; E-3798-SESS-4; NAS

1.55:10003-SESS-4) Avail: NTIS HC A05/MF A01 CSCL 21E

CONFERENCES, CONTROL SYSTEMS DESIGN, FIBER OPTICS, FLUID MECHANICS, MEASURING INSTRUMENTS, PROPULSION

**N88-15800\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

AEROPROPULSION '87. SESSION 5: SUBSONIC PROPULSION TECHNOLOGY

Nov. 1987 153 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication

(NASA-CP-10003-SESS-5; E-3798-SESS-5; NAS

1.55:10003-SESS-5) Avail: NTIS HC A08/MF A01 CSCL 21E CONFERENCES, ENGINE DESIGN, FLUID MECHANICS, PROP-FAN TECHNOLOGY, PROPULSION

**N88-15807\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. **AEROPROPULSION '87. SESSION 6: HIGH-SPEED** 

PROPULSION TECHNOLOGY

Nov. 1987 119 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication

(NASA-CP-10003-SESS-6; E-3798-SESS-6; NAS

1.55:10003-SESS-6) Avail: NTIS HC A06/MF A01 CSCL 21E CONFERENCES, FLUID MECHANICS, HYPERSONIC AIRCRAFT, PROPULSION SYSTEM CONFIGURATIONS,

SUPERSONIC AIRCRAFT, SUPERSONIC COMBUSTION RAMJET ENGINES, TRANSPORT AIRCRAFT

**N88-16697\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

# AEROPROPULSION '87. SESSION 1: AEROPROPULSION MATERIALS RESEARCH

Nov. 1987 121 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication

(NASA-CP-10003-SESS-1; E-3798-SESS-1; NAS 1.55:10003-SESS-1) Avail: NTIS HC A06/MF A01 CSCL 21E CERAMICS, CREEP PROPERTIES, ENGINE DESIGN, ENGINE PARTS, FATIGUE (MATERIALS), METAL MATRIX COMPOSITES, POLYMER MATRIX COMPOSITES

**N89-12565\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ADVANCED TURBOPROP PROJECT

ROY D. HAGER and DEBORAH VRABEL (Sverdrup Technology, Inc., Cleveland, Ohio.) 1988 130 p Original contains color illustrations

(NASA-SP-495; NAS 1.21:495; LC88-1690) Avail: NTIS HC A07/MF A01 CSCL 21E

At the direction of Congress, a task force headed by NASA was organized in 1975 to identify potential fuel saving concepts for aviation. The result was the Aircraft Energy Efficiency (ACEE) Program implemented in 1976. An important part of the program was the development of advanced turboprop technology for Mach 0.65 to 0.85 applications having the potential fuel saving of 30 to 50 percent relative to existing turbofan engines. A historical perspective is presented of the development and the accomplishments that brought the turboprop to successful flight tests in 1986 and 1987.

N90-21037\*# Sverdrup Technology, Inc., Cleveland, OH. EXHAUST NOZZLES FOR PROPULSION SYSTEMS WITH EMPHASIS ON SUPERSONIC CRUISE AIRCRAFT LEONARD E. STITT May 1990 107 p

(NAS3-25266)

(NASA-RP-1235; E-4789; NAS 1.61:1235) Avail: NTIS HC A06/MF A01 CSCL 21E

This compendium summarizes the contributions of the NASA-Lewis and its contractors to supersonic exhaust nozzle research from 1963 to 1985. Two major research and technology efforts sponsored this nozzle research work; the U.S. Supersonic Transport (SST) Program and the follow-on Supersonic Cruise Research (SCR) Program. They account for two generations of nozzle technology: the first from 1963 to 1971, and the second from 1971 to 1985. First, the equations used to calculate nozzle thrust are introduced. Then the general types of nozzles are presented, followed by a discussion of those types proposed for supersonic aircraft. Next, the first-generation nozzles designed specifically for the Boeing SST and the second-generation nozzles designed under the SCR program are separately reviewed and then compared. A chapter on throttle-dependent afterbody drag is included, since drag has a major effect on the off-design performance of supersonic nozzles. A chapter on the performance of supersonic dash nozzles follows, since these nozzles have similar design problems, Finally, the nozzle test facilities used at NASA-Lewis during this nozzle research effort are identified and discussed. These facilities include static test stands, a transonic wind tunnel, and a flying testbed aircraft. A concluding section points to the future: a third generation of nozzles designed for a new era of high speed civil transports to produce even greater advances in performance, to meet new noise rules, and to ensure the continuity of over two decades of NASA research. Author

**N90-23403\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

EXPERIMENTAL EVALUATION OF A TUNED

ELECTROMAGNETIC DAMPER FOR VIBRATION CONTROL OF CRYOGENIC TURBOPUMP ROTORS

ELISEO DIRUSSO and GERALD V. BROWN Washington Jun. 1990 17 p

(NASA-TP-3005; E-5012; NAS 1.60:3005) Avail: NTIS HC A03/MF A01 CSCL 21E

CRYOGENIC TEMPERATURE, ELECTROMAGNETISM, ROCKET ENGINES, ROTOR SPEED, ROTORS, SHAFTS (MACHINE ELEMENTS), TURBINE PUMPS, VIBRATION DAMPING

**N90-27722\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

COMPUTER CODE FOR PREDICTING COOLANT FLOW AND HEAT TRANSFER IN TURBOMACHINERY

# 08 AIRCRAFT STABILITY AND CONTROL

PETER L. MEITNER Washington Sep. 1990 41 p Prepared in cooperation with Army Aviation Systems Command, Cleveland, OH

(DA PROJ. 1L1-61102-AH-45)

(NASA-TP-2985; E-5186; NAS 1.60:2985; AVSCOM-TR-89-C-008) Avail: NTIS HC A03/MF A01 CSCL 21E

COMPUTER PROGRAMS, ENGINE COOLANTS, FLOW DISTRIBUTION, HEAT TRANSFER, TURBOMACHINERY

### 80

### **AIRCRAFT STABILITY AND CONTROL**

Includes aircraft handling qualities; piloting; flight controls; and autopilots.

N87-10103\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### IN-FLIGHT TOTAL FORCES, MOMENTS AND STATIC **AEROELASTIC CHARACTERISTICS OF AN OBLIQUE-WING RESEARCH AIRPLANE**

R. E. CURRY and A. G. SIM Oct. 1984 30 p (NASA-TP-2224; H-1181; NAS 1.60:2224) Avail: NTIS HC A03/MF A01 CSCL 01C

AEROELASTIC RESEARCH WINGS, AIRCRAFT DESIGN, FLIGHT TESTS, OBLIQUE WINGS, RESEARCH AIRCRAFT, STRUCTURAL DESIGN, WIND TUNNEL TESTS

N87-10870\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INTERFERENCE EFFECTS OF THRUST REVERSING ON HORIZONTAL TAIL EFFECTIVENESS OF TWIN-ENGINE FIGHTER AIRCRAFT AT MACH NUMBERS FROM 0.15 TO 0.90 F. J. CAPONE and M. L. MASON Oct. 1984 104 p (NASA-TP-2350; L-15811; NAS 1.60:2350) Avail: NTIS HC

A06/MF A01 CSCL 01C AERODYNAMIC INTERFERENCE, FIGHTER AIRCRAFT, TAIL

ASSEMBLIES, THRUST REVERSAL, WIND TUNNEL TESTS

N87-10871\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

FLIGHT-DETERMINED AERODYNAMIC DERIVATIVES OF THE **AD-1 OBLIQUE-WING RESEARCH AIRPLANE** 

A. G. SIM and R. E. CURRY Oct. 1984 40 p

(NASA-TP-2222; H-1179; NAS 1.60:2222) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC COEFFICIENTS, OBLIQUE WINGS. RESEARCH AIRCRAFT, VARIABLE SWEEP WINGS

N87-16849\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### PILOTED SIMULATOR STUDY OF ALLOWABLE TIME DELAYS IN LARGE-AIRPLANE RESPONSE

WILLIAM D. GRANTHAM, PAUL M. SMITH (PRC Kentron, Inc., Hampton, Va.), LEE H. PERSON, JR., ROBERT T. MEYER (Lockheed-Georgia Co., Marietta), and STEPHEN A. TINGAS Feb. 1987 69 p

(NASA-TP-2652; L-16149; NAS 1.60:2652) Avail: NTIS HC A04/MF A01 CSCL 01C

CONTROL SYSTEMS DESIGN, FLIGHT CHARACTERISTICS, FLIGHT SIMULATORS, LOW SPEED, TIME LAG, TRANSPORT AIRCRAFT

National Aeronautics and Space Administration. N87-18570\*# Ames Research Center, Moffett Field, CA.

FLIGHT CHARACTERISTICS OF THE AD-1 OBLIQUE-WING **RESEARCH AIRCRAFT** 

ALEX G. SIM and ROBERT E. CURRY Mar. 1985 29 p (NASA-TP-2223; H-1180; NAS 1.60:2223) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC CONFIGURATIONS, FLIGHT CHARAC-TERISTICS, LOW SPEED, OBLIQUE WINGS, RESEARCH AIR-CRAFT

N87-25331\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ADVANCED DETECTION, ISOLATION AND ACCOMMODATION OF SENSOR FAILURES: REAL-TIME EVALUATION

WALTER C. MERRILL, JOHN C. DELAAT, and WILLIAM M. BRUTON Jul. 1987 30 p

(NASA-TP-2740; E-3479; NAS 1.60:2740) Avail: US Patent and Trademark Office CSCL 01C

ENGINE CONTROL, ENGINE FAILURE, FAULT TOLERANCE, REDUNDANCY ENCODING, REMOTE SENSORS, TURBINE ENGINES

N87-26922\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PILOTED-SIMULATION STUDY OF EFFECTS OF VORTEX FLAPS ON LOW-SPEED HANDLING QUALITIES OF A **DELTA-WING AIRPLANE** 

JAY M. BRANDON, PHILIP W. BROWN, and ALFRED J. WUNSCHEL Sep. 1987 38 p (NASA-TP-2747; L-16307; NAS 1.60:2747) Avail: NTIS HC

A03/MF A01 CSCL 01C

CONTROLLABILITY, DELTA WINGS, FLIGHT SIMULATION, LOW SPEED, PILOTS (PERSONNEL), VORTEX FLAPS

N88-14987\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

HANDLING QUALITIES OF A WIDE-BODY TRANSPORT AIRPLANE UTILIZING PITCH ACTIVE CONTROL SYSTEMS (PACS) FOR RELAXED STATIC STABILITY APPLICATION WILLIAM D. GRANTHAM, LEE H. PERSON, JR., PHILIP W. BROWN, LAWRENCE E. BECKER, GEORGE E. HUNT, J. J. RISING, W. J. DAVIS, C. S. WILLEY, W. A. WEAVER, and R. COKELEY Dec. 1985 109 p

(NASA-TP-2482; L-15928; NAS 1.60:2482) Avail: NTIS HC

A06/MF A01 CSCL 01C ACTIVE CONTROL, FLIGHT CHARACTERISTICS, FLIGHT SIMULATION, PITCH (INCLINATION), STATIC STABILITY, TRANSPORT AIRCRAFT

N88-19475\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. ROTORCRAFT FLIGHT-PROPULSION CONTROL

INTEGRATION: AN ECLECTIC DESIGN CONCEPT

JAMES R. MIHALOEW, MARK G. BALLIN, and D. C. G. RUTTLEDGE (Sikorsky Aircraft, Stratford, Conn.) Apr. 1988 34 p

(NASA-TP-2815; E-3812; NAS 1.60:2815) Avail: NTIS HC

A03/MF A01 CSCL 01C AIRCRAFT CONTROL, DESIGN ANALYSIS, INTEGRATORS, PROPULSIVE EFFICIENCY, ROTARY WING AIRCRAFT

N89-12569\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SINGULAR PERTURBATIONS AND TIME SCALES IN THE DESIGN OF DIGITAL FLIGHT CONTROL SYSTEMS

DESINENI S. NAIDU (Old Dominion Univ., Norfolk, Va.) and DOUGLAS B. PRICE Washington, D.C. Dec. 1988 30 p (NASA-TP-2844; L-16440; NAS 1.60:2844) Avail: NTIS HC A03/MF A01 CSCL 01C

DIGITAL SYSTEMS, FLIGHT CONTROL, OPTIMAL CONTROL, PERTURBATION THEORY

N89-15123\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA. DERIVATION AND DEFINITION OF A LINEAR AIRCRAFT MODEL

EUGENE L. DUKE, ROBERT F. ANTONIEWICZ, and KEITH D. KRAMBEER Aug. 1988 106 p (NASA-RP-1207; H-1391; NAS 1.61:1207) Avail: NTIS HC A06/MF A01 CSCL 01C

# **08 AIRCRAFT STABILITY AND CONTROL**

A linear aircraft model for a rigid aircraft of constant mass flying over a flat, nonrotating earth is derived and defined. The derivation makes no assumptions of reference trajectory or vehicle symmetry. The linear system equations are derived and evaluated along a general trajectory and include both aircraft dynamics and observation variables. Author

N89-15929\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA. FLIGHT CONTROL SYSTEMS DEVELOPMENT AND FLIGHT TEST EXPERIENCE WITH THE HIMAT RESEARCH VEHICLES ROBERT W. KEMPEL and MICHAEL R. EARLS Jun. 1988

88 p

(NASA-TP-2822; H-1428; NAS 1.60:2822) Avail: NTIS HC A05/MF A01 CSCL 01C

DIGITAL SYSTEMS, FLIGHT CONTROL, FLIGHT TESTS, HIGHLY MANEUVERABLE AIRCRAFT, REMOTELY PILOTED VEHICLES, RESEARCH AIRCRAFT, SCALE MODELS

N89-15930\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA. A PILOTED EVALUATION OF AN OBLIQUE-WING RESEARCH AIRCRAFT MOTION SIMULATION WITH DECOUPLING CONTROL LAWS

ROBERT W. KEMPEL, WALTER E. MCNEILL, GLENN B. GILYARD, and TRINDEL A. MAINE Nov. 1988 52 p (NASA-TP-2874; H-1430; NAS 1.60:2874) Avail: NTIS HC . A04/MF A01 CSCL 01C

DECOUPLING, EVALUATION, FLIGHT SIMULATION, FLIGHT TESTS, OBLIQUE WINGS, PILOT PERFORMANCE

**N89-16845\***# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### MODAL CONTROL OF AN OBLIQUE WING AIRCRAFT JAMES D. PHILLIPS Jan. 1989 49 p

(NASA-TP-2898; A-88250; NAS 1.60:2898) Avail: NTIS HC

A03/MF A01 CSCL 01C

FLIGHT CONTROL, MODAL RESPONSE, OBLIQUE WINGS, RESEARCH AIRCRAFT

**N89-19309\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INTEGRATED TOOLS FOR CONTROL-SYSTEM ANALYSIS AARON J. OSTROFF, MELISSA S. PROFFITT, and DAVID R. CLARK (Planning Research Corp., Hampton, VA.) Washington NASA Mar. 1989 61 p

(NASA-TP-2885; L-16482; NAS 1.60:2885) Avail: NTIS HC A04/MF A01 CSCL 01C

ACTUATORS, COMPUTER PROGRAMS, CONTROL SYSTEMS DESIGN, CONTROLLERS, LINEAR SYSTEMS, SOFTWARE TOOLS, SYSTEMS ANALYSIS

**N89-23468\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### A CLOSED-FORM TRIM SOLUTION YIELDING MINIMUM TRIM DRAG FOR AIRPLANES WITH MULTIPLE LONGITUDINAL-CONTROL EFFECTORS

KENNETH H. GOODRICH, STEVEN M. SLIWA, and FREDERICK J. LALLMAN Washington May 1989 30 p

(NASA-TP-2907; L-16484; NAS 1.60:2907) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC BALANCE, AIRCRAFT DESIGN, COMPUTATION, LIFT DEVICES, OPTIMIZATION, REDUNDANCY, THRUST VECTOR CONTROL

N89-23469\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SIMULATOR EVALUATION OF A DISPLAY FOR A TAKEOFF PERFORMANCE MONITORING SYSTEM

DAVID B. MIDDLETON, RAGHAVACHARI SRIVATSAN, and LEE H. PERSON, JR. Washington May 1989 29 p (NASA-TP-2908; L-16510; NAS 1.60:2908) Avail: NTIS HC A03/MF A01 CSCL 01C ABORTED MISSIONS, DISPLAY DEVICES, MONITORS, RATINGS, SIMULATORS, TAKEOFF

N89-24327\*# National Aeronautics and Space Administration. Flight Research Center, Edwards, CA. DEVELOPMENT AND FLIGHT TEST EXPERIENCES WITH A

FLIGHT-CRUCIAL DIGITAL CONTROL SYSTEM DALE A. MACKALL Washington Nov. 1988 116 p (NASA-TP-2857; H-1344; NAS 1.60:2857) Avail: NTIS HC

A06/MF A01 CSCL 01C AIRCRAFT PERFORMANCE, CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, F-16 AIRCRAFT, FLIGHT CONTROL, SYSTEMS INTEGRATION

**N90-10074\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ANALYSIS OF FLIGHT DATA FROM A HIGH-INCIDENCE RESEARCH MODEL BY SYSTEM IDENTIFICATION METHODS JAMES G. BATTERSON and VLADISLAV KLEIN (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.) Washington Nov. 1989 50 p

(NASA-TP-2940; L-16571; NAS 1.60:2940) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC CONFIGURATIONS, AERODYNAMIC STABILITY, ANGLE OF ATTACK, DYNAMIC CONTROL, FLIGHT CHARACTERISTICS, STABILITY DERIVATIVES

**N90-11757\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

COMPARISON OF FLYING QUALITIES DERIVED FROM IN-FLIGHT AND GROUND-BASED SIMULATORS FOR A JET-TRANSPORT AIRPLANE FOR THE APPROACH AND LANDING PILOT TASKS

WILLIAM D. GRANTHAM Washington Dec. 1989 32 p (NASA-TP-2962; L-16609; NAS 1.60:2962) Avail: NTIS HC A03/MF A01 CSCL 01C

FLIGHT CHARACTERISTICS, FLIGHT CONTROL, FLIGHT SIMULATION, JET AIRCRAFT, TRANSPORT AIRCRAFT

**N90-15112\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ADVANCED DETECTION, ISOLATION, AND ACCOMMODATION OF SENSOR FAILURES IN TURBOFAN ENGINES: REAL-TIME MICROCOMPUTER IMPLEMENTATION JOHN C. DELAAT and WALTER C. MERRILL Washington Feb.

1990 28 p (NASA-TP-2925; E-4391; NAS 1.60:2925) Avail: NTIS HC

(NASA-1P-2925; E-4391; NAS 1.60:2925) Avail: NTIS HC A03/MF A01 CSCL 01C

ALGORITHMS, DIGITAL ELECTRONICS, ELECTRONIC CONTROL, ENGINE TESTS, FEEDBACK CONTROL, TURBOFAN ENGINES

**N90-17639\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

LONGITUDINAL STABILITY AND CONTROL

#### CHARACTERISTICS OF THE QUIET SHORT-HAUL RESEARCH AIRCRAFT (QSRA)

JACK D. STEPHENSON and GORDON H. HARDY Washington Dec. 1989 43 p

(NASA-TP-2965; A-89133; NAS 1.60:2965) Avail: NTIS HC A03/MF A01 CSCL 01C

AIRCRAFT PERFORMANCE, FLIGHT CHARACTERISTICS, FLIGHT TESTS, LONGITUDINAL CONTROL, LONGITUDINAL STABILITY, RESEARCH AIRCRAFT, SHORT HAUL AIRCRAFT

**N90-19239\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LOW-SPEED WIND-TUNNEL INVESTIGATION OF THE FLIGHT DYNAMIC CHARACTERISTICS OF AN ADVANCED TURBOPROP BUSINESS/COMMUTER AIRCRAFT CONFIGURATION

PAUL L. COE, J.R., STEVEN G. TURNER, and D. BRUCE OWENS Washington Apr. 1990 50  $\mbox{p}$ 

#### (NASA-TP-2982; L-16664; NAS 1.60:2982) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC CHARACTERISTICS, COMMUTER **DYNAMIC** AIRCRAFT. CHARACTERISTICS, FLIGHT CHARACTERISTICS, FLIGHT TESTS, TURBOPROP AIRCRAFT, WIND TUNNEL TESTS

# 09

### **RESEARCH AND SUPPORT FACILITIES (AIR)**

Includes airports, hangars and runways; aircraft repair and overhaul facilities; wind tunnels; shock tubes; and aircraft engine test stands.

N87-10876\*# National Aeronautics and Space Administration, Washington, DC.

#### **AERONAUTICAL FACILITIES ASSESSMENT**

F. E. PENARANDA, comp. Nov. 1985 204 p

(NASA-RP-1146; NAS 1.61:1146) Avail: NTIS HC A10/MF A02 CSCL 14B

A survey of the free world's aeronautical facilities was undertaken and an evaluation made on where the relative strengths and weaknesses exist. Special emphasis is given to NASA's own capabilities and needs. The types of facilities surveyed are: Wind Tunnels; Airbreathing Propulsion Facilities; and Flight Simulators Author

N87-17717\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### EXPERIMENTAL EVALUATION OF WALL MACH NUMBER DISTRIBUTIONS OF THE OCTAGONAL TEST SECTION **PROPOSED FOR NASA LEWIS RESEARCH CENTER'S** ALTITUDE WIND TUNNEL

DOUGLAS E. HARRINGTON, RICHARD R. BURLEY, and ROBERT R. CORBAN Nov. 1986 35 p

(NASA-TP-2666; E-3145; NAS 1.60:2666) Avail: NTIS HC A03/MF A01 CSCL 14B

FLOW VELOCITY, MACH NUMBER, WIND TUNNEL APPARATUS, WIND TUNNEL WALLS

N87-18576\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

EXPERIMENTAL EVALUATION OF TWO TURNING VANE **DESIGNS FOR FAN DRIVE CORNER OF 0.1-SCALE MODEL** OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL

DONALD R. BOLDMAN, ROYCE D. MOORE, and RICKEY J. SHYNE Mar. 1987 148 p

(NASA-TP-2646; E-3175; NAS 1.60:2646) Avail: NTIS HC A07/MF A01 CSCL 14B

CORNER FLOW, VANES, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

N87-20295\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DETAILED FLOW SURVEYS OF TURNING VANES DESIGNED FOR A 0.1-SCALE MODEL OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL

ROYCE D. MOORE, RICKEY J. SHYNE, DONALD R. BOLDMAN, and THOMAS F. GELDER Apr. 1987 151 p

(NASA-TP-2680; E-3294; NAS 1.60:2680) Avail: NTIS HC A08/MF A01 CSCL 14B ALTITUDE SIMULATION, FLOW DISTRIBUTION, GUIDE

VANES, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

# 09 RESEARCH AND SUPPORT FACILITIES (AIR)

N87-22694\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

EXPERIMENTAL EVALUATION OF BLOCKAGE RATIO AND PLENUM EVACUATION SYSTEM FLOW EFFECTS ON PRESSURE DISTRIBUTION FOR BODIES OF REVOLUTION IN 0.1 SCALE MODEL TEST SECTION OF NASA LEWIS **RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL** RICHARD R. BURLEY and DOUGLAS E. HARRINGTON Apr. 1987 26 p

(NASA-TP-2702; E-3267; NAS 1.60:2702) Avail: NTIS HC A03/MF A01 CSCL 14B

EVACUATING (VACUUM), EVALUATION, PLENUM CHAMBERS, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N87-23662\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

EXPERIMENTAL EVALUATION OF HONEYCOMB/SCREEN CONFIGURATIONS AND SHORT CONTRACTION SECTION FOR NASA LEWIS RESEARCH CENTER'S ALTITUDE WIND TUNNEL

RICHARD R. BURLEY and DOUGLAS E. HARRINGTON Mav 1987 30 p

(NASA-TP-2692; E-3142; NAS 1.60:2692) Avail: NTIS HC A03/MF A01 CSCL 14B

HONEYCOMB STRUCTURES, PRESSURE DISTRIBUTION, SCREENS, TURBULENCE EFFECTS, TURBULENT FLOW, WIND TUNNEL CALIBRATION

N87-28570\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EVOLUTION, CALIBRATION, AND OPERATIONAL CHARACTERISTICS OF THE TWO-DIMENSIONAL TEST SECTION OF THE LANGLEY 0.3-METER TRANSONIC **CRYOGENIC TUNNEL** 

CHARLES L. LADSON and EDWARD J. RAY Sep. 1987 171 p

(NASA-TP-2749; L-16190; NAS 1.60:2749) Avail: NTIS HC A08/MF A01 CSCL 14B

CRYOGENIC WIND TUNNELS, EVOLUTION (DEVELOPMENT), HISTORIES, TRANSONIC WIND TUNNELS, TWO DIMENSIONAL FLOW

N87-29544\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LANGLEY AIRCRAFT LANDING DYNAMICS FACILITY

PAMELA A. DAVIS, SANDY M. STUBBS, and JOHN A. TANNER Oct. 1987 35 p

(NASA-RP-1189; L-16293; NAS 1.61:1189) Avail: NTIS HC A03/MF A01 CSCL 14B

The Langley Research Center has recently upgraded the Landing Loads Track (LLT) to improve the capability of low-cost testing of conventional and advanced landing gear systems. The unique feature of the Langley Aircraft Landing Dynamics Facility (ALDF) is the ability to test aircraft landing gear systems on actual runway surfaces at operational ground speeds and loading conditions. A historical overview of the original LLT is given. followed by a detailed description of the new ALDF systems and operational capabilities. Author

N88-17686\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

EXPERIMENTAL EVALUATION OF TURNING VANE DESIGNS FOR HIGH-SPEED AND COUPLED FAN-DRIVE CORNERS OF 0.1-SCALE MODEL OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL

THOMAS F. GELDER, ROYCE D. MOORE, RICKEY J. SHYNE, and DONALD R. BOLDMAN May 1987 54 p Microfiche available as supplement

(NASA-TP-2681; E-3218; NAS 1.60:2681) Avail: NTIS HC A04/MF A01 CSCL 14B

ALTITUDE SIMULATION, CORNER FLOW, COUPLING, GUIDE VANES, HIGH SPEED, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

#### 09 RESEARCH AND SUPPORT FACILITIES (AIR)

N88-28075\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

FINITE-RATE WATER CONDENSATION IN

COMBUSTION-HEATED WIND TUNNELS

WAYNE D. ERICKSON, GERALD H. MALL, and RAMADAS K. PRABHU (PRC Systems Services Co., Hampton, Va.) Sep. 1988 76 p

(NASA-TP-2833; L-16443; NAS 1.60:2833) Avail: NTIS HC A05/MF A01 CSCL 14B

COMBUSTION PRODUCTS, COMBUSTION WIND TUNNELS, CONDENSING. TEMPERATURE ENVIRONMENTS, HIGH NUCLEATION, WATER

N90-17647\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CAST-10-2/DOA 2 AIRFOIL STUDIES WORKSHOP RESULTS EDWARD J. RAY, comp. and ACQUILLA S. HILL, comp. Washington Nov. 1989 259 p Workshop held in Hampton, VA, 23-27 Sep. 1988

(NASA-CP-3052; L-16633; NAS 1.55:3052) Avail: NTIS HC A12/MF A02 CSCL 14B

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC INTERFERENCE, AIRFOIL PROFILES. AIRFOILS, CONFERENCES, FLOW DISTRIBUTION, REYNOLDS NUMBER, WIND TUNNEL TESTS

N90-19242\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### COMPARISON BETWEEN DESIGN AND INSTALLED ACOUSTIC CHARACTERISTICS OF NASA LEWIS 9- BY **15-FOOT LOW-SPEED WIND TUNNEL ACOUSTIC** TREATMENT

MILO D. DAHL and RICHARD P. WOODWARD Washington Apr. 1990 28 p Presented at the 115th Meeting of the Acoustical Society of America, Seattle, WA, 16-20 May 1988 (NASA-TP-2996; E-4981; NAS 1.60:2996) Avail: NTIS HC A03/MF A01 CSCL 14B

ACOUSTIC ATTENUATION, ACOUSTIC MEASUREMENT, AIRCRAFT NOISE, LOW SPEED WIND TUNNELS, PANELS, PERFORATED PLATES

# 12

# **ASTRONAUTICS (GENERAL)**

N78-76855\* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM

A. FUCHS 1975 265 p refs Symp. held at Greenbelt, Md., 29-30 1975

(NASA-CP-2002) Avail: Goddard Space Flight Center, Code 582

CONFERENCES, FLIGHT MECHANICS, ORB!T CALCULATION, ORBITAL POSITION ESTIMATION

N87-20302\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

# THE 1986 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM

LAWRENCE R. THOMAS, ed. and FRANCES L. MOSIER, ed. Feb. 1987 236 p Symposium held in Greenbelt, Md., 7-8 Oct. 1986

(NASA-CP-2438; NAS 1.55:2438) Avail: NTIS HC A11/MF A02 CSCL 22A

CONFERENCES. GET AWAY SPECIALS (STS), GOVERNMENT/INDUSTRY RELATIONS, SPACE SHUTTLE PAYLOADS, UNIVERSITIES

N87-29576\* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

TECHNOLOGY FOR LARGE SPACE SYSTEMS: A **BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 17)** Oct. 1987 140 p

(NASA-SP-7046(17); NAS 1.21:7046(17)) Avail: NTIS HC A07 CSCL 22B

This bibliography lists 512 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1987 and June 30, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. Author

National Aeronautics and Space Administration. N88-17691\*# Goddard Space Flight Center, Greenbelt, MD.

THE 1987 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM

NEAL BARTHELME, ed. and FRANCES L. MOSIER, ed. (RMS Technologies, Inc., Landover, Md.) Feb. 1988 169 p Symposium held in Greenbelt, Md., 27-28 Oct. 1987

(NASA-CP-2500; REPT-88B0049; NAS 1.55:2500) Avail: NTIS HC A08/MF A01 CSCL 22A

GET AWAY SPECIALS (STS), MISSION PLANNING, PROJECT PLANNING, SPACE SHUTTLE MISSIONS, SPACE STATIONS

N88-27214\* National Aeronautics and Space Administration, Washington, DC.

#### TECHNOLOGY FOR LARGE SPACE SYSTEMS: A **BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 18)** Jun. 1988 162 p

(NASA-SP-7046(18); NAS 1.21:7046(18)) Avail: NTIS HC A08 CSCL 22B

This bibliography lists 569 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1,1987 and December 31, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. Author

N89-10902\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### THE 1988 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM

LAWRENCE R. THOMAS, ed. and FRANCES L. MOSIER, ed. (RMS Technologies, Inc., Landover, Md.) Sep. 1988 127 p Symposium held in Cocoa Beach, Fla., 27-30 Sep. 1988 Sponsored by NASA, Washington

(NASA-CP-3008; REPT-88-158; NAS 1.55:3008) Avail: NTIS HC A07/MF A01 CSCL 22A

CONFERENCES, GET AWAY SPECIALS (STS), SPACE SHUTTLE PAYLOADS, SPACEBORNE EXPERIMENTS

N89-11760\*# National Aeronautics and Space Administration, Washington, DC.

TECHNOLOGY FOR FUTURE NASA MISSIONS: CIVIL SPACE **TECHNOLOGY INITIATIVE (CSTI) AND PATHFINDER** 

Sep. 1988 550 p Conference held in Washington, D.C., 12-13 Sep. 1988; sponsored in part by NASA and AIAA

(NASA-CP-3016; NAS 1.55:3016) Avail: NTIS HC A23/MF A03 ČSCL 22A

AEROASSIST, CONFERENCES, NASA PROGRAMS, ORBIT TRANSFER VEHICLES, SPACEBORNE EXPERIMENTS, SPACECRAFT CONSTRUCTION MATERIALS, SPACECRAFT INSTRUMENTS, SPACECRAFT POWER SUPPLIES, SPACECRAFT PROPULSION

. ·

# 15 LAUNCH VEHICLES AND SPACE VEHICLES

# 13

# ASTRODYNAMICS

Includes powered and free-flight trajectories; and orbital and launching dynamics.

N88-15820\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

A STUDY TO EVALUATE STS HEADS-UP ASCENT

TRAJECTORY PERFORMANCE EMPLOYING A MINIMUM-HAMILTONIAN OPTIMIZATION STRATEGY

SUJIT SINHA Feb. 1988 56 p

(NASA-TP-2793; M-580; NAS 1.60:2793) Avail: NTIS HC A04/MF A01 CSCL 22A

ASCENT TRAJECTORIES, EVALUATION, HAMILTONIAN FUNCTIONS, OPTIMIZATION, SPACE TRANSPORTATION SYSTEM

N89-15934\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM 1988

THOMAS STENGLE, ed. Washington, DC Sep. 1988 611 p Symposium held in Greenbelt, MD, 10-11 May 1988

(NASA-CP-3011; REPT-88B0224; NAS 1.55:3011) Avail: NTIS HC A99/MF A04 CSCL 22A

ESTIMATES, FLIGHT MECHANICS, ORBITAL MECHANICS, SPACECRAFT PERFORMANCE

N90-13413\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM,

1989

THOMAS STENGLE, ed. Washington Oct. 1989 466 p Symposium held in Greenbelt, MD, 23-24 May 1989

(NASA-CP-3050: REPT-89B00261; NAS 1.55:3050) Avail: NTIS HC A20/MF A03 CSCL 22A

CONFERENCES, FLIGHT MECHANICS, ORBITAL MECHANICS, SATELLITE ATTITUDE CONTROL

N90-13444\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

A TRANSIENT RESPONSE METHOD FOR LINEAR COUPLED SUBSTRUCTURES

J. R. ADMIRE and J. A. BRUNTY Dec. 1989 26 p

(NASA-TP-2926; NAS 1.60:2926) Avail: NTIS HC A03/MF A01 CSCL 22A

FUNCTIONS, LINEAR SYSTEMS, LOADS DISCRETE (FORCES). MATHEMATICAL MODELS, NUMERICAL INTEGRATION, TRANSIENT RESPONSE

N90-26028\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

FORBIDDEN TANGENTIAL ORBIT TRANSFERS BETWEEN INTERSECTING KEPLERIAN ORBITS

ROWLAND E. BURNS Jul. 1990 53 p (NASA-TP-3031; NAS 1.60:3031) Avail: NTIS HC A04/MF A01 ČSCL 22A

KEPLER LAWS, PLANAR STRUCTURES, TRANSFER ORBITS, TWO BODY PROBLEM

### 14

# **GROUND SUPPORT SYSTEMS AND FACILITIES** (SPACE)

Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators.

N89-28545\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH,

DIGITALLY MODULATED BIT ERROR RATE MEASUREMENT SYSTEM FOR MICROWAVE COMPONENT EVALUATION MARY JO W. SHALKHAUSER and JAMES M. BUDINGER

Washington Jul. 1989 20 p

(NASA-TP-2912; E-4456; NAS 1.60:2912) Avail: NTIS HC A03/MF A01 CSCL 14B

BIT ERROR RATE, COMMUNICATION SATELLITES, DATA TRANSMISSION, DIGITAL DATA, MICROWAVE EQUIPMENT, MODULATION, TIME DIVISION MULTIPLE ACCESS

# 15

# LAUNCH VEHICLES AND SPACE VEHICLES

Includes boosters; operating problems of launch/space vehicle systems; and reusable vehicles.

N87-12581\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SOLAR ARRAY FLIGHT DYNAMIC EXPERIMENT

R. W. SCHOCK Washington May 1986 27 p (NASA-TP-2598; NAS 1.60:2598) Avail: NTIS HC A03/MF A01 CSCL 10A

LARGE SPACE STRUCTURES, LASER APPLICATIONS, SOLAR ARRAYS, SPACE SHUTTLE PAYLOADS, TRACKING (POSITION)

N87-18588\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SYSTEM STUDY OF THE CARBON DIOXIDE **OBSERVATIONAL PLATFORM SYSTEM (CO-OPS): PROJECT** OVERVIEW

J. BRISCOE STEPHENS and WILBUR E. THOMPSON Mar. 1987 35 p

(NASA-TP-2696; NAS 1.60:2696) Avail: NTIS HC A03/MF A01 CSCL 22B

ATMOSPHERIC COMPOSITION, CARBON DIOXIDE, REMOTE SENSING, SPACE PLATFORMS

N87-22702\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. STRUCTURAL DYNAMICS AND CONTROL INTERACTION OF

FLEXIBLE STRUCTURES ROBERT S. RYAN, ed. and HAROLD N. SCOFIELD, ed. Apr.

Workshop held in Huntsville, ALa., 22-24 Apr. 1987 680 p 1986

(NASA-CP-2467-PT-1; M-554-PT-1; NAS 1.55:2467-PT-1) Avail: NTIS HC A99/MF A04 CSCL 22B

CONTROL SYSTEMS DESIGN, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE BODIES, LARGE SPACE STRUCTURES, SPACECRAFT CONTROL

N87-22729\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. STRUCTURAL DYNAMICS AND CONTROL INTERACTION OF FLEXIBLE STRUCTURES

ROBERT S. RYAN, ed. and HAROLD N. SCOFIELD, ed. Apr.
## 15 LAUNCH VEHICLES AND SPACE VEHICLES

1987 729 p Workshop held in Huntsville, Ala., 22-24 Apr. 1986

(NASA-CP-2467-PT-2; M-554-PT-2; NAS 1.55:2467-PT-2) Avail: NTIS HC A99/MF A04 CSCL 22B

CONFERENCES, DESIGN ANALYSIS, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE BODIES, JOINTS (JUNCTIONS), LARGE SPACE STRUCTURES, SPACE STATIONS

**N88-14112\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

# HYDROBURST TEST OF A CARBON-CARBON INVOLUTE

ROY M. SULLIVAN Jan. 1986 33 p

(NASA-TP-2556; NAS 1.60:2556) Avail: NTIS HC A03/MF A01 CSCL 20H

BURST TESTS, CARBON-CARBON COMPOSITES, CONES, EXHAUST NOZZLES, HYDRODYNAMICS

**N89-18504\***# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

PRACTICES IN ADEQUATE STRUCTURAL DESIGN

ROBERT S. RYAN Jan. 1989 98 p

(NASA-TP-2893; NAS 1.60:2893) Avail: NTIS HC A05/MF A01 CSCL 22B

FLIGHT SAFETY, MANAGEMENT METHODS, PROJECT MANAGEMENT, REQUIREMENTS, SPACE SHUTTLES, STRESS ANALYSIS, STRUCTURAL DESIGN

**N90-14256\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

PAYLOAD CREW UTILIZATION FOR SPACELAB MISSIONS K. Y. IBRAHIM and J. D. WEILER Jan. 1990 55 p

(NASA-TP-2976; NAS 1.60:2976) Avail: NTIS HC A04/MF A01 CSCL 22A

CREW PROCEDURES (INFLIGHT), PAYLOAD INTEGRATION, SCHEDULING, SPACECREWS, TASK COMPLEXITY

N90-19249<sup>•</sup># National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EARTH SCIENCE GEOSTATIONARY PLATFORM

TECHNOLOGY

ROBERT L. WRIGHT, ed. and THOMAS G. CAMPBELL, ed. Washington Jul. 1989 386 p Workshop held in Hampton, VA, 21-22 Sep. 1988

(NASA-CP-3040; L-16612; NAS 1.55:3040) Avail: NTIS HC A17/MF A03 CSCL 22B

ANTENNA DESIGN, CONFERENCES, ELECTROMAGNETISM, LARGE SPACE STRUCTURES, METROLOGY, MICROWAVE SENSORS, REMOTE SENSING, SYNCHRONOUS PLATFORMS

## 16

### SPACE TRANSPORTATION

Includes passenger and cargo space transportation, e.g., shuttle operations; and space rescue techniques.

**N87-12585\***# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

DEVELOPMENT TESTING OF LARGE VOLUME WATER SPRAYS FOR WARM FOG DISPERSAL

V. W. KELLER, B. J. ANDERSON, R. A. BURNS, G. G. LALA (New York State Univ., Albany), M. B. MEYER, and K. V. BEARD (Illinois Univ., Urbana-Champaign) Washington Jun. 1986 112 p

(NASA-TP-2607; NAS 1.60:2607) Avail: NTIS HC A06/MF A01 CSCL 14B

COALESCING, FOG DISPERSAL, SPACE SHUTTLES, SPACECRAFT LAUNCHING, SPRAY NOZZLES, WATER

**N88-12520\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SPACECRAFT FIRE SAFETY

JANICE M. MARGLE, ed. (Pennsylvania State Univ., Abington.) 1987 134 p Workshop held in Cleveland, Ohio, 20-21 Aug. 1986

(NASA-CP-2476; E-3464; NAS 1.55:2476) Avail: NTIS HC A07/MF A01 CSCL 22B

ATMOSPHERIC COMPOSITION, COMBUSTION PHYSICS, CONFERENCES, FIRE EXTINGUISHERS, FIRES, FLAMMABILITY, INERT ATMOSPHERE, SPACE STATIONS, SPACECRAFT ENVIRONMENTS

**N90-25160\*#** National Aeronautics and Space Administration, Washington, DC.

#### SPACE SHUTTLE AVIONICS SYSTEM

JOHN F. HANAWAY (Intermetrics, Inc., Houston, TX.) and ROBERT W. MOOREHEAD 1989 75 p Original contains color illustrations

(NAS9-17826)

(NASA-SP-504; S-579; NAS 1.21:504; LC-89-600316) Avail: NTIS HC A04/MF A01; also available SOD HC \$8.50 as 033-000-01079-6; 5 functional color pages CSCL 22B

The Space Shuttle avionics system, which was conceived in the early 1970's and became operational in the 1980's represents a significant advancement of avionics system technology in the areas of systems and redundacy management, digital data base technology, flight software, flight control integration, digital fly-by-wire technology, crew display interface, and operational concepts. The origins and the evolution of the system are traced; the requirements, the constraints, and other factors which led to the final configuration are outlined; and the functional operation of the system is described. An overall system block diagram is included. Author

**N90-26036\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE EFFECT OF INTERPLANETARY TRAJECTORY OPTIONS ON A MANNED MARS AEROBRAKE CONFIGURATION

ROBERT D. BRAUN, RICHARD W. POWELL, and LIN C. HARTUNG Washington Aug. 1990 79 p

(NASA-TP-3019; L-16661; NAS 1.60:3019) Avail: NTIS HC A05/MF A01 CSCL 22B

AEROBRAKING, ATMOSPHERIC ENTRY SIMULATION, INTERPLANETARY NAVIGATION, INTERPLANETARY TRA-JECTORIES, MANNED MARS MISSIONS, PROPULSION SYSTEM PERFORMANCE, TRAJECTORY OPTIMIZATION

## 18

## SPACECRAFT DESIGN, TESTING AND PERFORMANCE

Includes satellites; space platforms; space stations; spacecraft systems and components such as thermal and environmental controls; and attitude controls.

**N87-16014\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

NASA/DOD CONTROL/STRUCTURES INTERACTION TECHNOLOGY, 1986

ROBERT L. WRIGHT, comp. Nov. 1986 549 p Conference held in Norfolk, Va., 18-21 Nov. 1986; sponsored by NASA Langley Research Center and AFWAL

(NASA-CP-2447-PT-1; L-16242-PT-1; NAS 1.55:2447-PT-1) Avail: NTIS HC A23/MF A04 CSCL 22B

ANTENNAS, CONFERENCES, FLEXIBLE SPACECRAFT, LARGE SPACE STRUCTURES, SPACE STATIONS, SPACECRAFT CONTROL, SPACECRAFT DESIGN, SYSTEMS ENGINEERING, TRUSSES, VIBRATION DAMPING N87-24495\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. NASA/DOD CONTROL/STRUCTURES INTERACTION

## TECHNOLOGY, 1986

ROBERT L. WRIGHT, comp. Jun. 1987 314 p Conference held in Norfolk, Va., 18-21 Nov. 1986

(NASA-CP-2447-PT-2; L-16242-PT-2; NAS 1.55:2447-PT-2)

Avail: NTIS HC A14/MF A02 CSCL 22B CONTROL STABILITY, CONTROL SYSTEMS DESIGN, INTERACTIVE CONTROL, SPACE STATIONS, SPACECRAFT CONTROL, VIBRATION DAMPING

N87-26073\* National Aeronautics and Space Administration, Washington, DC.

## SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH

**INDEXES (SUPPLEMENT 4)** 

May 1987 220 p

(NASA-SP-7056(04); NAS 1.21:7056(04)) Avail: NTIS HC A10 CSCL 22B

This bibliography lists 832 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1986 and December 31, 1986. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. The coverage includes documents that define major systems and subsystems, servicing and support requirements, procedures and operations, and missions for the current and future space station. Author

N88-10084\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. SPACECRAFT 2000

Jul. 1986 236 p Workshop held in Cleveland, Ohio, 29-31 Jul. 1986

(NASA-CP-2473; E-3358; NAS 1.55:2473) Avail: NTIS HC A11/MF A02 CSCL 22B

CONFERENCES, SPACE STATIONS, SPACECRAFT ELECTRONIC EQUIPMENT. SPACECRAFT PROPULSION, SPACECRAFT TRACKING, SYSTEMS ANALYSIS, TELEMETRY

N88-10829\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FOURTEENTH SPACE SIMULATION CONFERENCE: TESTING FOR A PERMANENT PRESENCE IN SPACE

JOSEPH L. STECHER, III, ed. 1986 435 p Conference held in Baltimore, Md., 3-6 Nov. 1986; sponsored by NASA, Inst. of Environmental Sciences, AIAA, and the American Society for **Testing and Materials** 

(NASA-CP-2446; REPT-86B0561; NAS 1.55:2446) Avail: NTIS HC A19/MF A03 CSCL 22B

CONFERENCES, CLEANING, SIMULATION, SPACE SHUTTLES. SPACE STATIONS, SPACECRAFT CONTAMINATION. SPACECRAFT ENVIRONMENTS, TEST FACILITIES, THERMAL ENVIRONMENTS

N88-10870\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SPACE CONSTRUCTION

JANE A. HAGAMAN, ed. Oct. 1987 308 p Conference held in Hampton, Va., 6-7 Aug. 1986

(NASA-CP-2490; L-16378; NAS 1.55:2490) Avail: NTIS HC A14/MF A02 CSCL 22B

CONFERENCES, **EXTRAVEHICULAR** ACTIVITY. MANAGEMENT PLANNING, MISSION PLANNING, SPACE SPACE PAYLOADS, SPACE STATIONS, SHUTTLE TRANSPORTATION SYSTEM

N88-13382\* National Aeronautics and Space Administration, Washington, DC.

SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES Nov. 1987 245 p

(NASA-SP-7056(05); NAS 1.21:7056(05)) Avail: NTIS HC A11 ČSCL 22B

This bibliography lists 967 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1987 and June 30, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. The coverage includes documents that define major systems and subsystems, servicing and support requirements, procedures and operations, and missions for the current and future space station. Author

N88-14115\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CONTINUUM MODELING OF LARGE LATTICE STRUCTURES: STATUS AND PROJECTIONS

AHMED K. NOOR and MARTIN M. MIKULAS, JR. Feb. 1988 79 p

(NASA-TP-2767; L-16360; NAS 1.60:2767) Avail: NTIS HC A05/MF A01 CSCL 22B

CONTINUUM MODELING, LATTICES, STRUCTURAL ANALYSIS, TRUSSES

N89-12580\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LIGHTWEIGHT STRUCTURAL DESIGN OF A BOLTED CASE JOINT FOR THE SPACE SHUTTLE SOLID ROCKET MOTOR JOHN T. DORSEY, PETER A. STEIN (Coast Guard, Yorktown,

Nov. 1988 Va.), and HAROLD G. BUSH Washington, D.C. 24 p

(NASA-TP-2851; L-16496; NAS 1.60:2851) Avail: NTIS HC A03/MF A01 CSCL 22B

BOLTED JOINTS, ROCKET ENGINE CASES, SPACE SHUTTLE MAIN ENGINE, STRUCTURAL ANALYSIS

N89-12582\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. FIFTEENTH SPACE SIMULATION CONFERENCE: SUPPORT

THE HIGHWAY TO SPACE THROUGH TESTING

JOSEPH STECHER, ed. 1988 492 p Conference held in Williamsburg, Va., 31 Oct. - 3 Nov. 1988; sponsored by NASA, Conference held in Inst. of Environmental Sciences, AIAA, and the American Society for Testing and Materials

(NASA-CP-3015; REPT-88B0253; NAS 1.55:3015) Avail: NTIS HC A21/MF A03 CSCL 22B

COMMUNICATION SATELLITES, CONFERENCES, HEAT TRANSFER, RADIATION DAMAGE, SOLAR SIMULATORS, SPACE ENVIRONMENT SIMULATION, SPACE SIMULATORS, SPACE STATIONS, SPACECRAFT CONTAMINATION, THERMAL CONTROL COATINGS

N89-18522\* National Aeronautics and Space Administration, Washington, DC.

SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 7)

Dec. 1988 289 p

(NASA-SP-7056(07); NAS 1.21:7056(07)) Avail: NTIS HC A13 CSCL 22B

This bibliography lists 1,158 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1988 and June 30, 1988. Its purpose is to provide helpful information to researchers. designers and managers engaged in Space Station technology development and mission design. Coverage includes documents that define major systems and subsystems related to structures

## **18 SPACECRAFT DESIGN, TESTING AND PERFORMANCE**

and dynamic control, electronics and power supplies, propulsion, and payload integration. In addition, orbital construction methods, servicing and support requirements, procedures and operations, and missions for the current and future Space Station are included. Author

**N89-26037\*** National Aeronautics and Space Administration, Washington, DC.

#### TECHNOLOGY FOR LARGE SPACE SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 20) Jun. 1989 183 p

(NASA-SP-7046(20); NAS 1.21:7046(20)) Avail: NTIS HC A09 CSCL 22B

This bibliography lists 694 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between July, 1988 and December, 1988. Its purpose is to provide helpful information to the researcher or manager engaged in the development of technologies related to large space systems. Subject areas include mission and program definition, design techniques, structural and thermal analysis, structural dynamics and control systems, electronics, advanced materials, assembly concepts, and propulsion. Author

**N90-21062\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## NASA/DOD CONTROLS-STRUCTURES INTERACTION TECHNOLOGY 1989

JERRY R. NEWSOM, comp. Washington Aug. 1989 543 p Conference held in San Diego, CA, 29 Jan. - 2 Feb. 1989; sponsored by NASA Langley Research Center, Hampton, VA and Wright Research Development Center, Wright-Patterson AFB, OH (NASA-CP-3041; L-16602; NAS 1.55:3041) Avail: NTIS HC A23/MF A03 CSCL 22B

CONFERENCES, CONTROL SYSTEMS DESIGN, FLEXIBLE BODIES, GROUND TESTS, LARGE SPACE STRUCTURES, MATHEMATICAL MODELS, STRUCTURAL DESIGN, SYSTEMS ENGINEERING

**N90-25171\*** National Aeronautics and Space Administration, Washington, DC.

# SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 10)

Jun. 1990 352 p

(NASA-SP-7056(10); NAS 1.21:7056(10)) Avail: NTIS HC A16 CSCL 22B

This bibliography lists 1,422 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1989 and December 31, 1989. Its purpose is to provide helpful information to researchers, designers and managers engaged in Space Station technology development and mission design. Coverage includes documents that define major systems and subsystems related to structures and dynamic control, electronics and power supplies, propulsion, and payload integration. In addition, orbital construction methods, servicing and support requirements, procedures and operations, and missions for the current and future Space Station are included. Author

**N90-26056\*** National Aeronautics and Space Administration, Washington, DC.

## TECHNOLOGY FOR LARGE SPACE SYSTEMS: A

BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 22) Jul. 1990 274 p

(NASA-SP-7046(22); NAS 1.21:7046(22)) Avail: NTIS HC A12 CSCL 22B

This bibliography lists 1077 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between July 1, 1989 and December 31, 1989. Its purpose is to provide helpful information to the researcher or manager engaged in the development of technologies related to large space systems. Subject areas include mission and program definition, design techniques, structural and thermal analysis, structural dynamics and control systems, electronics, advanced materials, assembly concepts, and propulsion. Author

N90-27738\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. THERMAL-DISTORTION ANALYSIS OF AN ANTENNA STRONGBACK FOR GEOSTATIONARY HIGH-FREQUENCY MICROWAVE APPLICATIONS JEFFREY T. FARMER, DEBORAH M. WAHLS, and ROBERT L. WRIGHT Washington Sep. 1990 22 p (NASA-TP-3016; L-16739; NAS 1.60:3016) Avail: NTIS HC A03/MF A01 CSCL 22A ANTENNA DESIGN, GEOSYNCHRONOUS ORBITS,

ANTENNA DESIGN, GEOSTNCHRONOUS ORBITS, MICROWAVE ANTENNAS, MICROWAVE SOUNDING, STRUCTURAL ANALYSIS, SYNCHRONOUS PLATFORMS, THERMAL ENVIRONMENTS

## 20

### SPACECRAFT PROPULSION AND POWER

Includes main propulsion systems and components, e.g., rocket engines; and spacecraft auxiliary power sources.

N87-20380\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

## SOLAR ARRAY FLIGHT EXPERIMENT/DYNAMIC

AUGMENTATION EXPERIMENT LEIGHTON E. YOUNG and HOMER C. PACK, JR.

LEIGHTON E. YOUNG and HOMER C. PACK, JR. Feb. 1987 72 p

(NASA-TP-2690; NAS 1.60:2690) Avail: NTIS HC A04/MF A01 CSCL 10A

LARGE SPACE STRUCTURES, SOLAR ARRAYS, SOLAR DYNAMIC POWER SYSTEMS, SPACE ERECTABLE STRUCTURES, SPACE SHUTTLE PAYLOADS

**N87-20381\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### EXPERIMENTAL THRUST PERFORMANCE OF A HIGH-AREA-RATIO ROCKET NOZZLE

ALBERT J. PAVLI, KENNETH J. KACYNSKI, and TAMARA A. SMITH Apr. 1987 16 p Presented at the 23rd JANNAF Combustion Meeting, Hampton, Va., 20-24 Oct. 1986 (NASA-TP-2720; E-3236-1; NAS 1.60:2720) Avail: NTIS HC

A03/MF A01 CSCL 21H

AREA, NOZZLE GEOMETRY, ROCKET NOZZLES, ROCKET THRUST

**N87-22766\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

## STRUCTURAL INTEGRITY AND DURABILITY OF REUSABLE SPACE PROPULSION SYSTEMS

1987 205 p Conference held in Cleveland, Ohio, 12-13 May 1987

(NASA-CP-2471; E-3512; NAS 1.55:2471) Avail: NTIS HC A10/MF A02 CSCL 21H

AEROTHERMODYNAMICS, CONFERENCES, DURABILITY, DYNAMIC STRUCTURAL ANALYSIS, FATIGUE (MATERIALS), FRACTURE MECHANICS, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT PROPULSION, STRUCTURAL RELIABILITY

**N87-25423\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

COMPARISON OF THÉORETICAL AND EXPERIMENTAL THRUST PERFORMANCE OF A 1030:1 AREA RATIO ROCKET NOZZLE AT A CHAMBER PRESSURE OF 2413 KN/M2 (350 PSIA)

TAMARA A. SMITH, ALBERT J. PAVLI, and KENNETH J. KACYNSKI 1987 25 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif., 29 Jun. - 2 Jul. 1987; sponsored

## 23 CHEMISTRY AND MATERIALS (GENERAL)

by AIAA, SAE, ASME and ASEE

(NASA-TP-2725; E-3523; NAS 1.60:2725; AIAA-87-2069) Avail: NTIS HC A03/MF A01 CSCL 21H

ENGINE TESTS, PREDICTIONS, ROCKET NOZZLES, ROCKET THRUST

N87-25424\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### EXPERIMENTAL EVALUATION OF HEAT TRANSFER ON A **1030:1 AREA RATIO ROCKET NOZZLE**

KENNETH J. KACYNSKI, ALBERT J. PAVLI, and TAMARA A. SMITH Aug. 1987 28 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif., 29 Jun. - 2 Jul. 1987; sponsored by AIAA, SAE, ASME and ASEE

(NASA-TP-2726; E-3558; NAS 1.60:2726; AIAA-87-2070) Avail: NTIS HC A03/MF A01 CSCL 21H

EXHAUST NOZZLES, HEAT FLUX, HEAT TRANSFER, NOZZLE FLOW, ROCKET NOZZLES, WALL TEMPERATURE

N87-25425\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ANALYSIS OF QUASI-HYBRID SOLID ROCKET BOOSTER CONCEPTS FOR ADVANCED EARTH-TO-ORBIT VEHICLES ROBERT L. ZURAWSKI and DOUGLAS C. RAPP (Sverdrup Technology, Inc., Cleveland, Ohio.) Aug. 1987 32 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif. 29 Jun. - 2 Jul. 1987; sponsored by AIAA, SAE, ASME and ASEE (NASA-TP-2751; E-3554; NAS 1.60:2751; AIAA-87-2082) Avail:

NTIS HC A03/MF A01 CSCL 21H FEASIBILITY ANALYSIS, HYBRID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE BOOSTERS

N88-12538\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

COMPATABILITY OF DISPERSION-STRENGTHENED PLATINUM WITH RESISTOJET PROPELLANTS

MARGARET V. WHALEN and MICHAEL V. NATHAL Oct. 1987 29 p

(NASA-TP-2765; E-3738; NAS 1.60:2765) Avail: NTIS HC A03/MF A01 CSCL 21H

COMPATIBILITY, DISPERSING, PLATINUM, PRECIPITATION HARDENING, RESISTOJET ENGINES, ROCKET PROPELLANTS

National Aeronautics and Space Administration. N89-12626\*# Marshall Space Flight Center, Huntsville, AL.

ADVANCED EARTH-TO-ORBIT PROPULSION TECHNOLOGY 1986, VOLUME 2

R. J. RICHMOND, ed. and S. T. WU, ed. (Alabama Univ., Oct. 1986 775 p Conference held in Huntsville, Huntsville.) Ala., 13-15 May 1986

(NASA-CP-2437-VOL-2; M-541-VOL-2; NAS 1.55:2437-VOL-2) Avail: NTIS HC A99/MF E06 CSCL 21H

BEARINGS, BOOSTER ROCKET ENGINES, CONFERENCES, FRACTURE MECHANICS, FUEL COMBUSTION, HYDROGEN EMBRITTLEMENT, HYDROGEN OXYGEN ENGINES, METAL FATIGUE, PROPULSION SYSTEM CONFIGURATIONS, ROCKET DESIGN, SPACE SHUTTLE MAIN ENGINE, ENGINE SPACECRAFT PROPULSION

N89-15979\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

HIGH-PRESSURE CALORIMETER CHAMBER TESTS FOR LIQUID OXYGEN/KEROSENE (LOX/RP-1) ROCKET COMBUSTION

PHILIP A. MASTERS, ELIZABETH S. ARMSTRONG, and HAROLD G. PRICE Dec. 1988 18 p (NASA-TP-2862; E-2645; NAS 1.60:2862) Avail: NTIS HC

A03/MF A01 CSCL 21H

CALORIMETERS, COMBUSTION CHAMBERS, HIGH PRESSURE, KEROSENE, LIQUID OXYGEN, OXYGEN-HYDRO-CARBON ROCKET ENGINES, RP-1 ROCKET PROPELLANTS

N90-10140\*# National Aeronautics and Space Administration. Lanaley Research Center, Hampton, VA.

SECOND BEAMED SPACE-POWER WORKSHOP

439 p RUSSELL J. DEYOUNG, ed. Washington Jul. 1989 Workshop held in Hampton, VA, 28 Feb. - 2 Mar. 1989 (NASA-CP-3037; L-16590; NAS 1.55:3037) Avail: NTIS HC A19/MF A03 CSCL 10B

CONFERENCES, ENERGY CONVERSION, LASER POWER BEAMING, LASER PROPULSION, LUNAR BASES, MICROWAVE POWER BEAMING, SATELLITE POWER TRANSMISSION, SOLAR POWER SATELLITES, SPACECRAFT POWER SUPPLIES, SPACECRAFT PROPULSION

N90-21795\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

FREE-SPACE POWER TRANSMISSION

Washington Nov. 1989 189 p Workshop held in Cleveland, OH, 29-30 Mar. 1988

(NASA-CP-10016; E-4161; NAS 1.55:10016) Avail: NTIS HC A09/MF A02 CSCL 10B

CONFERENCES, CYCLOTRON RESONANCE DEVICES, FREE ELECTRON LASERS, INFLATABLE STRUCTURES, POWER TRANSMISSION, SOLAR-PUMPED LASERS

N90-28611\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

#### ADVANCED EARTH-TO-ORBIT PROPULSION TECHNOLOGY 1988, VOLUME 1

ROBERT J. RICHMOND, ed. and S. T. WU, ed. (Alabama Univ., Huntsville.) Washington Sep. 1988 775 p Conference held in Huntsville, AL, 10-12 May 1988

(NASA-CP-3012-VOL-1; M-593-VOL-1; NAS 1.55:3012-VOL-1) Avail: NTIS HC A99/MF E06 CSCL 21H

CONFERENCES, LIQUID PROPELLANT ROCKET ENGINES, LIQUID ROCKET PROPELLANTS, OXYGEN-HYDROCARBON ROCKET ENGINES, PROPULSION SYSTEM PERFORMANCE, TRANSFER ORBITS

## 23

## **CHEMISTRY AND MATERIALS (GENERAL)**

N87-18611\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SPECTROSCOPIC COMPARISON OF EFFECTS OF ELECTRON **RADIATION ON MECHANICAL PROPERTIES OF TWO** POLYIMIDES

EDWARD R. LONG, JR. and SHEILA ANN T. LONG Apr. 1987 21 p

(NASA-TP-2663; L-16200; NAS 1.60:2663) Avail: NTIS HC A03/MF A01 CSCL 11C

DURABILITY, ELECTRON RADIATION KAPTON (TRADEMARK), RADIATION DAMAGE, TENSILE PROPERTIES

N88-12543\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. SURFACE CATALYTIC DEGRADATION STUDY OF TWO LINEAR PERFLUOROPOLYALKYLETHERS AT 345 C

WILFREDO MORALES Nov. 1987 12 p (NASA-TP-2774; E-3395; NAS 1.60:2774) Avail: NTIS HC A03/MF A01 CSCL 07A

ALKYL COMPOUNDS, CATALYSIS, DEGRADATION, ETHERS, PERFLUORO COMPOUNDS, SURFACE REACTIONS

National Aeronautics and Space Administration. N89-23528\*# Langley Research Center, Hampton, VA. NASA/SDIO SPACE ENVIRONMENTAL EFFECTS ON MATERIALS WORKSHOP, PART 1

## 23 CHEMISTRY AND MATERIALS (GENERAL)

LOUIS A. TEICHMAN, comp. and BLAND A. STEIN, comp. Washington May 1989 356 p Workshop held in Hampton, VA, 28 Jun. - 1 Jul. 1988

(NÁSA-CP-3035-PT-1; L-16575-PT-1; NAS 1.55:3035-PT-1) Avail: NTIS HC A16/MF A02 CSCL 11G

CONFERENCES, EARTH ORBITAL ENVIRONMENTS, MICROMETEOROIDS, OXYGEN ATOMS, RADIATION EFFECTS, SPACE DEBRIS, SPACECRAFT CHARGING, SPACECRAFT CONTAMINATION

**N89-23547\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

NASA/SDIO SPACE ENVIRONMENTAL EFFECTS ON MATERIALS WORKSHOP, PART 2

LOUIS A. TEICHMAN, comp. and BLAND A. STEIN, comp. Washington May 1989 253 p Workshop held in Hampton, VA, 28 Jun. - 1 Jul. 1988

(NASA-CP-3035-PT-2; L-16575-PT-2; NAS 1.55:3035-PT-2) Avail: NTIS HC A12/MF A02 CSCL 11G

EXTRATERRESTRIAL ENVIRONMENTS, MICROMETE-OROIDS, OXYGEN ATOMS, RADIATION EFFECTS, THERMAL RADIATION

**N90-24350\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### NATIONAL EDUCATORS' WORKSHOP: UPDATE 1989 STANDARD EXPERIMENTS IN ENGINEERING MATERIALS SCIENCE AND TECHNOLOGY

JAMES E. GARDNER, comp. and JAMES A. JACOBS, comp. (Norfolk State Univ., VA.) Washington May 1990 182 p Workshop held in Hampton, VA, 17-19 Oct. 1989 (NAG1-976)

(NASA-CP-3074; L-16785; NAS 1.55:3074) Avail: NTIS HC A09/MF A02 CSCL 07A

COMPUTER ASSISTED INSTRUCTION, CONFERENCES, DECISION MAKING, EDUCATION, ELECTROCHEMISTRY, EXPERIMENT DESIGN, FIBER COMPOSITES, MANUFACTUR-ING, NASA PROGRAMS, PLASTICS, PROCESS CONTROL (INDUSTRY), RESEARCH AND DEVELOPMENT, TECHNOL-OGIES, THERMAL CONDUCTIVITY

**N90-26075\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# PROCEEDINGS OF THE LDEF MATERIALS DATA ANALYSIS WORKSHOP

BLAND A. STEIN, comp. and PHILIP R. YOUNG, comp. Jul. 1990 289 p Workshop held at Cocoa Beach, FL, 13-14 Feb. 1990

(NASA-CP-10046; NAS 1.55:10046) Avail: NTIS HC A13/MF A02 CSCL 07A

CONFERENCES, DATA BASES, ENVIRONMENT EFFECTS, LIFE (DURABILITY), LONG DURATION EXPOSURE FACILITY, SPACEBORNE EXPERIMENTS, SPACECRAFT CONSTRUCTION MATERIALS

## 24

### COMPOSITE MATERIALS

Includes physical, chemical, and mechanical properties of laminates and other composite materials.

**N87-10184\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## EFFECTS OF THERMAL CYCLING ON

**GRAPHIE-FIBER-REINFORCED 6061 ALUMINUM** 

G. A. DRIES (PRC Kentron, Inc., Hampton, Va.) and S. S. TOMPKINS Oct. 1986 29 p (NASA-TP-2612; L-16139; NAS 1.60:2612) Avail: NTIS HC A03/MF A01 CSCL 11D ALUMINUM GRAPHITE COMPOSITES, CARBON FIBERS, METAL MATRIX COMPOSITES, REINFORCING FIBERS, SPACECRAFT STRUCTURES, THERMAL CYCLING TESTS

**N87-25435\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### PRELIMINARY STRUCTURAL DESIGN OF COMPOSITE MAIN ROTOR BLADES FOR MINIMUM WEIGHT

MARK W. NIXON Jul. 1987 28 p Prepared in cooperation with Army Aviation Research and Development Command, Hampton, Va.

(DA PROJ. 1L1-62209-AH-76)

(NASA-TP-2730; L-16310; NAS 1.60:2730; AVSCOM-TM-87-B-6; AD-A180364) Avail: NTIS HC A03/MF A01 CSCL 11/4

BLADES, COMPOSITE MATERIALS, DYNAMIC STRUCTURAL ANALYSIS, HELICOPTERS, ROTORS, WEIGHT REDUCTION

**N87-29612\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE ACEE PROGRAM AND BASIC COMPOSITES RESEARCH AT LANGLEY RESEARCH CENTER (1975 TO 1986): SUMMARY AND BIBLIOGRAPHY

## MARVIN B. DOW Oct. 1987 147 p

(NASA-RP-1177; L-16290; NAS 1.61:1177) Avail: NTIS HC A07/MF A01 CSCL 11D

Composites research conducted at the Langley Research Center during the period from 1975 to 1986 is described, and an annotated bibliography of over 600 documents (with their abstracts) is presented. The research includes Langley basic technology and the composite primary structures element of the NASA Aircraft Energy Efficiency (ACEE) Program. The basic technology documents cited in the bibliography are grouped according to the research activity such as design and analysis, fatigue and fracture, and damage tolerance. The ACEE documents cover development of composite structures for transport aircraft. Author

**N88-10117\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

OUTGASSING DATA FOR SELECTING SPACECRAFT MATERIALS

WILLIAM A. CAMPBELL, JR. and RICHARD S. MARRIOTT Aug. 1987 323 p Revised

(NASA-RP-1124; REPT-87B0347; NAS 1.61:1124) Avail: NTIS HC A14/MF A02 CSCL 11D

Outgassing data, derived from tests at 398 K (125 C) for 24 hours in vacuum as per ASTM E 595-77, have been compiled for numerous materials for spacecraft use. The data presented are the total mass loss (TML) and the collected volatile condensable materials (CVCM). The various materials are listed by likely usage and alphabetically. Author

**N88-25480\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PROPERTIES OF TWO COMPOSITE MATERIALS MADE OF TOUGHENED EPOXY RESIN AND HIGH-STRAIN GRAPHITE FIBER

MARVIN B. DOW and DONALD L. SMITH (PRC Kentron, Inc., Hampton, Va.) Jul. 1988 44 p (NASA-TP-2826; L-16425; NAS 1.60:2826) Avail: NTIS HC

(NASA-TP-2826; L-16425; NAS 1.60:2826) Avail: NTIS HC A03/MF A01 CSCL 11D

COMPRESSIVE STRENGTH, EPOXY RESINS, GRAPHITE-EPOXY COMPOSITES, REINFORCING FIBERS

**N88-70029\*** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECTS OF CONTINUOUS AND CYCLIC THERMAL EXPOSURES ON BORON- AND BORSIC-REINFORCED 6061 ALUMINUM COMPOSITES

GEORGE C. OLSEN and STEPHEN S. TOMPKINS Nov. 1977 48 p

(NASA-TP-1063; L-11722; NAS 1.60:1063) Avail: NTIS ALUMINUM, BORON, BORSIC (TRADENAME), COMPOSITE MATERIALS, CYCLIC LOADS, METAL MATRIX COMPOSITES, THERMAL CYCLING TESTS

N89-19385\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. THE EFFECTS OF SIMULATED SPACE ENVIRONMENTAL

PARAMETERS OF SIMULATED SPACE ENVIRONMENTAL PARAMETERS ON SIX COMMERCIALLY AVAILABLE COMPOSITE MATERIALS

JOAN G. FUNK and GEORGE F. SYKES, JR. Apr. 1989 34 p (NASA-TP-2906; L-16549; NAS 1.60:2906) Avail: NTIS HC A03/MF A01 CSCL 11D

COMPOSITE MATERIALS, EARTH ORBITAL ENVIRONMENTS, FIBER COMPOSITES, RADIATION EFFECTS, SPACE ENVIRONMENT SIMULATION

N89-27796\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. TUNGSTEN FIBER REINFORCED COPPER MATRIX

COMPOSITES: A REVIEW

DAVID L. MCDANELS Sep. 1989 24 p

(NASA-TP-2924; E-4318; NAS 1.60:2924) Avail: NTIS HC A03/MF A01 CSCL 11D

COPPER, FIBER COMPOSITES, METAL MATRIX COMPOSITES, STRESS-STRAIN RELATIONSHIPS, TUNGSTEN

**N90-10179\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE INTERLAMINAR FRACTURE TOUGHNESS OF WOVEN GRAPHITE/EPOXY COMPOSITES

JOAN G. FUNK and JERRY W. DEATON Washington Nov. 1989 28 p

(NASA-TP-2950; L-16629; NAS 1.60:2950) Avail: NTIS HC A03/MF A01 CSCL 11D

FABRICS, FRACTURE STRENGTH, GRAPHITE-EPOXY COMPOSITES, WEAVING

**N90-16007\***# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

INSTRUMENTED IMPACT AND RESIDUAL TENSILE STRENGTH TESTING OF EIGHT-PLY CARBON EOPOXY SPECIMENS

A. T. NETTLES Jan. 1990 43 p

(NASA-TP-2981; NAS 1.60:2981) Avail: NTIS HC A03/MF A01 CSCL 11D

CARBON FIBERS, EPOXY MATRIX COMPOSITES, IMPACT STRENGTH, IMPACT TESTS

**N90-19302\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

HEAT TREATMENT STUDY OF THE SIC/TI-15-3 COMPOSITE SYSTEM Final Report

BRADLEY A. LERCH, TIMOTHY P. GABB, and REBECCA A. MACKAY Washington Jan. 1990 31 p

(NASA-TP-2970; E-4985; NAS 1.60:2970) Avail: NTIS HC A03/MF A01 CSCL 11D

AGING (METALLURGY), FIBER COMPOSITES, OXIDATION, SILICON CARBIDES, TENSILE STRENGTH, TITANATES

**N90-25198\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

LOW VELOCITY INSTRUMENTED IMPACT TESTING OF FOUR NEW DAMAGE TOLERANT CARBON/EPOXY COMPOSITE SYSTEMS

D. G. LANCE and A. T. NETTLES Jul. 1990 39 p

(NASA-TP-3029; NAS 1.60:3029) Avail: NTIS HC A03/MF A01 CSCL 11D

CARBON FIBERS, DAMAGE ASSESSMENT, EPOXY MATRIX COMPOSITES, IMPACT DAMAGE, IMPACT TESTS, LOW SPEED

**N90-26077\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

BUCKLING AND POSTBUCKLING BEHAVIOR OF SQUARE COMPRESSION-LOADED GRAPHITE-EPOXY PLATES WITH CIRCULAR CUTOUTS MICHAEL P. NEMETH Washington Aug. 1990 33 p Presented at the 8th DOD/NASA/FAA Conference on Fibrous Composites in Structural Design, Norfolk, VA, 28-30 1989

(NASA-TP-3007; L-16777; NAS 1.60:3007) Avail: NTIS HC A03/MF A01 CSCL 11D

BENDING, BUCKLING, COMPRESSION LOADS, GRAPHITE-EPOXY COMPOSITES, METAL PLATES, OPENINGS, ORTHOTROPIC PLATES

**N90-27788\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A PROTECTION AND DETECTION SURFACE (PADS) FOR DAMAGE TOLERANCE

MARK J. SHUART, CHUNCHU B. PRASAD, and SHERRILL B. BIGGERS (Lockheed Aeronautical Systems Co., Burbank, CA.) Washington Sep. 1990 21 p

(NASA-TP-3011; L-16775; NAS 1.60:3011) Avail: NTIS HC A03/MF A01 CSCL 11D AIRCRAFT STRUCTURES, COMPOSITE STRUCTURES,

AIRCRAFT STRUCTURES, COMPOSITE STRUCTURES, FAILURE, IMPACT DAMAGE, PROTECTION, TOLERANCES (MECHANICS)

N90-27792\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. AMSAHTS 1990: ADVANCES IN MATERIALS SCIENCE AND APPLICATIONS OF HIGH TEMPERATURE SUPERCONDUCTORS

YURY FLOM, ed. Washington Apr. 1990 137 p Conference held in Greenbelt, MD, 2-6 Apr. 1990

(NASA-CP-10043; REPT-90B00018; NAS 1.55:10043) Avail: NTIS HC A07/MF A02 CSCL 11D

CONFERENCES, HIGH TEMPERATURE SUPERCONDUC-TORS, REACTION KINETICS, SURFACE RACTIONS, TECHNOL-OGY UTILIZATION, THERMODYNAMIC PROPERTIES

**N90-27876\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. **AN EXAMINATION OF IMPACT DAMAGE IN** 

GLASS-PHENOLIC AND ALUMINUM HONEYCOMB CORE COMPOSITE PANELS

A. T. NETTLES, D. G. LANCE, and A. J. HODGE Aug. 1990 25 p

(NASA-TP-3042; NAS 1.60:3042) Avail: NTIS HC A03/MF A01 CSCL 11D

ALUMINUM, GLASS FIBER REINFORCED PLASTICS, GRAPHITE-EPOXY COMPOSITES, HONEYCOMB CORES, IMPACT DAMAGE, PHENOLIC RESINS, SANDWICH STRUCTURES

## 25

## INORGANIC AND PHYSICAL CHEMISTRY

Includes chemical analysis, e.g., chromatography; combustion theory; electrochemistry; and photochemistry.

**N87-18629\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ELECTRON STIMULATED DESORPTION OF ATOMIC OXYGEN FROM SILVER

R. A. OUTLAW, W. K. PEREGOY, GAR B. HOFLUND (Florida Univ., Gainesville), and GREGORY R. CORALLO Apr. 1987 25 p

(NASA-TP-2668; L-16225; NAS 1.60:2668) Avail: NTIS HC A03/MF A01 CSCL 07D

ATOMIC BEAMS, DESORPTION, ELECTRON EMISSION, OXYGEN, SILVER, STIMULATED EMISSION

## 25 INORGANIC AND PHYSICAL CHEMISTRY

N88-15846\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### AN ANALYTICAL STUDY OF THE HYDROGEN-AIR REACTION **MECHANISM WITH APPLICATION TO SCRAMJET** COMBUSTION

CASIMIR J. JACHIMOWSKI Feb. 1988 18 p

(NASA-TP-2791; L-16372; NAS 1.60:2791) Avail: NTIS HC A03/MF A01 CSCL 07D

CHEMICAL REACTIONS, HYDROGEN COMBUSTION, OXYGEN ENGINES, REACTION KINETICS, SUPERSONIC COMBUSTION RAMJET ENGINES

N88-16830\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## A RAPID METHOD FOR THE COMPUTATION OF

EQUILIBRIUM CHEMICAL COMPOSITION OF AIR TO 15000 K RAMADAS K. PRABHU (Planning Research Corp., Hampton, Va.) and WAYNE D. ERICKSON Mar. 1988 31 p

(NASA-TP-2792; L-16375; NAS 1.60:2792) Avail: NTIS HC A03/MF A01 CSCL 07D

COMPOSITION, AIR, **ATMOSPHERIC** CHEMICAL COMPOSITION, CHEMICAL EQUILIBRIUM, COMPUTATION, HIGH TEMPERATURE

## 26

## **METALLIC MATERIALS**

Includes physical, chemical, and mechanical properties of metals, e.g., corrosion; and metallurgy.

N87-16902\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

CONVENTIONALLY CAST AND FORGED COPPER ALLOY FOR HIGH-HEAT-FLUX THRUST CHAMBERS

JOHN M. KAZAROFF and GEORGE A. REPAS Feb. 1987 12 p

(NASA-TP-2694; E-3304; NAS 1.60:2694) Avail: NTIS HC A03/MF A01 CSCL 11F

COMBUSTION CHAMBERS, COPPER ALLOYS, HEAT FLUX, HIGH TEMPERATURE, LININGS, SPACE SHUTTLE MAIN ENGINE

N87-18644\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF LID (REGISTERED) PROCESSING ON THE **MICROSTRUCTURE AND MECHANICAL PROPERTIES OF** TI-6AL-4V AND TI-6AL-2SN-4ZR-2MO TITANIUM FOIL-GAUGE MATERIALS

LINDA B. BALCKBURN Apr. 1987 27 p (NASA-TP-2677; L-16098; NAS 1.60:2677) Avail: NT/S HC A03/MF A01 CSCL 11F

BONDING, DIFFUSION, INTERFACES, LIQUIDS, MECHANICAL PROPERTIES, MICROSTRUCTURE, PROTECTIVE COATINGS, TITANIUM ALLOYS

N87-20407\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MATERIAL CHARACTERIZATION OF SUPERPLASTICALLY FORMED TITANIUM (TI-6AL-2SN-4ZR-2MO) SHEET

WILLIAM A. OSSA (PRC Kentron, Inc., Hampton, Va.) and DICK M. ROYSTER 1987 38 p

(NASA-TP-2674; L-16115; NAS 1.60:2674) Avail: NTIS HC A03/MF A01 CSCL 11F

AEROSPACE INDUSTRY, SUPERPLASTICITY, TENSILE CREEP. TITANIUM ALLOYS

N87-21076\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THE CORROSION MECHANISMS FOR PRIMER COATED 2219-T87 ALUMINUM

MERLIN D. DANFORD and WARD W. KNOCKEMUS (Huntingdon Coll., Montgomery, Ala.) Apr. 1987 25 p (NASA-TP-2715; M-559; NAS 1.60:2715) Avail: NTIS HC

A03/MF A01 CSCL 11F

ALUMINUM ALLOYS, CORROSION RESISTANCE, PRIMERS (COATINGS), PROTECTIVE COATINGS

N87-25463\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

HYDROGEN TRAPPING AND THE INTERACTION OF HYDROGEN WITH METALS

MERLIN D. DANFORD Jul. 1987 36 p

(NASA-TP-2744; NAS 1.60:2744) Avail: NTIS HC A03/MF A01 ĊSCL 11F

CRYSTAL LATTICES, GAS-METAL INTERACTIONS, HYDROGEN, TRAPPING

N87-27024\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

PERMEATION OF OXYGEN THROUGH HIGH PURITY, LARGE **GRAIN SILVER** 

R. A. OUTLAW, W. K. PEREGOY, and GAR B. HOFLUND (Florida Univ., Gainesville.) Sep. 1987 19 p (NASA-TP-2755; L-16305; NAS 1.60:2755) Avail: NTIS HC

A03/MF A01 CSCL 11F

GRAIN BOUNDARIES, OXYGEN, PERMEATING, PURITY, SILVER

N89-10996\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

INDENTATION PLASTICITY AND FRACTURE IN SILICON

GEORGE C. RYBICKI and P. PIROUZ (Case Western Reserve Univ., Cleveland, Ohio.) Nov. 1988 30 p

(NASA-TP-2863; E-4184; NAS 1.60:2863) Avail: NTIS HC A03/MF A01 CSCL 11B

CRYSTAL DISLOCATIONS, DOPED CRYSTALS, FRACTURE STRENGTH, HARDNESS, PLASTIC PROPERTIES, SILICON, SINGLE CRYSTALS, TRANSITION TEMPERATURE

N89-17650\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SECONDARY ELECTRON EMISSION CHARACTERISTICS OF UNTREATED AND ION-TEXTURED TITANIUM

ARTHUR N. CURREN, KENNETH A. JENSEN, and GARY A. BLACKFORD (Case Western Reserve Univ., Cleveland, OH.) Mar. 1989 16 p

(NASA-TP-2902; E-4495; NAS 1.60:2902) Avail: NTIS HC A03/MF A01 CSCL 11F

ELECTRON EMISSION, MACHINING, ION PLATING, SECONDARY EMISSION, SURFACE FINISHING, TITANIUM

N89-19406'# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

AN ELECTROCHEMICAL STUDY OF CORROSION

PROTECTION BY PRIMER-TOPCOAT SYSTEMS ON 4130 STEEL WITH AC IMPEDANCE AND DC METHODS

M. J. MENDREK, R. H. HIGGINS, and M. D. DANFORD May 1988 56 p

(NASA-TP-2820; NAS 1.60:2820) Avail: NTIS HC A04/MF A01 CSCL 11F

ALTERNATING CURRENT, DIRECT CURRENT. ELECTROCHEMICAL CORROSION, IMPEDANCE. METAL SURFACES, PRIMERS (COATINGS), PROTECTIVE COATINGS, STAINLESS STEELS

N89-26976\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

STRESS CORROSION STUDY OF PH13-8MO STAINLESS STEEL USING THE SLOW STRAIN RATE TECHNIQUE

## 27 NONMETALLIC MATERIALS

PABLO D. TORRES Washington Jul. 1989 32 p (NASA-TP-2934; NAS 1.60:2934) Avail: NTIS HC A03/MF A01 CSCL 11F

AGING (METALLURGY), SALT SPRAY TESTS, STAINLESS STEELS, STRAIN RATE, STRESS CORROSION CRACKING

**N90-10248\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EMITTANCE, CATALYSIS, AND DYNAMIC OXIDATION OF TI-14AL-21NB

K. E. WIEDEMANN, R. K. CLARK, and S. N. SANKARAN (Analytical Services and Materials, Inc., Hampton, VA.) 1989 1 p Presented at the 1988 Annual Meeting of TMS AIME, Phoenix, AZ, Jan. 1988

(NASA-TP-2955; L-16606; NAS 1.60:2955) PREVIEW CSCL 11F

ALUMINUM ALLOYS, CATALYSIS, EMITTANCE, NIOBIUM ALLOYS, OXIDATION, OXIDATION RESISTANCE, TITANIUM ALLOYS

**N90-15211\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SECONDARY ELECTRON EMISSION CHARACTERISTICS OF MOLYBDENUM-MASKED, ION-TEXTURED OFHC COPPER ABTHUR AL CURRENT KENNETH A UNION and DOPERT

ARTHUR N. CURREN, KENNETH A. JENSEN, and ROBERT F. ROMAN Jan. 1990 15 p (NASA-TP-2967; E-5009; NAS 1.60:2967) Avail: NTIS HC

(NASA-TP-2967; E-5009; NAS 1.60:2967) Avail: NTIS HC A03/MF A01 CSCL 11F

COPPER, ELECTRON BOMBARDMENT, MOLYBDENUM, SECONDARY EMISSION, TRAVELING WAVE TUBES

**N90-25206\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

OXIDATION CHARACTERISTICS OF TI-14AL-21NB INGOT ALLOY

SANKARA N. SANKARAN, RONALD K. CLARK, JALAIAH UNNAM, and KARL E. WIEDEMANN (Analytical Services and Materials, Inc., Hampton, VA.) Washington Jul. 1990 24 p (NASA-TP-3012; L-16658; NAS 1.60:3012) Avail: NTIS HC

(NASA-1P-3012; L-16658; NAS 1.60:3012) Avail: NTIS HC A03/MF A01 CSCL 11F

ALUMINUM OXIDES, INGOTS, NIOBIUM ALLOYS, OXIDATION, REACTION KINETICS, TEMPERATURE EFFECTS, TITANIUM ALLOYS

## 27

#### NONMETALLIC MATERIALS

Includes physical, chemical, and mechanical properties of plastics, elastomers, lubricants, polymers, textiles, adhesives, and ceramic materials.

**N87-12680\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INVESTIGATION OF THE EFFECTS OF COBALT IONS ON EPOXY PROPERTIES

J. J. SINGH and D. M. STOAKLEY Dec. 1986 16 p (NASA-TP-2639; L-16196; NAS 1.60:2639) Avail: NTIS HC A03/MF A01 CSCL 11G

COBALT, EPOXY RESINS, INVESTIGATION, IONS, MECHANICAL PROPERTIES

**N87-18666\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. ESTER OXIDATION ON AN ALUMINUM SURFACE USING

CHEMILUMINESCENCE WILLIAM R. JONES, JR., MICHAEL A. MEADOR, and WILFREDO MORALES Jul. 1986 16 p (NASA-TP-2611; E-2647; NAS 1.60:2611) Avail: NTIS HC A03/MF A01 CSCL 11B ALUMINUM ALLOYS, CHEMILUMINESCENCE, ESTERS, METAL SURFACES, OXIDATION

**N87-20423\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

MICROGRAVITY CRYSTALLIZATION OF MACROMOLECULES: AN INTERIM REPORT AND PROPOSAL FOR CONTINUED RESEARCH

BENJAMIN E. GOLDBERG Dec. 1986 26 p

(NASA-TP-2671; NAS 1.60:2671) Avail: NTIS HC A03/MF A01 CSCL 20B

MOLECULES, POLYMER CHEMISTRY, RECRYSTALLIZA-TION, REDUCED GRAVITY

**N88-23872\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

STRUCTURAL CERAMICS

May 1986 226 p Workshop held in Cleveland, Ohio, 20-21 May 1986 Sponsored by NASA, Washington

(NASA-CP-2427; E-3063; NAS 1.55:2427) Avail: NTIS HC A11/MF A02 CSCL 11B

CERAMICS, CONFERENCES, CORROSION, FRACTURE MECHANICS, NONDESTRUCTIVE TESTS, POLYMER CHEMISTRY, TRIBOLOGY

**N89-13642\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

THERMAL BARRIER COATINGS. ABSTRACTS AND FIGURES 1985 220 p Workshop held in Cleveland, Ohio, 21-22 May 1985

(NASA-CP-10019; E-4425; NAS 1.55:10019) Avail: NTIS HC A10/MF A02 CSCL 11C

BARRIER LAYERS, CONFERENCES, FAILURE ANALYSIS, GAS TURBINES, LIFE (DURABILITY), MATHEMATICAL MODELS, NONDESTRUCTIVE TESTS, PLASMA SPRAYING, THERMAL CONTROL COATINGS

**N89-21103\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DEGRADATION AND CROSSLINKING OF PERFLUOROALKYL POLYETHERS UNDER X-RAY IRRADIATION IN ULTRAHIGH VACUUM

SHIGEYUKI MORI (National Academy of Sciences - National Research Council, Washington, DC.) and WILFREDO MORALES Mar. 1989 15 p Prepared in cooperation with Iwate Univ., Morioka (Japan)

(NASA-TP-2910; E-4500; NAS 1.60:2910) Avail: NTIS HC A03/MF A01 CSCL 11B

CROSSLINKING, PHOTOELECTRON SPECTROSCOPY, POLYETHER RESINS, RADIATION EFFECTS

**N89-25332\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ABSORBED DOSE THRESHOLDS AND ABSORBED DOSE RATE LIMITATIONS FOR STUDIES OF ELECTRON RADIATION EFFECTS ON POLYETHERIMIDES

EDWARD R. LONG, JR., SHEILA ANN T. LONG, STEPHANIE L. GRAY, and WILLIAM D. COLLINS (Old Dominion Univ., Norfolk, VA.) Washington Aug. 1989 22 p

VA.) Washington Aug. 1989 22 p (NASA-TP-2928; L-16585; NAS 1.60:2928) Avail: NTIS HC A03/MF A01 CSCL 11C

ELECTRON RADIATION, POLYETHER RESINS, POLYIMIDE RESINS, RADIATION ABSORPTION, RADIATION DOSAGE, RADIATION EFFECTS

**N89-26091\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

REACTION OF PERFLUOROALKYLPOLYETHERS (PFPE) WITH 440C STEEL IN VACUUM UNDER SLIDING CONDITIONS AT ROOM TEMPERATURE

SHIGEYUKI MORI (Iwate Univ., Morioka, Japan ) and WILFREDO MORALES Jan. 1989 12 p (NASA-TP-2883; E-4209; NAS 1.60:2883) Avail: NTIS HC A03/MF A01 CSCL 07D

## 29 MATERIALS PROCESSING

ALKYL COMPOUNDS, PERFLUORO COMPOUNDS. POLYETHER RESINS, SLIDING FRICTION, STAINLESS STEELS, VACUUM EFFECTS

## 29

## MATERIALS PROCESSING

Includes space-based development of products and processes for commercial applications.

N87-21141\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

MICROGRAVITY FLUID MANAGEMENT SYMPOSIUM

Apr. 1987 225 p Symposium held in Cleveland, Ohio, 9-10 Sep. 1986

(NASA-CP-2465; E-3386; NAS 1.55:2465) Avail: NTIS HC A10/MF A02 CSCL 22A

AEROSPACE ENVIRONMENTS, CONFERENCES, FLUID MANAGEMENT, WEIGHTLESSNESS

N88-10977\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

PREPARATIVE ELECTROPHORESIS FOR SPACE PERCY H. RHODES and ROBERT S. SNYDER Oct. 1987 15 p

(NASA-TP-2777; NAS 1.60:2777) Avail: NTIS HC A03/MF A01 CSCL 22A

CONVECTIVE FLOW. ELECTROHYDRODYNAMICS, ELECTROKINETICS, ELECTROPHORESIS, TEMPERATURE EFFECTS

N88-10978\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

CONTINUOUS FLOW ELECTROPHORESIS SYSTEM **EXPERIMENTS ON SHUTTLE FLIGHTS STS-6 AND STS-7** 

ROBERT S. SNYDER, PERCY H. RHODES, and TERESA Y. MILLER Oct. 1987 17 p

(NASA-TP-2778; NAS 1.60:2778) Avail: NTIS HC A03/MF A01 CSCL 22A

CONVECTIVE FLOW, ELECTRICAL RESISTIVITY. ELECTRODYNAMICS, ELECTROPHORESIS, GRAVITATIONAL EFFECTS

N88-14212\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

**GROWTH OF SOLID SOLUTION SINGLE CRYSTALS** S. L. LEHOCZKY and F. R. SZOFRAN Dec. 1987 18 p

(NASA-TP-2787; NAS 1.60:2787) Avail: NTIS HC A03/MF A01 CSCL 20B

CRYSTAL GROWTH, MERCURY CADMIUM TELLURIDES, SINGLE CRYSTALS, SOLID SOLUTIONS, THERMOPHYSICAL PROPERTIES

N88-23895\*# National Aeronautics and Space Administration, Washington, DC.

#### NONCONTACT TEMPERATURE MEASUREMENT

MARK C. LEE, ed. Mar. 1988 429 p Workshop held in Washington, D.C., 30 Apr. - 1 May 1987

(NASA-CP-2503; NAS 1.55:2503) Avail: NTIS HC A19/MF A03 CSCL 12A

CONFERENCES, INFRARED RADIOMETERS, OPTICAL PYROMETERS, RADIATION PYROMETERS, TEMPERATURE MEASUREMENT, TEMPERATURE MEASURING INSTRUMENTS

N89-17682\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

**MICROGRAVITY COMBUSTION DIAGNOSTICS WORKSHOP** GILBERT J. SANTORO, ed., PAUL S. GREENBERG, ed., and NANCY D. PILTCH, ed. 1988 47 p Workshop held in Cleveland, OH, 28-29 Jul. 1987 (NASA-CP-10017; E-4213; NAS 1.55:10017) Avail: NTIS HC A03/MF A01 CSCL 22A COMBUSTION PHYSICS, CONFERENCES, DIAGNOSIS, REDUCED GRAVITY

## 31

## **ENGINEERING (GENERAL)**

Includes vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.

N87-22870\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

MODELING DIGITAL CONTROL SYSTEMS WITH MA-PREFILTERED MEASUREMENTS

MICHAEL E. POLITES Jun. 1987 23 p (NASA-TP-2732; NAS 1.60:2732) Avail: NTIS HC A03/MF A01 CSCL 13H

CONTROL SYSTEMS DESIGN, DIGITAL FILTERS, DIGITAL SYSTEMS, STATE VECTORS, SYSTEMS ENGINEERING

National Aeronautics and Space Administration. N87-24585\*# Marshall Space Flight Center, Huntsville, AL

A NEW APPROACH TO STATE ESTIMATION IN

DETERMINISTIC DIGITAL CONTROL SYSTEMS

MICHAEL E. POLITES Jul. 1987 16 p

(NASA-TP-2745; NAS 1.60:2745) Avail: NTIS HC A03/MF A01 CSCL 09B

CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, STATE **ESTIMATION** 

N87-27067\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

EXACT STATE RECONSTRUCTION IN DETERMINISTIC DIGITAL CONTROL SYSTEMS

MICHAEL E. POLITES Aug. 1987 19 p (NASA-TP-2757; NAS 1.60:2757) Avail: NTIS HC A03/MF A01 CSCL 13H

DIGITAL COMMAND SYSTEMS, STATE ESTIMATION, STATE VECTORS

N88-17869\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

A GENERALIZED METHOD FOR AUTOMATIC DOWNHAND AND WIREFEED CONTROL OF A WELDING ROBOT AND POSITIONER

KEN FERNANDEZ and GEORGE E. COOK (Vanderbilt Univ., Nashville, Tenn.) Feb. 1988 54 p

(NASA-TP-2807; NAS 1.60:2807) Avail: NTIS HC A04/MF A01 CSCL 13H

ARC WELDING, COMPUTER AIDED DESIGN, COMPUTER MANUFACTURING, PROGRAM VERIFICATION AIDED (COMPUTERS), ROBOT CONTROL, ROBOTICS, ROBOTS

N88-18751\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

FURTHER DEVELOPMENTS IN EXACT STATE **RECONSTRUCTION IN DETERMINISTIC DIGITAL CONTROL** SYSTEMS

MICHAEL E. POLITES Mar. 1988 19 p

(NASA-TP-2812; NAS 1.60:2812) Avail: NTIS HC A03/MF A01 CSCL 13B

CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS. STATE, EQUATIONS OF RECONSTRUCTION, STATE **ESTIMATION** 

## 32 COMMUNICATIONS AND RADAR

N88-28177\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. MORE ON EXACT STATE RECONSTRUCTION IN

DETERMINISTIC DIGITAL CONTROL SYSTEMS

MICHAEL E. POLITES Sep. 1988 21 p (NASA-TP-2847; NAS 1.60:2847) Avail: NTIS HC A03/MF A01 CSCL 13B

CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, PLANT DESIGN, RECONSTRUCTION, STATE ESTIMATION

N89-24507\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. FURTHER DEVELOPMENTS IN MODELING DIGITAL

CONTROL SYSTEMS WITH MA-PREFILTERED MEASUREMENTS

MICHAEL E. POLITES Washington Mar. 1989 20 p (NASA-TP-2909; M-612; NAS 1.60:2909) Avail: NTIS HC A03/MF A01 CSCL 13B

ACCELEROMETERS, CONTROL SYSTEMS DESIGN, DIGITAL FILTERS. DIGITAL SYSTEMS, GYROSCOPES, STAR TRACKERS

N89-27039\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

A NEW STATE RECONSTRUCTOR FOR DIGITAL CONTROLS SYSTEMS USING WEIGHTED-AVERAGE MEASUREMENTS MICHAEL E. POLITES Washington Aug. 1989 17 p (NASA-TP-2936; M-615; NAS 1.60:2936) Avail: NTIS HC A03/MF A01 CSCL 09B

CONTROL SYSTEMS DESIGN, DIGITAL TECHNIQUES, RECONSTRUCTION, STATE ESTIMATION

N90-16968\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AN AUGER ELECTRON SPECTROSCOPY STUDY OF SURFACE-PREPARATION CONTAMINANTS

D. WU (Old Dominion Univ., Norfolk, VA.), R. M. STEPHENS, R. A. OUTLAW, and P. HOPSON Washington Feb. 1990 16 p (NASA-TP-2972; L-16653; NAS 1.60:2972) Avail: NTIS HC A03/MF A01 CSCL 13B

AUGER SPECTROSCOPY, CLEANING, CONTAMINANTS, ELECTRON SPECTROSCOPY, ELECTROPOLISHING, SURFACE FINISHING

N90-21210\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

INFLUENCE OF THE DEPOSITION CONDITIONS ON **RADIOFREQUENCY MAGNETRON SPUTTERED MOS2 FILMS** PIERRE A. STEINMANN and TALIVALDIS SPALVINS Apr. 1990 11 p

(NASA-TP-2994; E-5181; NAS 1.60:2994) Avail: NTIS HC A03/MF A01 CSCL 13B

DEPOSITION, LUBRICANTS, MAGNETRON SPUTTERING, MORPHOLOGY, RADIO FREQUENCIES, STOICHIOMETRY, THIN FILMS

National Aeronautics and Space Administration. N90-21219\*# Marshall Space Flight Center, Huntsville, AL.

A GENERAL-PURPOSE BALLOON-BORNE POINTING SYSTEM FOR SOLAR SCIENTIFIC INSTRUMENTS

M. E. POLITES Washington May 1990 22 p (NASA-TP-3013; NAS 1.60:3013) Avail: NTIS HC A03/MF A01 CSCL 13I

BALLOON-BORNE INSTRUMENTS, CONTROL SYSTEMS CONTROL SYSTEMS, POINTING SOLAR DESIGN, INSTRUMENTS, THREE AXIS STABILIZATION

N90-25255\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. ROTATING-UNBALANCED-MASS DEVICES FOR SCANNING

BALLOON-BORNE EXPERIMENTS, FREE-FLYING SPACECRAFT, AND SPACE SHUTTLE/SPACE STATION EXPERIMENTS

MICHAEL E. POLITES Jun. 1990 17 p

(NASA-TP-3030; NAS 1.60:3030) Avail: NTIS HC A03/MF A01 CSCL 14B

POINTING CONTROL SYSTEMS, ROTATING BODIES, SPACE SHUTTLES, SPACE STATION PAYLOADS, SPACE STATIONS, SPACEBORNE EXPERIMENTS

N90-28754\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

## DEVELOPMENT AND APPROACH TO LOW-FREQUENCY **MICROGRAVITY ISOLATION SYSTEMS**

CARLOS M. GRODSINSKY Washington Aug. 1990 24 p (NASA-TP-2984; E-5287; NAS 1.60:2984) Avail: NTIS HC A03/MF A01 CSCL 22A

GRAVITATIONAL EFFECTS, PAYLOADS, REDUCED GRAVITY, SPACE SHUTTLES, SPACE STATIONS, SPACEBORNE EXPERIMENTS, VIBRATION ISOLATORS

## 32

#### COMMUNICATIONS AND RADAR

Includes radar; land and global communications; communications theory; and optical communications.

N87-11916\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

PULSE CODE MODULATION (PCM) ENCODER HANDBOOK FOR AYDIN VECTOR MMP-600 SERIES SYSTEM

S. F. CURRIER and W. R. POWELL Washington, D.C. Aug. 1986 139 p

(NASA-RP-1171; NAS 1.61:1171) Avail: NTIS HC A07/MF A01 CSCL 17B

The hardware and software characteristics of a time division multiplex system are described. The system is used to sample analog and digital data. The data is merged with synchronization information to produce a serial pulse coded modulation (PCM) bit stream. Information presented herein is required by users to design compatible interfaces and assure effective utilization of this encoder system, GSFC/Wallops Flight Facility has flown approximately 50 of these systems through 1984 on sounding rockets with no inflight failures. Aydin Vector manufactures all of the components for these Author systems.

N87-12718\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

PULSE CODE MODULATION (PCM) DATA STORAGE AND ANALYSIS USING A MICROCOMPUTER

D. E. MASSEY Aug. 1986 8 p (NASA-TP-2629; REPT-822.3; NAS 1.60:2629) Avail: NTIS HC A02/MF A01 CSCL 17B

DATA PROCESSING, DATA REDUCTION, DATA STORAGE, MICROCOMPUTERS, PULSE CODE MODULATION

N87-17971\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. **BIT-ERROR-RATE TESTING OF HIGH-POWER 30-GHZ** 

TRAVELING WAVE TUBES FOR GROUND-TERMINAL APPLICATIONS

KURT A. SHALKHAUSER and GENE FUJIKAWA Oct. 1986 16 p

(NASA-TP-2635; E-2996; NAS 1.60:2635) Avail: NTIS HC A03/MF A01 CSCL 17B

BIT ERROR RATE, PERFORMANCE TESTS, TRANSMISSION EFFICIENCY, TRAVELING WAVE TUBES

N87-20448\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. UNIQUE BIT-ERROR-RATE MEASUREMENT SYSTEM FOR SATELLITE COMMUNICATION SYSTEMS

## 32 COMMUNICATIONS AND RADAR

MARY JO WINDMILLER Mar. 1987 13 p (NASA-TP-2699; E-3322; NAS 1.60:2699) Avail: NTIS HC A03/MF A01 CSCL 17B BIT ERROR RATE, COMMUNICATION NETWORKS,

SATELLITE COMMUNICATION, SYSTEMS ANALYSIS

N87-24590\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

A SYNCHRONOUS DATA ANALYZER FOR THE MINIMUM DELAY DATA FORMAT (MDDF) AND LAUNCH TRAJECTORY ACQUISITION SYSTEM (LTAS)

ANDREW J. GREEN Jul. 1987 10 p

(NASA-TP-2743; REPT-822.1; NAS 1.60:2743) Avail: NTIS HC A02/MF A01 CSCL 17B

DATA REDUCTION, LAUNCHING, SAMPLING, SYNCHRONISM, TRAJECTORY ANALYSIS

N88-14226\*# Colorado Univ., Boulder. Dept. of Electrical Engineering.

#### PROPAGATION EFFECTS ON SATELLITE SYSTEMS AT FREQUENCIES BELOW 10 GHZ: A HANDBOOK FOR SATELLITE SYSTEMS DESIGN WARREN L. FLOCK Dec. 1987 501 p

(NAS7-100; JPL-956249)

NASA-RP-1108/2; NAS 1.61:1108/2) Avail: NTIS HC A22/MF A03 CSCL 22D

Frequencies below 10 GHz continue to be used for a large portion of satellite service, and new applications, including mobile satellite service and the global positioning system, use frequencies below 10 GHz. As frequency decreases below 10 GHz, attenuation due to precipitation and gases decreases and ionospheric effects increase. Thus the ionosphere, which can be largely neglected above 10 GHz, receives major attention. Although attenuation and depolarization due to rain are less severe below 10 GHz than above, they are nevertheless still important and constitute another major topic. The handbook emphasizes the propagation effects on satellite communications but material that is pertinent to radio navigation and positioning systems and deep-space telecommunications is included as well. Chapter 1 through 7 describe the various propagation impairments, and Chapter 9 is devoted to the estimation or calculation of the magnitudes of these effects for use in system design. Chapter 10 covers link power budget equations and the role of propagation effects in these equations. Chapter 8 deals with the complex subject of interference between space and terrestrial systems. Author

#### N89-17060\*# Westinghouse Electric Corp., Baltimore, MD. PROPAGATION EFFECTS HANDBOOK FOR SATELLITE SYSTEMS DESIGN. A SUMMARY OF PROPAGATION IMPAIRMENTS ON 10 TO 100 GHZ SATELLITE LINKS WITH TECHNIQUES FOR SYSTEM DESIGN

LOUIS J. IPPOLITO Washington, DC Feb. 1989 531 p (NAS7-100; JPL-958178)

(NASA-RP-1082(04); NAS 1.61:1082(04)) Avail: NTIS HC A23/MF A03 CSCL 20N

The NASA Propagation Effects Handbook for Satellite Systems Design provides a systematic compilation of the major propagation effects experienced on space-Earth paths in the 10 to 100 GHz frequency band region. It provides both a detailed description of the propagation phenomenon and a summary of the impact of the effect on the communications system design and performance. Chapter 2 through 5 describe the propagation effects, prediction models, and available experimental data bases. In Chapter 6. design techniques and prediction methods available for evaluating propagation effects on space-Earth communication systems are presented. Chapter 7 addresses the system design process and how the effects of propagation on system design and performance should be considered and how that can be mitigated. Examples operational and planned Ku, Ka, and EHF satellite Author communications systems are given.

**N89-17767\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### UNIVERSAL TEST FIXTURE FOR MONOLITHIC MM-WAVE INTEGRATED CIRCUITS CALIBRATED WITH AN AUGMENTED TRD ALGORITHM

ROBERT R. ROMANOFSKY and KURT A. SHALKHAUSER Mar. 1989 42 p Presented at the 13th International Conference on Infrared and mm-Waves, Honolulu, Hawaii, 5-9 Dec. 1988 (NASA-TP-2875; E-3983; NAS 1.60:2875) Avail: NTIS HC A03/MF A01 CSCL 09C

ALGORITHMS, CALIBRATING, INTEGRATED CIRCUITS, MICROWAVE CIRCUITS, MILLIMETER WAVES, SOLID STATE DEVICES

**N90-11915\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### SATELLITE-MATRIX-SWITCHED, TIME-DIVISION-MULTIPLE-ACCESS NETWORK SIMULATOR

WILLIAM D. IVANCIC, MONTY ANDRO, LAWRENCE A. NAGY, JAMES M. BUDINGER, and MARY JO SHALKHAUSER Washington Oct. 1989 21 p Proposed for presentation at the 13th AIAA International Communication Satellite System Conference, 11-15 Mar. 1990

(NASA-TP-2944; E-4813; NAS 1.60:2944) Avail: NTIS HC A03/MF A01 CSCL 17B

COMMUNICATION NETWORKS, COMMUNICATION SATELLITES, SIMULATORS, TIME DIVISION MULTIPLE ACCESS

## 33

## ELECTRONICS AND ELECTRICAL ENGINEERING

Includes test equipment and maintainability; components, e.g., tunnel diodes and transistors; microminiaturization; and integrated circuitry.

N87-11072\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

THE 1985 GODDARD SPACE FLIGHT CENTER BATTERY WORKSHOP

G. MORROW, ed. Sep. 1986 427 p Workshop held in Greenbelt, Md., 19-21 Nov. 1985

(NASA-CP-2434; REPT-86B0366; NAS 1.55:2434) Avail: NTIS HC A19/MF A03 CSCL 10C

CONFERENCES, ENERGY STORAGE, LITHIUM SULFUR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES

**N87-17990\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

PERFORMANCE OF TEXTURED CARBON ON COPPER ELECTRODE MULTISTAGE DEPRESSED COLLECTORS WITH MEDIUM-POWER TRAVELING WAVE TUBES PETER RAMINS and ARTHUR N. CURREN Nov. 1986 12 p (NASA-TP-2665; E-3143; NAS 1.60:2665) Avail: NTIS HC

A03/MF A01 CSCL 09A ACCUMULATORS, CURRENT DENSITY, ELECTRODES, ELECTRON EMISSION, TRAVELING WAVE TUBES

**N87-17991\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

CALCULATION OF SECONDARY ELECTRON TRAJECTORIES IN MULTISTAGE DEPRESSED COLLECTORS FOR MICROWAVE AMPLIFIERS

DALE A. FORCE Nov. 1986 7 p (NASA-TP-2664; E-3196; NAS 1.60:2664) Avail: NTIS HC A02/MF A01 CSCL 09A

ACCUMULATORS, ELECTRON EMISSION, MICROWAVE

AMPLIFIERS, PARTICLE TRAJECTORIES, TRAVELING WAVE TUBES

**N87-20474\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DESIGN, FABRICATION AND PERFORMANCE OF SMALL, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTORS WITH 200-W, CW, 8- TO 18-GHZ TRAVELING-WAVE TUBES

BEN T. EBIHARA and PETER RAMINS Feb. 1987 22 p (NASA-TP-2693; E-3099; NAS 1.60:2693) Avail: NTIS HC A03/MF A01 CSCL 09A

ACCUMULATORS, DESIGN ANALYSIS, ELECTRODES, FABRICATION, PYROLYTIC GRAPHITE, TRAVELING WAVE TUBES

**N87-21239\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

TRAVELING-WAVE-TUBE EFFICIENCY IMPROVEMENT BY A LOW-COST TECHNIQUE FOR DEPOSITION OF CARBON ON MULTISTAGE DEPRESSED COLLECTOR

BEN T. EBIHARA, PETER RAMINS, and SHELLY PEET May 1987 14 p

(NASA-TP-2719; E-3416; NAS 1.60:2719) Avail: NTIS HC A03/MF A01 CSCL 09A

CARBON, COPPER, DEPOSITION, ELECTRODES, THIN FILMS, TRAVELING WAVE TUBES

N87-22923\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. REVISED NASA AXIALLY SYMMETRIC RING MODEL FOR

COUPLED-CAVITY TRAVELING-WAVE TUBES JEFFREY D. WILSON Jan. 1987 17 p

(NASA-TP-2675; E-3220; NAS 1.60:2675) Avail: NTIS HC A03/MF A01 CSCL 09A

AXISYMMETRIC BODIES, CAVITIES, COUPLED MODES, MODELS, RINGS, TRAVELING WAVE TUBES

**N87-25532\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ANALYTICAL AND EXPERIMENTAL PERFORMANCE OF A DUAL-MODE TRAVELING WAVE TUBE AND MULTISTAGE DEPRESSED COLLECTOR

PETER RAMINS, DALE A. FORCE, and HENRY G. KOSMAHL Aug. 1987 29  $\mbox{p}$ 

(NASA-TP-2752; E-3470; NAS 1.60:2752) Avail: NTIS HC A03/MF A01 CSCL 09A

ACCUMULATORS, ELECTRON BEAMS, TRAVELING WAVE TUBES

N88-11021\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. THE 1986 GODDARD SPACE FLIGHT CENTER BATTERY

WORKSHOP GEORGE W. MORROW, ed. and THOMAS Y. YI, ed. Sep. 1987 374 p Workshop held in Greenbelt, Md., 18-19 Nov. 1986 (NASA-CP-2486; REPT-87B0408; NAS 1.55:2486) Avail: NTIS HC A16/MF A03 CSCL 10C

CONFERENCES, ELECTROCHEMISTRY, FAILURE ANALYSIS, FLIGHT TESTS, LITHIUM SULFUR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES

**N88-15146\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

PERFORMANCE OF A SMALL, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTOR WITH A 500-W, CONTINUOUS WAVE, 4.8- TO 9.6-GHZ TRAVELING WAVE TUBE

PETER RAMINS, GARY G. LESNY, BEN T. EBIHARA, and SHELLY PEET Feb. 1988 15 p

(NASA-TP-2788; E-3800; NAS 1.60:2788) Avail: NTIS HC A03/MF A01 CSCL 09A

ACCUMULATORS, CONTINUOUS RADIATION, ELECTRODES, GRAPHITE, TRAVELING WAVE TUBES

**N89-15337\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

PERFORMANCE OF A MULTISTAGE DEPRESSED COLLECTOR WITH MACHINED TITANIUM ELECTRODES PETER RAMINS and BEN T. EBIHARA Jan. 1989 10 p (NASA-TP-2891; E-4400; NAS 1.60:2891) Avail: NTIS HC A02/MF A01 CSCL 09A ACCUMULATORS, ELECTRODES, MACHINING, PERFORMANCE TESTS, TITANIUM

N89-21169<sup>\*</sup># National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. ANALYTICAL AND EXPERIMENTAL PROCEDURES FOR

DETERMINING PROPAGATION CHARACTERISTICS OF MILLIMETER-WAVE GALLIUM ARSENIDE MICROSTRIP LINES ROBERT R. ROMANOFSKY Mar. 1989 21 p (NASA-TP-2899; E-4273; NAS 1.60:2899) Avail: NTIS HC A03/MF A01 CSCL 20N ELECTROMAGNETIC RADIATION, MICROSTRIP ELECTROMAGNETIC RADIATION, MICROSTRIP

TRANSMISSION LINES, MICROWAVE TRANSMISSION, REFLECTANCE

**N89-21171\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DESIGN, FABRICATION, AND PERFORMANCE OF BRAZED, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTORS WITH 500-W, CONTINUOUS WAVE, 4.8- TO 9.6-GHZ TRAVELING-WAVE TUBES

PETER RAMINS and BEN EBIHARA Mar. 1989 18 p (NASA-TP-2904; E-4361; NAS 1.60:2904) Avail: NTIS HC A03/MF A01 CSCL 09A

BRAZING, CONTINUOUS RADIATION, ELECTRODE MATERIALS, ELECTRON EMISSION, SOLID ELECTRODES, TRAVELING WAVE TUBES

N90-27965\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. SPENT-BEAM REFOCUSING ANALYSIS AND MULTISTAGE DEPRESSED COLLECTOR DESIGN FOR A 75-W, 59- TO 64-GHZ COUPLED-CAVITY TRAVELING-WAVE TUBE JEFFREY D. WILSON, PETER RAMINS, and DALE A. FORCE Aug. 1990 22 p (NASA-TP-3039; E-5455; NAS 1.60:3039) Avail: NTIS HC

A03/MF A01 CSCL 09A

ACCUMULATORS, COMPUTER AIDED DESIGN, DESIGN ANALYSIS, TRAVELING WAVE TUBES

## 34

## FLUID MECHANICS AND HEAT TRANSFER

Includes boundary layers; hydrodynamics; fluidics; mass transfer; and ablation cooling.

N87-11963\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. ON THE MAXWELLIAN DISTRIBUTION, SYMMETRIC FORM, AND ENTROPY CONSERVATION FOR THE EULER EQUATIONS S. M. DESHPANDE Nov. 1986 30 p (NASA-TP-2583; L-16036; NAS 1.60:2583) Avail: NTIS HC A03/MF A01 CSCL 20D ENTROPY, EULER EQUATIONS OF MOTION, MAXWELL-BOLTZMANN DENSITY FUNCTION

N87-13664\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. AEROTHERMAL TESTS OF SPHERICAL DOME PROTUBERANCES ON A FLAT PLATE AT A MACH NUMBER OF 6.5

C. E. GLASS and L. R. HUNT Dec. 1986 61 p (NASA-TP-2631; L-16160; NAS 1.60:2631) Avail: NTIS HC A04/MF A01 CSCL 20D

AEROTHERMODYNAMICS, HYPERSONIC VEHICLES, LAMINAR BOUNDARY LAYER, PREDICTION ANALYSIS TECHNIQUES, PROTUBERANCES, THERMAL PROTECTION, TILES, TURBULENT BOUNDARY LAYER

**N87-17000\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SPACE SHUTTLE MAIN ENGINE HIGH PRESSURE FUEL PUMP AFT PLATFORM SEAL CAVITY FLOW ANALYSIS

S. A. LOWRY and L. W. KEETON (CHAM of North America, Inc., Huntsville, Ala.) Jan. 1987 134  $\mbox{p}$ 

(NASA-TP-2685; NAS 1.60:2685) Avail: NTIS HC A07/MF A01 CSCL 20D

CAVITIES, FUEL PUMPS, HIGH PRESSURE, SEALS (STOPPERS), SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

N87-18034\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

JET MODEL FOR SLOT FILM COOLING WITH EFFECT OF FREE-STREAM AND COOLANT TURBULENCE FREDERICK F. SIMON Oct. 1986 21 p

(NASA-TP-2655; E-2961; NAS 1.60:2655) Avail: NTIS HC A03/MF A01 CSCL 20D

FILM COOLING, FLOW VELOCITY, JET ENGINES, NUMERICAL ANALYSIS, TURBULENCE EFFECTS, WALL JETS

**N87-18035\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

VELOCITY PROFILES IN LAMINAR DIFFUSION FLAMES VALERIE J. LYONS and JANICE M. MARGLE (Pennsylvania State Univ., Abington) May 1986 13 p Presented at the Combustion Inst. Meeting, Cleveland, Ohio, 5-6 May 1986 (NASA-TP-2596; E-2879; NAS 1.60:2596) Avail: NTIS HC A03/MF A01 CSCL 20D

CYCLOHEXANE, DIFFUSION FLAMES, ETHYL ALCOHOL, HEPTANES, LAMINAR FLOW, OCTANES, TEMPERATURE PROFILES, VELOCITY MEASUREMENT

**N87-18782\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AEROTHERMAL EVALUATION OF A SPHERICALLY BLUNTED BODY WITH A TRAPEZOIDAL CROSS SECTION IN THE LANGLEY 8-FOOT HIGH-TEMPERATURE TUNNEL

CINDY W. ALBERTSON Apr. 1987 83 p (NASA-TP-2641; L-16096; NAS 1.60:2641) Avail: NTIS HC A05/MF A01 CSCL 20D

BOUNDARY LAYERS, FLOW DISTRIBUTION, HEAT TRANSFER, PREDICTIONS, PRESSURE MEASUREMENT, THERMAL PROTECTION

**N87-18783\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A SECOND-ORDER ACCURATE KINETIC-THEORY-BASED METHOD FOR INVISCID COMPRESSIBLE FLOWS SURESH M. DESHPANDE Dec. 1986 42 p

(NASA-TP-2613; L-16050; NAS 1.60:2613) Avail: NTIS HC A03/MF A01 CSCL 20D

BOLTZMANN TRANSPORT EQUATION, EULER EQUATIONS OF MOTION, KINETIC THEORY, NUMERICAL ANALYSIS, SHOCK WAVE PROPAGATION

N87-22103\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. SPACELAB 3 MISSION SCIENCE REVIEW

GEORGE H. FICHTL, ed., JOHN S. THEON, ed. (National Aeronautics and Space Administration, Washington, D.C.), CHARLES K. HILL, ed., and OTHA H. VAUGHAN, ed. Feb. 1987 98 p Symposium held in Huntsville, Ala., 4 Dec. 1985 (NASA-CP-2429; M-547; NAS 1.55:2429) Avail: NTIS HC A05/MF A01 CSCL 22A AEROSPACE ENVIRONMENTS, POSTFLIGHT ANALYSIS, REDUCED GRAVITY, SPACE COMMERCIALIZATION, SPACE SHUTTLES, SPACEBORNE EXPERIMENTS, SPACELAB

N87-23921\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

THREE-STEP LABYRINTH SEAL FOR HIGH-PERFORMANCE TURBOMACHINES

ROBERT C. HENDRICKS Jun. 1987 75 p (NASA-TP-1848; E-3186; NAS 1.60:1848) Avail: NTIS HC A04/MF A01 CSCL 20D

FUEL PUMPS, LABYRINTH SEALS, SPACE SHUTTLE MAIN ENGINE, STATIC TESTS, TURBOMACHINERY

N87-23936\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. STRAIGHT CYLINDRICAL SEAL FOR HIGH-PERFORMANCE TURBOMACHINES ROBERT C. HENDRICKS Jun. 1987 76 p (NASA-TP-1850; E-3184; NAS 1.60:1850) Avail: NTIS HC

A05/MF A01 CSCL 20D CYLINDRICAL BODIES, FUEL PUMPS, SEALS (STOPPERS),

SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS, TURBOMACHINERY

N87-24639\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

THREE-STEP CYLINDRICAL SEAL FOR HIGH-PERFORMANCE TURBOMACHINES

ROBERT C. HENDRICKS Jun. 1987 79 p

(NASA-TP-1849; E-3185; NAS 1.60:1849) Avail: NTIS HC A05/MF A01 CSCL 20D

DYNAMIC STABILITY, FUEL PUMPS, LEAKAGE, PUMP SEALS, SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

**N87-24672\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MULTISCALE TURBULENCE EFFECTS IN SUPERSONIC JETS EXHAUSTING INTO STILL AIR

KHALED S. ABDOL-HAMID (Analytical Services and Materials, Inc., Hampton, Va.) and RICHARD G. WILMOTH Jul. 1987 38 p (NASA-TP-2707; L-16258; NAS 1.60:2707) Avail: NTIS HC A03/MF A01 CSCL 20D

JET EXHAUST, NAVIER-STOKES EQUATION, SUPERSONIC AIRCRAFT, TURBULENCE

N87-26309\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SIMPLIFIED CURVE FITS FOR THE THERMODYNAMIC

#### SIMPLIFIED CURVE FITS FOR THE THERMODYNAMIC PROPERTIES OF EQUILIBRIUM AIR

S. SRINIVASAN, J. C. TANNEHILL (lowa State Univ. of Science and Technology, Ames.), and K. J. WEILMUENSTER Aug. 1987 48  $\rho$ 

(NAG1-313)

(NASA-RP-1181; L-16276; NAS 1.61:1181) Avail: NTIS HC A03/MF A01 CSCL 20D

New, improved curve fits for the thermodynamic properties of equilibrium air have been developed. The curve fits are for pressure, speed of sound, temperature, entropy, enthalpy, density, and internal energy. These curve fits can be readily incorporated into new or existing computational fluid dynamics codes if real gas effects are desired. The curve fits are constructed from Grabau-type transition functions to model the thermodynamic surfaces in a piecewise manner. The accuracies and continuity of these curve fits are substantially improved over those of previous curve fits. These improvements are due to the incorporation of a small number of additional terms in the approximating polynomials and careful choices of the transition functions. The ranges of validity of the new curve fits are temperatures up to 25 000 K and densities from 10 to the -7 to 10 to the 3d power amagats. Author

N87-27161\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

APPLICATION OF TURBULENCE MODELING TO PREDICT SURFACE HEAT TRANSFER IN STAGNATION FLOW REGION **OF CIRCULAR CYLINDER** 

CHI R. WANG and FREDERICK C. YEH Sep. 1987 25 p (NASA-TP-2758; E-3418; NAS 1.60:2758) Avail: NTIS HC A03/MF A01 CSCL 20D

CIRCULAR CYLINDERS, HEAT TRANSFER, MODELS, STAGNATION FLOW, SURFACE PROPERTIES, TURBULENCE

N87-29778\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. DESCRIPTION AND CALIBRATION OF THE LANGLEY

HYPERSONIC CF4 TUNNEL: A FACILITY FOR SIMULATING LOW GAMMA FLOW AS OCCURS FOR A REAL GAS RAYMOND E. MIDDEN and CHARLES G. MILLER, III

Mar. 1985 78 p

(NASA-TP-2384; L-15798; NAS 1.60:2384) Avail: NTIS HC A05/MF A01 CSCL 20D

CALIBRATING, CARBON TETRAFLUORIDE, HYPERSONIC WIND TUNNELS, MACH NUMBER, REAL GASES, TEST FACILITIES

N87-29795\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

FINITE-ELEMENT REENTRY HEAT-TRANSFER ANALYSIS OF SPACE SHUTTLE ORBITER

WILLIAM L. KO, ROBERT D. QUINN, and LESLIE GONG Dec. 1986 59 p

(NASA-TP-2657; H-1236; NAS 1.60:2657) Avail: NTIS HC A04/MF A01 CSCL 20D

AERODYNAMIC HEATING, FINITE ELEMENT METHOD, HEAT TRANSFER COEFFICIENTS, REENTRY SHIELDING, SPACE SHUTTLE ORBITERS, THERMAL ANALYSIS

N88-14299\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

FLIGHT AND WIND-TUNNEL MEASUREMENTS SHOWING BASE DRAG REDUCTION PROVIDED BY A TRAILING DISK FOR HIGH REYNOLDS NUMBER TURBULENT FLOW FOR SUBSONIC AND TRANSONIC MACH NUMBERS

SHERYLL GOECKE POWERS, JARRETT K. HUFFMAN, and CHARLES H. FOX, JR. (National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.) Nov. 1986 143 p

(NASA-TP-2638; H-1281; NAS 1.60:2638) Avail: NTIS HC A07/MF A01 CSCL 20D

BASE PRESSURE, DRAG REDUCTION, FLIGHT TESTS, TRAILING EDGE FLAPS, TURBULENT FLOW, WIND TUNNEL TESTS

N88-15924\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

CRYOGENIC FLUID MANAGEMENT TECHNOLOGY

WORKSHOP. VOLUME 1: PRESENTATION MATERIAL AND DISCUSSION

JOHN C. AYDELOTT, ed. and WILLIAM DEVOL, ed. (Sverdrup Technology, Inc., Middleburg Heights, Ohio.) Sep. 1987 386 p Workshop held in Cleveland, Ohio, 28-30 Apr. 1987 (NASA-CP-10001; E-3732; NAS 1.55:10001) Avail: NTIS HC

A17/MF A03 CSCL 20D CONFERENCES, CRYOGENIC COOLING, CRYOGENIC FLUID STORAGE, CRYOGENIC FLUIDS, CRYOGENIC PROPELLANTS, CRYOGENICS, REDUCED GRAVITY BOCKET

N88-18881\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA. INFLUENCE OF BASE MODIFICATIONS ON IN-FLIGHT BASE DRAG IN THE PRESENCE OF JET EXHAUST FOR MACH NUMBERS FROM 0.7 TO 1.5 SHERYLL GOECKE POWERS Feb. 1988 20 p

(NASA-TP-2802; H-1408; NAS 1.60:2802) Avail: NTIS HC A03/MF A01 CSCL 20D

BASE FLOW, DRAG, FLIGHT TESTS, JET EXHAUST, MACH NUMBER, REVISIONS

N88-18884\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

GALILEO PROBE PARACHUTE TEST PROGRAM: WAKE PROPERTIES OF THE GALILEO PROBE AT MACH NUMBERS FROM 0.25 TO 0.95

THOMAS N. CANNING (Canning, T. N., Portola Valley, Calif ) and THOMAS M. EDWARDS Apr. 1988 144 p (NAS2-10000)

(NASA-RP-1130; A-9643; NAS 1.61:1130) Avail: NTIS HC A07/MF A01 CSCL 20D

The results of surveys of the near and far wake of the Galileo Probe are presented for Mach numbers from 0.25 tp 0.95. The trends in the data resulting from changes in Mach number, radial and axial distance, angle of attack, and a small change in model shape are shown in crossplots based on the data. A rationale for selecting an operating volume suitable for parachute inflation based on low Mach number flight results is outlined. Author

N88-20599\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

CRYOGENIC FLUID MANAGEMENT TECHNOLOGY WORKSHOP. VOLUME 2: ROUNDTABLE DISCUSSION OF TECHNOLOGY REQUIREMENTS

Mar. 1988 84 p Workshop held in Cleveland, Ohio, 28-30 Apr. 1987

(NASA-CP-10009; E-3987; NAS 1.55:10009) Avail: NTIS HC A05/MF A01 CSCL 20D

CONFERENCES, CRYOGENIC FLUIDS, FLUID MANAGE-MENT, TECHNOLOGY ASSESSMENT

N88-22325\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AEROTHERMAL TESTS OF QUILTED DOME MODELS ON A FLAT PLATE AT A MACH NUMBER OF 6.5

CHRISTOPHER E. GLASS and L. ROANE HUNT May 1988 72 p

(NASA-TP-2804; L-16346; NAS 1.60:2804) Avail: NTIS HC À04/MF A01 CSCL 20D

AEROTHERMODYNAMICS, HYPERSONIC AIRCRAFT. LAMINAR BOUNDARY LAYER, PRESSURE DISTRIBUTION, THERMAL PROTECTION, TURBULENT BOUNDARY LAYER

N89-11153\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. MIXING AND DEMIXING PROCESSES IN MULTIPHASE

FLOWS WITH APPLICATION TO PROPULSION SYSTEMS

RAND DECKER, ed. and CHARLES F. SCHAFER, ed. Jul. 1988 191 p Workshop was held in Huntsville, Ala., 25-26 Feb. 1988; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and USRA, Huntsville, Ala. Sponsored by NASA, Washington, D.C.

(NASA-CP-3006; M-591; NAS 1.55:3006) Avail: NTIS HC A09/MF A02 CSCL 20D

COMBUSTION PHYSICS, CONFERENCES, FLUID DYNAMICS, FUEL COMBUSTION, LAMINAR FLOW, MIXING, MULTIPHASE FLOW, PROPULSION, TURBULENT FLOW

N89-12822\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

**AERODYNAMIC PRESSURES AND HEATING RATES ON** SURFACES BETWEEN SPLIT ELEVONS AT MACH 6.6 L. ROANE HUNT Washington, D.C. Dec. 1988 85 p (NASA-TP-2855; L-16460; NAS 1.60:2855) Avail: NTIS HC A05/MF A01 CSCL 20D

AERODYNAMIC HEATING, DYNAMIC PRESSURE, ELEVONS, HYPERSONIC FLIGHT, SPLIT FLAPS

**N89-16115\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CONSERVATION EQUATIONS AND PHYSICAL MODELS FOR HYPERSONIC AIR FLOWS IN THERMAL AND CHEMICAL NONEQUILIBRIUM

PETER A. GNOFFO, ROOP N. GUPTA (Scientific Research and Technology, Inc., Hampton, VA.), and JUDY L. SHINN Washington, DC Feb. 1989 62 p

(NASA-TP-2867; L-16477; NAS 1.60:2867) Avail: NTIS HC A04/MF A01 CSCL 20D

AIR FLOW, CHEMICAL EQUILIBRIUM, CONSERVATION EQUATIONS, HYPERSONIC FLOW, MATHEMATICAL MODELS, NONEQUILIBRIUM FLOW, NONEQUILIBRIUM THERMO-DYNAMICS

N89-19499\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CONTAMINATION OF LIQUID OXYGEN BY PRESSURIZED GASEOUS NITROGEN

ALLAN J. ZUCKERWAR, TRACY K. KING, and KIM CHI NGO (Old Dominion Univ., Norfolk, VA.) Apr. 1989 26 p (NASA-TP-2894; L-16526; NAS 1.60:2894) Avail: NTIS HC A03/MF A01 CSCL 20D

FUEL CONTAMINATION, GAS-GAS INTERACTIONS, GASEOUS DIFFUSION, HYPERSONIC WIND TUNNELS, LIQUID NITROGEN, LIQUID OXYGEN, PRESSURE EFFECTS

**N89-25409\***# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DETERMINATION OF COMBUSTION GAS TEMPERATURES BY INFRARED RADIOMETRY IN SOOTING AND NONSOOTING FLAMES

VALERIE J. LYONS and CARMEN M. GRACIA-SALCEDO (Army Aviation Systems Command, Cleveland, OH.) Feb. 1989 13 p (DA PROJ. 1L1-61102-AH-45)

(NASA-TP-2900; E-4446; NAS 1.60:2900; AVSCOM-TR-88-C-008; AD-A205373) Avail: NTIS HC A03/MF A01 CSCL 21/2

COMBUSTION TEMPERATURE, FLAME TEMPERATURE, GAS TEMPERATURE, INFRARED RADIOMETERS, PREMIXED FLAMES, RADIATION PYROMETERS, SOOT, TEMPERATURE MEASUREMENT

N89-26184\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

WORKSHOP ON TWO-PHASE FLUID BEHAVIOR IN A SPACE ENVIRONMENT

THEODORE D. SWANSON, ed., AL JUHASZ, ed., W. RUSS LONG, ed. (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), and LAURA OTTENSTEIN, ed. 1989 45 p Workshop held in Ocean City, MD, 13-14 Jun. 1988

(NASA-CP-3043; REPT-89B00114; NAS 1.55:3043) Avail: NTIS HC A03/MF A01 CSCL 20D

AEROSPACE ENVIRONMENTS, FLUID MANAGEMENT, HEAT TRANSFER, LIQUID-VAPOR INTERFACES, TWO PHASE FLOW

**N89-27116\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

# A REVIEW OF HIGH-SPEED, CONVECTIVE, HEAT-TRANSFER COMPUTATION METHODS

MICHAEL E. TAUBER Washington Jul. 1989 38 p (NASA-TP-2914; A-89042; NAS 1.60:2914) Avail: NTIS HC A03/MF A01 CSCL 20D

AERODYNAMIC HEATING, COMPUTATION, CONVECTIVE HEAT TRANSFER, LAMINAR BOUNDARY LAYER, SEPARATED FLOW, SHOCK HEATING, TURBULENT BOUNDARY LAYER

**N90-10385\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

CONSTITUTIVE RELATIONSHIPS AND MODELS IN

CONTINUUM THEORIES OF MULTIPHASE FLOWS

RAND DECKER, ed. Washington Sep. 1989 165 p Workshop held in Huntsville, AL, 5-7 Apr. 1989; sponsored by NASA, Washington and USRA, Washington, DC

(NASA-ČP-3047; M-616; NAS 1.55:3047) Avail: NTIS HC A08/MF A01 CSCL 20D

CONSTITUTIVE EQUATIONS, CONTINUUM MECHANICS, MATHEMATICAL MODELS, MULTIPHASE FLOW

**N90-11245\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

LASER ANEMOMETER MEASUREMENTS IN A TRANSONIC AXIAL-FLOW FAN ROTOR

ANTHONY J. STRAZISAR, JERRY R. WOOD, MICHAEL D. HATHAWAY, and KENNETH L. SUDER Washington Nov. 1989 216 p

(NASA-TP-2879; E-4480; NAS 1.60:2879) Avail: NTIS HC A10/MF A02 CSCL 20D

AXIAL FLOW, FAN BLADES, FLOW VELOCITY, LASER ANEMOMETERS, ROTOR BLADES (TURBOMACHINERY), SURVEYS, TRANSONIC FLOW, VELOCITY DISTRIBUTION

**N90-14493\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SURFACE FLOW AND HEATING DISTRIBUTIONS ON A CYLINDER IN NEAR WAKE OF AEROASSIST FLIGHT EXPERIMENT (AFE) CONFIGURATION AT INCIDENCE IN MACH 10 AIR

WILLIAM L. WELLS Jan. 1990 58 p (NASA-TP-2954; L-16623; NAS 1.60:2954) Avail: NTIS HC A04/MF A01 CSCL 20D

COMPUTER PROGRAMS, CYLINDRICAL BODIES, FREE FLOW, HEAT TRANSFER, NAVIER-STOKES EQUATION, NEAR WAKES

**N90-17042\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AN UPWIND-BIASED, POINT-IMPLICIT RELAXATION ALGORITHM FOR VISCOUS, COMPRESSIBLE PERFECT-GAS FLOWS

PETER A. GNOFFO Washington Feb. 1990 75 p (NASA-TP-2953; L-16588; NAS 1.60:2953) Avail: NTIS HC A04/MF A01 CSCL 20D

ALGORITHMS, COMPRESSIBLE FLOW, GAS FLOW, HYPERSONIC FLOW, RELAXATION METHOD (MATHEMATICS), THREE DIMENSIONAL FLOW, VISCOUS FLOW

**N90-23670\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AERODYNAMIC PRESSURE AND HEATING-RATE DISTRIBUTIONS IN TILE GAPS AROUND CHINE REGIONS WITH PRESSURE GRADIENTS AT A MACH NUMBER OF 6.6 L. ROANE HUNT and KRISTOPHER K. NOTESTINE (PRC Kentron, Inc., Hampton, VA.) Washington Jun. 1990 70 p (NASA-TP-2988; L-16649; NAS 1.60:2988) Avail: NTIS HC

A04/MF A01 CSCL 20D AERODYNAMIC LOADS, HEATING, HIGH PRESSURE,

HYPERSONIC SPEED, THERMAL PROTECTION, TILES

**N90-27064\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A REVIEW OF REACTION RATES AND THERMODYNAMIC AND TRANSPORT PROPERTIES FOR AN 11-SPECIES AIR MODEL FOR CHEMICAL AND THERMAL NONEQUILIBRIUM CALCULATIONS TO 30000 K

ROOP N. GUPTA, JERROLD M. YOS, RICHARD A. THOMPSON, and KAM-PUI LEE (Scientific Research and Technology, Inc., Hampton, VA.) Washington Aug. 1990 90 p

(NASA-RP-1232; L-16634; NAS 1.61:1232) Avail: NTIS HC A05/MF A01 CSCL 20D

Reaction rate coefficients and thermodynamic and transport properties are reviewed and supplemented for the 11-species air model which can be used for analyzing flows in chemical and thermal nonequilibrium up to temperatures of 3000 K. Such flows will likely occur around currently planned and future hypersonic vehicles. Guidelines for determining the state of the surrounding environment are provided. Curve fits are given for the various species properties for their efficient computation in flowfield codes. Approximate and more exact formulas are provided for computing the properties of partially ionized air mixtures in a high energy environment. Limitations of the approximate mixing laws are discussed for a mixture of ionized species. An electron number-density correction for the transport properties of the charged species is obtained. This correction has been generally ignored in the literature. Author

N90-27066\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AN APPROXIMATE METHOD FOR CALCULATING

THREE-DIMENSIONAL INVISCID HYPERSONIC FLOW FIELDS CHRISTOPHER J. RILEY and FRED R. DEJARNETTE Washington Aug. 1990 26 p

(NASA-TP-3018; L-16745; NAS 1.60:3018) Avail: NTIS HC A03/MF A01 CSCL 20D

APPROXIMATION, EULER EQUATIONS OF MOTION, FLOW DISTRIBUTION, HYPERSONIC FLOW, INVISCID FLOW, THREE DIMENSIONAL FLOW

N90-28806\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

GAS-JET AND TANGENT-SLOT FILM COOLING TESTS OF A 12.5 DEG CONE AT MACH NUMBER OF 6.7

ROBERT J. NOWAK May 1988 85 p

(NASA-TP-2786; L-16148; NAS 1.60:2786) Avail: NTIS HC A05/MF A01 CSCL 20D

COOLING, JETS, FILM GAS HEAT TRANSFER. MATHEMATICAL MODELS, PRESSURE MEASUREMENT, SHOCK LAYERS, SLOTS, TEMPERATURE MEASUREMENT

## 35

## **INSTRUMENTATION AND PHOTOGRAPHY**

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography.

N87-10263\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THIRTEENTH INTERNATIONAL LASER RADAR CONFERENCE Aug. 1986 335 p Conference held in Toronto, Ontario, 11-15 Aug. 1986; sponsored by NASA, Washington, D.C., Atmospheric Environment Service, and York Univ.

(NASA-CP-2431; L-16201; NAS 1.55:2431) Avail: NTIS HC A15/MF A03 CSCL 20E

CONFERENCES, LASER APPLICATIONS, LASERS. METEOROLOGICAL PARAMETERS, MIDDLE ATMOSPHERE, OPTICAL RADAR, RADAR EQUIPMENT

N87-13731\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

**EVALUATION OF DIFFUSE-ILLUMINATION HOLOGRAPHIC** CINEMATOGRAPHY IN A FLUTTER CASCADE

A. J. DECKER Jul. 1986 33 p

(NASA-TP-2593; E-2937; NAS 1.60:2593) Avail: NTIS HC A03/MF A01 CSCL 14E

CINEMATOGRAPHY, FLOW VISUALIZATION, HOLOGRAPHIC INTERFEROMETRY, HOLOGRAPHY, LASER OUTPUTS, THREE DIMENSIONAL FLOW

N87-20514\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. A SIMPLIFIED METHOD FOR DETERMINING HEAT OF

# COMBUSTION OF NATURAL GAS

JAG J. SINGH, HOSHANG CHEGINI (Old Dominion Univ., Norfolk, Va.), and GERALD H. MALL (Computer Sciences Corp., Hampton,

## 35 INSTRUMENTATION AND PHOTOGRAPHY

Va.) Apr. 1987 15 p (NASA-TP-2682; L-16261; NAS 1.60:2682) Avail: NTIS HC A03/MF A01 CSCL 14B GAS DETECTORS, HEAT OF COMBUSTION, NATURAL GAS, OXYGEN SUPPLY EQUIPMENT

N88-28286\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. OPTICAL MEASUREMENT OF PROPELLER BLADE DEFLECTIONS ANATOLE P. KURKOV Sep. 1988 31 p (NASA-TP-2841; E-4131; NAS 1.60:2841) Avail: NTIS HC A03/MF A01 CSCL 14B DEFLECTION, DISPLACEMENT MEASUREMENT, OPTICAL MEASUREMENT, PROPELLER BLADES N88-30099\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. MEASUREMENT OF LOCAL HIGH-LEVEL, TRANSIENT SURFACE HEAT FLUX CURT H. LIEBERT Sep. 1988 9 p Sponsored by NASA, Washington, D.C. (NASA-TP-2840; E-4200; NAS 1.60:2840) Avail: NTIS HC A02/MF A01 CSCL 14B HEAT FLUX, SURFACE TEMPERATURE, TEMPERATURE MEASUREMENT, TEMPERATURE MEASURING INSTRUMENTS, TRANSIENT HEATING N89-13762\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SPATIAL VISION PROCESSES: FROM THE OPTICAL IMAGE TO THE SYMBOLIC STRUCTURES OF CONTOUR INFORMATION DANIEL J. JOBSON Nov. 1988 31 p Original contains color illustrations (NASA-TP-2838; L-16479; NAS 1.60:2838) Avail: NTIS HC A03/MF A01 CSCL 14B COMPUTER VISION. CONTOURS. EDGES. IMAGE PROCESSING, SPATIAL FILTERING, SYMBOLS, TEXTURES N89-15380\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. TECHNIQUE FOR TEMPERATURE COMPENSATION OF EDDY-CURRENT PROXIMITY PROBES ROBERT M. MASTERS Jan. 1989 10 p (NASA-TP-2880; E-4316; NAS 1.60:2880) Avail: NTIS HC A02/MF A01 CSCL 14B EDDY CURRENTS, EVALUATION, PERFORMANCE TESTS, PROBES, PROXIMITY, TEMPERATURE COMPENSATION, TEMPERATURE MEASUREMENT, TURBOMACHINERY

N89-16139\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. RAMAN INTENSITY AS A PROBE OF CONCENTRATION NEAR A CRYSTAL GROWING IN SOLUTION R. ALLEN WILKINSON Feb. 1989 12 p (NASA-TP-2865; E-4397; NAS 1.60:2865) Avail: NTIS HC A03/MF A01 CSCL 14B GROWTH, CRYSTAL RAMAN SPECTRA. RAMAN SPECTROSCOPY, SOLUTIONS

N89-26209\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

MARA (MULTIMODE AIRBORNE RADAR ALTIMETER) SYSTEM DOCUMENTATION. VOLUME 1: MARA SYSTEM **REQUIREMENTS DOCUMENT** 

C. L. PARSONS, ed. Jul. 1989 88 p (NASA-RP-1226; REPT-89-143; NAS 1.61:1226) Avail: NTIS HC A05/MF A01 CSCL 14B

The Multimode Airborne Radar Altimeter (MARA), a flexible airborne radar remote sensing facility developed by NASA's Goddard Space Flight Center, is discussed. This volume describes the scientific justification for the development of the instrument and the translation of these scientific requirements into instrument design goals. Values for key instrument parameters are derived to accommodate these goals, and simulations and analytical models are used to estimate the developed system's performance.

Author

**N90-10412\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INTRODUCTION TO TOTAL- AND PARTIAL-PRESSURE MEASUREMENTS IN VACUUM SYSTEMS

R. A. OUTLAW and F. A. KERN Washington Nov. 1989

77 p (NASA-RP-1219; L-16494; NAS 1.61:1219) Avail: NTIS HC A05/MF A01 CSCL 14B

An introduction to the fundamentals of total and partial pressure measurement in the vacuum regime (760 x 10 to the -16th power Torr) is presented. The instrument most often used in scientific fields requiring vacuum measurement are discussed with special emphasis on ionization type gauges and quadrupole mass spectrometers. Some attention is also given to potential errors in measurement as well as calibration techniques. Author

**N90-16204\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# VISUAL INFORMATION PROCESSING FOR TELEVISION AND TELEROBOTICS

FRIEDRICH O. HUCK, ed. and STEPHEN K. PARK, ed. (College of William and Mary, Williamsburg, VA.) Washington Nov. 1989 263 p Workshop held in Williamsburg, VA, 10-12 May 1989 (NASA-CP-3053; L-16665; NAS 1.55:3053) Avail: NTIS HC A12/MF A02 CSCL 14B

CODING, COMPUTER VISION, CONFERENCES, IMAGE RECONSTRUCTION, IMAGING TECHNIQUES, ROBOTICS, ROBOTS, TELEOPERATORS, TELEROBOTICS, TELEVISION SYSTEMS

**N90-17085\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

NASA LASER LIGHT SCATTERING ADVANCED

**TECHNOLOGY DEVELOPMENT WORKSHOP, 1988** 

WILLIAM V. MEYER, ed. (Case Western Reserve Univ., Cleveland, OH.) Aug. 1989 306 p Workshop held in Cleveland, OH, 7-8 Sep. 1988

(NASA-CP-10033; E-4915; NAS 1.55:10033) Avail: NTIS HC A14/MF A02 CSCL 14B

FIBER OPTICS, LASER BEAMS, LIGHT SCATTERING, PHOTODIODES, REDUCED GRAVITY, SPECTROSCOPY

**N90-21351\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

FOUNDATIONS OF MEASUREMENT AND INSTRUMENTATION ISIDORE WARSHAWSKY Apr. 1990 232 p

(NASA-RP-1222; E-3786; NAS 1.61:1222) Avail: NTIS HC A11/MF A02 CSCL 14B

The user of instrumentation has provided an understanding of the factors that influence instrument performance, selection, and application, and of the methods of interpreting and presenting the results of measurements. Such understanding is prerequisite to the successful attainment of the best compromise among reliability, accuracy, speed, cost, and importance of the measurement operation in achieving the ultimate goal of a project. Some subjects covered are dimensions; units; sources of measurement error; methods of describing and estimating accuracy; deduction and presentation of results through empirical equations, including the method of least squares; experimental and analytical methods of determining the static and dynamic behavior of instrumentation systems, including the use of analogs. Author

## LASERS AND MASERS

Includes parametric amplifiers.

N87-20522\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. CLOSED-CYCLE, FREQUENCY-STABLE CO2 LASER

CLOSED-CYCLE, FREQUENCY-STABLE CO2 LASEF

CARMEN E. BATTEN, ed., IRVIN M. MILLER, ed., GEORGE M. WOOD, JR., ed., and DAVID V. WILLETTS, ed. (Royal Signals and Radar Establishment, Malvern, England.) Apr. 1987 279 p Workshop held in Hampton, Va., 10-12 Jun. 1986

(NASA-CP-2456; L-16271; NAS 1.55:2456) Avail: NTIS HC A13/MF A02 CSCL 20E

CARBON DIOXIDE LASERS, CLOSED CYCLES, FREQUENCY STABILITY, RESEARCH MANAGEMENT

**N87-27994\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

FREQUENCY DOMAIN LASER VELOCIMETER SIGNAL PROCESSOR: A NEW SIGNAL PROCESSING SCHEME

JAMES F. MEYERS and JAMES I. CLEMMONS, JR. Sep. 1987 38 p

(NASA-TP-2735; L-16209; NAS 1.60:2735) Avail: NTIS HC A03/MF A01 CSCL 20E

DOMAINS, FREQUENCIES, LASER DOPPLER VELOCIMETERS, SIGNAL PROCESSING

N89-17855\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. ANALYSIS OF ND3+:GLASS, SOLAR-PUMPED, HIGH-POWR LASER SYSTEMS

L. E. ZAPATA and M. D. WILLIAMS Feb. 1989 13 p (NASA-TP-2905; L-16085; NAS 1.60:2905) Avail: NTIS HC A03/MF A01 CSCL 20E

GLASS LASERS, HIGH POWER LASERS, NEODYMIUM LASERS, SOLAR COLLECTORS

**N90-24585\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. **DIODE LASER SATELLITE SYSTEMS FOR BEAMED POWER** 

TRANSMISSION M. D. WILLIAMS, J. H. KWON (Miami Univ., Oxford, OH.), G. H. WALKER, and D. H. HUMES Washington 1990 31 p

(NASA-TP-2992; L-16669; NAS 1.60:2992) Avail: NTIS HC A03/MF A01 CSCL 20E

ESTIMATING, LASER POWER BEAMING, OPERATING TEMPERATURE, SATELLITE TRANSMISSION, SEMICONDUC-TOR LASERS, STRUCTURAL DESIGN CRITERIA

**N90-24586\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

LOW-TEMPERATURE CO-OXIDATION CATALYSTS FOR LONG-LIFE CO2 LASERS

DAVID R. SCHRYER, ed. and GAR B. HOFLUND, ed. (Florida Univ., Gainesville.) Washington Jun. 1990 404 p Conference held in Hampton, VA, 17-19 Oct. 1989; sponsored by NASA, Washington and the Royal Signals and Radar Establishment, Malvern, England

(NASA-CP-3076; L-16797; NAS 1.55:3076) Avail: NTIS HC A18/MF A03 CSCL 20E

CARBON DIOXIDE LASERS, CATALYSTS, CATALYTIC ACTIVITY, CONFERENCES, LOW TEMPERATURE, OXIDATION

#### **MECHANICAL ENGINEERING**

Includes auxiliary systems (nonpower); machine elements and processes; and mechanical equipment.

National Aeronautics and Space Administration. N87-10391\*# Lewis Research Center, Cleveland, OH.

TESTING OF UH-60A HELICOPTER TRANSMISSION IN NASA LEWIS 2240-KW (3000-HP) FACILITY

A. M. MITCHELL, F. B. OSWALD, and H. H. COE Aug. 1986 30 p

(NASA-TP-2626; E-2941; NAS 1.60:2626) Avail: NTIS HC A03/MF A01 CSCL 131

HELICOPTERS, TRANSMISSIONS (MACHINE ELEMENTS), VIBRATION MEASUREMENT

N87-18095\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### PREDICTED EFFECT OF DYNAMIC LOAD ON PITTING FATIGUE LIFE FOR LOW-CONTACT-RATIO SPUR GEARS DAVID G. LEWICKI Jun. 1986 19 p

(NASA-TP-2610; E-2989; NAS 1.60:2610; AD-A170906;

AVSCOM-TR-86-C-21) Avail: NTIS HC A03/MF A01 CSCL 13/9

APPLICATIONS PROGRAMS (COMPUTERS), DYNAMIC LOADS, FATIGUE (MATERIALS), GEARS, LIFE (DURABILITY), PITTING

N87-18821\*# National Aeronautics and Space Administration, Washington, DC.

#### TETHER DYNAMICS SIMULATION

Workshop held in Arlington, Va., 16 Sep. Feb. 1987 338 p 1986

(NASA-CP-2458; NAS 1.55:2458) Avail: NTIS HC A15/MF A02 CSCL 22B

COMPUTERIZED SIMULATION. ELECTRODYNAMICS. TETHERED SATELLITES, TETHERLINES

N87-20555\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### **VIBRATION CHARACTERISTICS OF OH-58A HELICOPTER** MAIN ROTOR TRANSMISSION

DAVID G. LEWICKI and JOHN J. COY Apr. 1987 18 p (NASA-TP-2705; E-3368; NAS 1.60:2705; AVSCOM-TR-86-C-42; AD-A180364) Avail: NTIS HC A03/MF A01 CSCL 01/3 HELICOPTERS, ROTOR AERODYNAMICS, TRANSMISSIONS

(MACHINE ELEMENTS), VIBRATION MEASUREMENT

National Aeronautics and Space Administration. N87-22199\*# Lewis Research Center, Cleveland, OH.

## ROTORDYNAMIC INSTABILITY PROBLEMS IN

**HIGH-PERFORMANCE TURBOMACHINERY, 1986** 

Jan. 1987 548 p Workshop held in College Station, Tex., 2-4 Jun. 1986; sponsored in cooperation with Texas A&M Univ., Army Research Office, and Air Force Aeropropulsion Lab. (NASA-CP-2443; E-3136; NAS 1.55:2443) Avail: NTIS HC A23/MF A03 CSCL 131

ROTOR AERODYNAMICS, STABILITY, TURBOCOMPRES-SORS, TURBOMACHINERY

National Aeronautics and Space Administration. N87-22235\*# Lewis Research Center, Cleveland, OH.

## GEAR TOOTH STRESS MEASUREMENTS ON THE UH-60A HELICOPTER TRANSMISSION

FRED B. OSWALD Mar. 1987 17 p

(NASA-TP-2698; E-3357; NAS 1.60:2698) Avail: NTIS HC A03/MF A01 CSCL 131

GEAR TEETH, STRESS MEASUREMENT, TRANSMISSIONS (MACHINE ELEMENTS), UH-60A HELICOPTER

N88-15224\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

### EFFICIENCY TESTING OF A HELICOPTER TRANSMISSION PLANETARY REDUCTION STAGE

ROBERT F. HANDSCHUH and DOUGLAS A. ROHN Feb. 1988 18 p Prepared in cooperation with Army Aviation Research and Development Command, Cleveland, Ohio (DA PROJ. 1L1-61102-AH-45)

(NASA-TP-2795; E-3770; NAS 1.60:2795; AVSCOM-TR-87-C-28; AD-A191884) Avail: NTIS HC A03/MF A01 CSCL 13/9

ENGINE TESTS, GEARS, HELICOPTER ENGINES, POWER EFFICIENCY, TRANSMISSIONS (MACHINE ELEMENTS)

N88-17045\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

DYNAMIC ANALYSIS OF MULTIMESH-GEAR HELICOPTER TRANSMISSIONS

FRED K. CHOY, DENNIS P. TOWNSEND, and FRED B. OSWALD Feb. 1988 22 p

(NASA-TP-2789; E-3191; NAS 1.60:2789) Avail: NTIS HC A03/MF A01 CSCL 131

CHARACTERISTICS, GEARS, HELICOPTER DYNAMIC ENGINES, SYSTEMS ANALYSIS, TRANSMISSIONS (MACHINE **ELEMENTS**)

N88-18933\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

COMPUTER-AIDED DESIGN ANALYSIS OF 57-MM,

ANGULAR-CONTACT, CRYOGENIC TURBOPUMP BEARINGS ELIZABETH S. ARMSTRONG and HAROLD H. COE Mar. 1988 15 p

(NASA-TP-2816; E-3890; NAS 1.60:2816) Avail: NTIS HC A03/MF A01 CSCL 13K

BEARINGS, COMPUTER AIDED DESIGN, CRYOGENIC FLUIDS, RETROFITTING, REVISIONS, SERVICE LIFE, SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

National Aeronautics and Space Administration. N89-21243\*# Lewis Research Center, Cleveland, OH. COMPARISON STUDY OF GEAR DYNAMIC COMPUTER

PROGRAMS AT NASA LEWIS RESEARCH CENTER

JAMES J. ZAKRAJSEK Mar. 1989 31 p Prepared in cooperation with Army Aviation Research and Development Command, Cleveland, OH

(DA PROJ. 1L1-62209-AH-76)

(NASA-TP-2901; E-4144; NAS 1.60:2901; AVSCOM-TR-88-C-010) Avail: NTIS HC A03/MF A01 CSCL 131

COMPUTER AIDED DESIGN, COMPUTER PROGRAMS, GEARS, MECHANICAL DRIVES

N89-22891\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

ROTORDYNAMIC INSTABILITY PROBLEMS IN

HIGH-PERFORMANCE TURBOMACHINERY, 1988

Washington, DC Feb. 1989 454 p Workshop held in College Station, TX, 16-18 May 1988; sponsored by NASA, Lewis Research Center, Cleveland, OH, Texas A and M Univ., College Station, ARO, Durham, NC, and Aeropropulsion Lab., Wright-Patterson AFB, OH

(NASA-CP-3026; E-4227; NAS 1.55:3026) Avail: NTIS HC A20/MF A03 CSCL 131

BEARINGS, COMPRESSORS, CONFERENCES, DAMPERS, DYNAMIC STABILITY, IMPELLERS, MATHEMATICAL MODELS, AERODYNAMICS, SEALS (STOPPERS), ROTOR TURBOMACHINERY

National Aeronautics and Space Administration. N89-24607\*# Lewis Research Center, Cleveland, OH.

COMPARISON OF PREDICTED AND MEASURED TEMPERATURES OF UH-60A HELICOPTER TRANSMISSION HAROLD H. COE Washington Apr. 1989 15 p (NASA-TP-2911; NAS 1.60.2911; E-4588; AVSCOM-TR-89-C-010; AD-A219173) Avail: NTIS HC A03/MF A01 CSCL 13/9

COMPUTERIZED SIMULATION, HELICOPTER PROPELLER DRIVE, OPERATING TEMPERATURE, PERFORMANCE TESTS, ROLLER BEARINGS, THERMAL ANALYSIS, TRANSMISSIONS (MACHINE ELEMENTS), UH-60A HELICOPTER

**N90-18740\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

FASTENER DESIGN MANUAL

RICHARD T. BARRETT Mar. 1990 99 p

(NASA-RP-1228; E-4911; NAS 1.61:1228) Avail: NTIS HC A05/MF A01 CSCL 13K

This manual was written for design engineers to enable them to choose appropriate fasteners for their designs. Subject matter includes fastener material selection, platings, lubricants, corrosion, locking methods, washers, inserts, thread types and classes, fatigue loading, and fastener torque. A section on design criteria covers the derivation of torque formulas, loads on a fastener group, combining simultaneous shear and tension loads, pullout load for tapped holes, grip length, head styles, and fastener strengths. The second half of this manual presents general guidelines and selection criteria for rivets and lockbolts. Author

**N90-19593\*#** Illinois Univ., Chicago. Dept. of Mechanical Engineering.

#### THEORY OF GEARING

FAYDOR L. LITVIN 1989 479 p Prepared in cooperation with Army Aviation System s Command, Cleveland, OH

(NAG3-783; NAG3-655; DA PROJ. 1L1-62209-AH-76)

(NASA-RP-1212; E-2641; NAS 1.61:1212; AVSCOM-TR-88-C-035; L-89-600204) Avail: NTIS HC A21/MF A03; Also Avail: SOD HC \$40.00 as 033-000-01068-1 CSCL 13I

Basic mathematical problems on the theory of gearing are covered in this book, such as the necessary and sufficient conditions of envelope existence, relations between principal curvatures and directions for surfaces of mating gears. Also included are singularities of surfaces accompanied by undercutting the process of generation, the phenomena of envelope of lines of contact, and the principles for generation of conjugate surfaces. Special attention is given to the algorithms for computer aided simulation of meshing and tooth contact. This edition was complemented with the results of research recently performed by the author and his doctoral students. The book contains sample problems and also problems for the reader to solve. K.C.D.

**N90-19595\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MODELING AND ANALYSIS OF THE SPACE SHUTTLE NOSE-GEAR TIRE WITH SEMIANALYTIC FINITE ELEMENTS

KYUN O. KIM, AHMED K. NOOR (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.), and JOHN A. TANNER Washington Apr. 1990 36 p

(NASA-TP-2977; L-16639; NAS 1.60:2977) Avail: NTIS HC A03/MF A01 CSCL 22B

AIRCRAFT TIRES, ANISOTROPIC SHELLS, FINITE ELEMENT METHOD, LANDING GEAR, MATHEMATICAL MODELS, NOSE WHEELS, SHELL THEORY, SPACE SHUTTLE ORBITERS

**N90-28063\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. **LIQUID LUBRICATION IN SPACE** 

ERWIN V. ZARETSKY Jul. 1990 26 p

(NASA-RP-1240; E-5094; NAS 1.61:1240) Avail: NTIS HC A03/MF A01 CSCL 13I

The requirement for long-term, reliable operation of aerospace mechanisms has, with a few exceptions, pushed the state of the art in tribology. Space mission life requirements in the early 1960s were generally 6 months to a year. The proposed U.S. space station schedule to be launched in the 1990s must be continuously usable for 10 to 20 years. Liquid lubrication systems are generally used for mission life requirements longer than a year. Although most spacecraft or satellites have reached their required lifetimes without a lubrication-related failure, the application of liquid lubricants in the space environment presents unique challenges. The state of the art of liquid lubrication in space as well as the problems and their solutions are reviewed. Author

**N90-28066\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

MODIFICATION OF THE SHABERTH BEARING CODE TO INCORPORATE RP-1 AND A DISCUSSION OF THE TRACTION MODEL

CLAUDIA M. WOODS Sep. 1990 30 p

(NASA-TP-3017; E-5407; NAS 1.60:3017) Avail: NTIS HC A03/MF A01 CSCL 13I

COMPUTER PROGRAMS, MATHEMATICAL MODELS, ROLLER BEARINGS, RP-1 ROCKET PROPELLANTS, SPACECRAFT LUBRICATION

## 38

## QUALITY ASSURANCE AND RELIABILITY

Includes product sampling procedures and techniques; and quality control.

**N87-27204\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ELECTRONICS RELIABILITY AND MEASUREMENT TECHNOLOGY

JOSEPH S. HEYMAN, ed. Aug. 1987 143 p Conference held in Hampton, Va., 3-5 Jun. 1986; sponsored by NASA Langley Research Center, USAF, National Security Industrial Association, and the Aerospace Industry Association

(NASA-CP-2472; L-16315; NAS 1.55:2472) Avail: NTIS HC A07/MF A01 CSCL 14D

COMPONENT RELIABILITY, INSPECTION, MICROELEC-TRONICS, NONDESTRUCTIVE TESTS, QUALITY CONTROL, RE-LIABILITY ENGINEERING

**N87-28025\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A TECHNIQUE FOR EVALUATING THE APPLICATION OF THE PIN-LEVEL STUCK-AT FAULT MODEL TO VLSI CIRCUITS

DANIEL L. PALUMBO and GEORGE B. FINELLI Sep. 1987 45 p

(NASA-TP-2738; L-16269; NAS 1.60:2738) Avail: NTIS HC A03/MF A01 CSCL 14D

COMPUTERS, ERROR ANALYSIS, EVALUATION, FAULT TOLERANCE, INTEGRATED CIRCUITS, VERY LARGE SCALE INTEGRATION.

## 39

## STRUCTURAL MECHANICS

Includes structural element design and weight analysis; fatigue; and thermal stress.

N81-71592\* National Aeronautics and Space Administration, Washington, DC.

THE NASTRAN DEMONSTRATION PROBLEM MANUAL, LEVEL 17.5 Dec. 1978 185 p refs (NASA-SP-224(05))

N81-71594\* National Aeronautics and Space Administration, Washington, DC.

THE NASTRAN PROGRAMMERS MANUAL, LEVEL 17.5

Dec. 1978 845 p refs (NASA-SP-223(05))

N87-11180\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

**TURBINE ENGINE HOT SECTION TECHNOLOGY, 1984** Oct. 1984 400 p Conference held in Cleveland, Ohio, 23-24 Oct. 1984

(NASA-CP-2339; E-2267; NAS 1.55:2339) Avail: NTIS HC A17/MF A03 CSCL 20K

AIRCRAFT ENGINES, AIRFOILS, CONFERENCES, LIFE (DURABILITY), LININGS, MATHEMATICAL MODELS, PREDICTION ANALYSIS TECHNIQUES, ROTOR BLADES (DURABILITY), (TURBOMACHINERY), TURBINE ENGINES

N87-12921\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL

EFFECTS OF VARIABLES UPON PYROTECHNICALLY INDUCED SHOCK RESPONSE SPECTRA J. L. SMITH May 1986 61 p

(NASA-TP-2603; NAS 1.60:2603) Avail: NTIS HC A04/MF A01 CSCL 20K

PYROTECHNICS, SHOCK LOADS, SHOCK SPECTRA, VARIABILITY

N87-13789\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EFFECTS OF WINGLET ON TRANSONIC FLUTTER

#### **CHARACTERISTICS OF A CANTILEVERED TWIN-ENGINE-TRANSPORT WING MODEL**

C. L. RUHLIN, K. G. BHATIA (Boeing Commercial Airplane Co., Seattle, Wash.), and K. S. NAGARAJA Dec. 1986 77 p (NASA-TP-2627; L-16095; NAS 1.60:2627) Avail: NTIS HC A05/MF A01 CSCL 20K

AERODYNAMIC CONFIGURATIONS, FLUTTER, PREDICTION ANALYSIS TECHNIQUES, TRANSONIC FLOW, WIND TUNNEL TESTS, WINGLETS, WINGS

N87-16321\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

THE 20TH AEROSPACE MECHANICS SYMPOSIUM

May 1986 316 p Symposium held in Cleveland, Ohio, 7-9 May 1986; sponsored by NASA, the California Inst. of Tech. and LMSC

(NASA-CP-2423-REV; E-2904; NAS 1.55:2423-REV) Avail: NTIS HC A14/MF A02 CSCL 20K

ACTUATORS, CONFERENCES, FLEXIBLE SPACECRAFT, EQUIPMENT, HYDRAULIC JOINTS (JUNCTIONS). MANIPULATORS, SPACE STATIONS, SPACECRAFT INSTRUMENTS, SPUTTERING, TRIBOLOGY

N87-18855\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SENSITIVITY ANALYSIS IN ENGINEERING HOWARD M. ADELMAN, comp. and RAPHAEL T. HAFTKA, comp.

(Virginia Polytechnic Inst. and State Univ., Blacksburg) Feb. Symposium held in Hampton, Va., 25-26 Sep. 369 p 1987 1986

(NASA-CP-2457; L-16278; NAS 1.55:2457) Avail: NTIS HC A16/MF A03 CSCL 20K

DYNAMIC STRUCTURAL ANALYSIS, EIGENVALUES, MODAL RESPONSE, OPTIMIZATION, SENSITIVITY

N87-20566\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

## SHOT PEENING FOR TI-6AL-4V ALLOY COMPRESSOR BLADES

GERALD A. CAREK Apr. 1987 9 p

(NASA-TP-2711; E-3430; NAS 1.60:2711) Avail: NTIS HC A02/MF A01 CSCL 20K

ALUMINUM, COMPRESSOR BLADES, SHOT PEENING, TITANIUM ALLOYS, VANADIUM

N87-20567\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MODELING OF JOINTS FOR THE DYNAMIC ANALYSIS OF **TRUSS STRUCTURES** W. KEITH BELVIN May 1987 43 p

(NASA-TP-2661; L-16163; NAS 1.60:2661) Avail: NTIS HC

A03/MF A01 CSCL 20K DYNAMIC STRUCTURAL ANALYSIS, JOINTS (JUNCTIONS), LARGE SPACE STRUCTURES, MODELS, TRUSSES

N87-20568\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SPACE STATION STRUCTURES AND DYNAMICS TEST PROGRAM

CARLETON J. MOORE, JOHN S. TOWNSEND, and EDWARD W. IVEY Mar. 1987 47 p

(NASA-TP-2710; NAS 1.60:2710) Avail: NTIS HC A03/MF A01 CSCL 20K

DYNAMIC STRUCTURAL ANALYSIS, DYNAMIC TESTS, LARGE SPACE STRUCTURES, SPACE STATION STRUCTURES, SPACE STATIONS, SYSTEMS ANALYSIS

#### N87-27231\*# Computer Software Management and Information Center, Athens, GA.

FIFTEENTH NASTRAN (R) USERS' COLLOQUIUM

Aug. 1987 312 p Colloquium held in Kansas City, Mo., 4-8 May 1987

(NASW-3247)

(NASA-CP-2481; NAS 1.55:2481; AD-A226753) Avail: NTIS HC A14/MF A02; also available from COSMIC, Athens, Ga. 30602 CSCL 20/11

COMPUTER AIDED DESIGN, COMPUTER TECHNIQUES, CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS, STRUCTURAL VIBRATION

N87-29858\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

THE 21ST AEROSPACE MECHANISMS SYMPOSIUM

356 p Symposium held in Houston, Tex., 29 Apr. -May 1987 1 May 1987; sponsored by NASA, California Inst. of Tech., and LMSC

(NASA-CP-2470; S-560; NAS 1.55:2470) Avail: NTIS HC A16/MF A02 CSCL 20K

ACTUATORS, DEPLOYMENT, LARGE SPACE STRUCTURES, MANIPULATORS, ROBOTICS, SPACE ERECTABLE **STRUCTURES** 

N88-11140\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. TURBINE ENGINE HOT SECTION TECHNOLOGY, 1985

443 p Conference held in Cleveland, Ohio, 22-23 Oct. 1985 Oct. 1985

(NASA-CP-2405; E-2727; NAS 1.55:2405) Avail: NTIS HC A19/MF A03 CSCL 20K

COMBUSTION CHAMBERS, CONFERENCES, GAS TURBINE ENGINES, LININGS, MATHEMATICAL MODELS, METAL FATIGUE, STRUCTURAL ANALYSIS, TURBINE BLADES, VANES

N88-13609\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THE 58TH SHOCK AND VIBRATION SYMPOSIUM, VOLUME 1 WALTER D. PILKEY, comp. and BARBARA F. PILKEY, comp. (Virginia Univ., Charlottesville.) Oct. 1987 476 p Symposium held in Huntsville, Ala., 13-15 Oct. 1987; sponsored in part by DOD

(NASA-CP-2488-VOL-1; M-571-VOL-1; NAS 1.55:2488-VOL-1) Avail: NTIS HC A21/MF A03 CSCL 20K

CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS MECHANICAL SHOCK, SHOCK TESTS, SPACE SHUTTLE MAIN ENGINE, STRUCTURAL VIBRATION, VIBRATION DAMPING, VIBRATION ISOLATORS

## **39 STRUCTURAL MECHANICS**

**N88-15263\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

LIFE PREDICTION OF THERMOMECHANICAL FATIGUE USING TOTAL STRAIN VERSION OF STRAINRANGE PARTITIONING (SRP): A PROPOSAL

JAMES F. SALTSMAN and GARY R. HALFORD Feb. 1988 25 p

(NASA-TP-2779; E-3795; NAS 1.60:2779) Avail: NTIS HC A03/MF A01 CSCL 20K

FATIGUE LIFE, LIFE (DURABILITY), METALS, PREDICTIONS

N88-17095\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. STRESS INTENSITY AND CRACK DISPLACEMENT FOR SMALL EDGE CRACKS

THOMAS W. ORANGE Feb. 1988 11 p

(NASA-TP-2801; E-3744; NAS 1.60:2801) Avail: NTIS HC A03/MF A01 CSCL 20K

CRACKS, DISPLACEMENT, EDGES, ELASTIC DEFORMATION, STRESS INTENSITY FACTORS

**N88-18948\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THE 58TH SHOCK AND VIBRATION SYMPOSIUM, VOLUME 2 WALTER D. PILKEY, comp. and BARBARA F. PILKEY, comp. (Virginia Univ., Charlottesville.) Feb. 1988 208 p Symposium held in Huntsville, Ala., 13-15 Oct. 1987; sponsored in part by DOD

(NASA-CP-2488-VOL-2; M-572-VOL-2; NAS 1.55:2488-VOL-2) Avail: NTIS HC A10/MF A02 CSCL 20K

CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, FINITE ELEMENT METHOD, SPACECRAFT COMPONENTS, SPACECRAFT DESIGN, SPECTRUM ANALYSIS, STRUCTURAL VIBRATION

**N88-20652\*#** Computer Software Management and Information Center, Athens, GA.

SIXTEENTH NASTRAN (R) USERS' COLLOQUIUM

Mar. 1988 196 p Colloquium held in Arlington, Va., 25-29 Apr. 1988

(NASA-CP-2505; NAS 1.55:2505; AD-A226754) Avail: NTIS HC A09/MF A02; also available from COSMIC, Athens, Ga. 30602 CSCL 20/11

CONFERENCES, NASTRAN, STRUCTURAL ANALYSIS

**N88-21456\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ADVANCES IN CONTACT ALGORITHMS AND THEIR APPLICATION TO TIRES

AHMED K. NOOR and JOHN A. TANNER Apr. 1988 36 p Presented at the American Chemical Society Meeting, Montreal, Quebec, 26-29 May 1987 Original contains color illustrations (NASA-TP-2781; L-16376; NAS 1.60:2781) Avail: NTIS HC A03/MF A01 CSCL 20K

ALGORITHMS, FRICTION, SURFACE PROPERTIES, TIRES

**N88-21468\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## THE 22ND AEROSPACE MECHANISMS SYMPOSIUM

May 1988 416 p Symposium held in Hampton, Va.; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, Calif.

(NASA-CP-2506; L-16433; NAS 1.55:2506) Avail: NTIS HC A18/MF A03 CSCL 20K

ACTUATORS, BEARINGS, MAGNETIC SUSPENSION, MECHANICAL DRIVES, TELEOPERATORS, VIBRATION ISOLATORS

**N88-21498\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### NONLINEAR CONSTITUTIVE RELATIONS FOR HIGH TEMPERATURE APPLICATIONS, 1986

Apr. 1988 482 p Symposium held in Akron, Ohio, 11-13 Jun. 1986; sponsored by NASA, Lewis Research Center, Cleveland,

Ohio and Akron Univ., Ohio

(NASA-CP-10010; E-3956; NAS 1.55:10010) Avail: NTIS HC A21/MF A03 CSCL 20K

CONSTITUTIVE EQUATIONS, MATHEMATICAL MODELS, REFRACTORY MATERIALS, STRESS ANALYSIS, STRUCTURAL ANALYSIS, VISCOPLASTICITY

**N88-22382\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 2: STRUCTURAL MECHANICS

May 1988 307 p Symposium held in Cleveland, Ohio, 24-25 May 1988

(NASA-CP-3003-VOL-2; E-3970-VOL-2; NAS 1.55:3003-VOL-2) Avail: NTIS HC A14/MF A02 CSCL 20K

AIRCRAFT ENGINES, DYNAMIC STRUCTURAL ANALYSIS, FATIGUE (MATERIALS), FRACTURE MECHANICS, STRESS ANALYSIS

**N88-22408\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 3: STRUCTURAL INTEGRITY FATIGUE AND FRACTURE WIND TURBINES HOST

May 1988 366 p Symposium held in Cleveland, Ohio, 24-25 May 1988

(NASA-CP-3003-VOL-3; E-3970-VOL-3; NAS 1.55:3003-VOL-3) Avail: NTIS HC A16/MF A03 CSCL 20K

CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, FRACTURE MECHANICS, METAL FATIGUE, NONDESTRUCTIVE TESTS, PARALLEL PROCESSING (COMPUTERS), WIND TURBINES

**N88-23226\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 1: STRUCTURAL DYNAMICS

May 1988 463 p Symposium held in Cleveland, Ohio, 24-25 May 1988

(NÁSA-CP-3003-VOL-1; E-3970-VOL-1; NAS 1.55:3003-VOL-1) Avail: NTIS HC A20/MF A03 CSCL 20K

AEROELASTICITY, COMPUTER TECHNIQUES, CONFER ENCES, DYNAMIC STRUCTURAL ANALYSIS, NASTRAN, PAR-ALLEL PROCESSING (COMPUTERS), SPACECRAFT STRUC-TURES, STRUCTURAL VIBRATION, TURBINE BLADES, VIBRA-TION DAMPING, WIND TURBINES

**N88-23988\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

DYNAMIC CHARACTERISTICS OF A VIBRATING BEAM WITH PERIODIC VARIATION IN BENDING STIFFNESS

JOHN S. TOWNSEND Feb. 1987 23 p Previously announced as N87-22726

(NASA-TP-2697; NAS 1.60:2697) Avail: NTIS HC A03/MF A01 CSCL 20K

BEAMS (SUPPORTS), BENDING, BENDING VIBRATION, DYNAMIC CHARACTERISTICS, MODAL RESPONSE, MODULATION, PERIODIC VARIATIONS, STIFFNESS

**N88-25013\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SRM PROPELLANT AND POLYMER MATERIALS STRUCTURAL TEST PROGRAM

CARLETON J. MOORE May 1988 16 p

(NASA-TP-2821; NAS 1.60:2821) Avail: NTIS HC A03/MF A01 CSCL 20K

DYNAMIC STRUCTURAL ANALYSIS, PERFORMANCE TESTS, SOLID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE BOOSTERS

N88-26684\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. THREE-DIMENSIONAL ANALYSIS OF A POSTBUCKLED EMBEDDED DELAMINATION JOHN D. WHITCOMB Jul. 1988 26 p

(NASA-TP-2823; L-16453; NAS 1.60:2823) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, DELAMINATING, FINITE ELEMENT METHOD, LAMINATES, STRAIN ENERGY RELEASE RATE

N88-28343\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SRM (SOLID ROCKET MOTOR) PROPELLANT AND POLYMER MATERIALS STRUCTURAL MODELING

CARLETON J. MOORE Aug. 1988 42 p

(NASA-TP-2824; NAS 1.60:2824) Avail: NTIS HC A03/MF A01 CSCL 20K

POLYMERIC FILMS, PROPELLANTS, SOLID PROPELLANT ROCKET ENGINES, STRUCTURAL ANALYSIS

National Aeronautics and Space Administration. N89-12876\*# Lewis Research Center, Cleveland, OH.

**TURBINE ENGINE HOT SECTION TECHNOLOGY 1986** 488 p Workshop held in Cleveland, Ohio, 21-22 Oct. 1986 Oct. 1986

(NASA-CP-2444; E-3205; NAS 1.55:2444) Avail: NTIS HC A21/MF A03 CSCL 20K

CONFERENCES, FATIGUE (MATERIALS), FRACTURE MECHANICS, GAS TURBINE ENGINES, HEAT TRANSFER, MEASURING INSTRUMENTS, PROPELLANT COMBUSTION, STRUCTURAL ANALYSIS, THERMAL CONTROL COATINGS

N89-13814\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

EFFECTS OF VARIABLES UPON PYROTECHNICALLY INDUCED SHOCK RESPONSE SPECTRA, PART 2

JAMES LEE SMITH Nov. 1988 106 p

(NASA-TP-2872; NAS 1.60:2872) Avail: NTIS HC A06/MF A01 CSCL 20K

RELIABILITY, COMPONENT JOINTS (JUNCTIONS), PYROTECHNICS, SHAPED CHARGES, SPACECRAFT STRUCTURES

N89-16170\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### PARTITIONING STRATEGY FOR EFFICIENT NONLINEAR FINITE ELEMENT DYNAMIC ANALYSIS ON **MULTIPROCESSOR COMPUTERS**

AHMED K. NOOR and JEANNE M. PETERS (Joint Inst. for. Advancement of Flight Sciences, Hampton, VA.) Washington, DC Jan. 1989 38 p Original contains color illustrations (NAG1-730; AF-AFOSR-0136-88)

(NASA-TP-2850; L-16476; NAS 1.60:2850) Avail: NTIS HC A03/MF A01 CSCL 20K

DYNAMIC STRUCTURAL ANALYSIS, FINITE ELEMENT METHOD, MULTIPROCESSING (COMPUTERS), PARALLEL PROCESSING (COMPUTERS), PARTITIONS (MATHEMATICS)

N89-16183\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. THERMOVISCOPLASTIC MODEL WITH APPLICATION TO COPPER ALAN D. FREED Dec. 1988 18 p

(NASA-TP-2845; E-4280; NAS 1.60:2845) Avail: NTIS HC A03/MF A01 CSCL 20K

COPPER, MODELS, THERMOVISCOELASTICITY, VISCO-PLASTICITY

National Aeronautics and Space Administration. N89-16192\*# Marshall Space Flight Center, Huntsville, AL. CYCLIC LOADS TESTS OF CARBON INVOLUTE SOLID

#### ROCKET MOTOR OUTER BOOT RING SEGMENTS RAFIQ AHMED Dec. 1988 28 p

(NASA-TP-2884; M-605; NAS 1.60:2884) Avail: NTIS HC A03/MF A01 CSCL 20K

CYCLIC LOADS, FIBER COMPOSITES, LOAD TESTS, MODULUS OF ELASTICITY, PLASTIC PROPERTIES, RESIN MATRIX COMPOSITES, SPACE SHUTTLE BOOSTERS, STRESS-STRAIN RELATIONSHIPS

N89-16196\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA. CONTROL SURFACE SPANWISE PLACEMENT IN ACTIVE

## FLUTTER SUPPRESSION SYSTEMS

E. NISSIM and JOHN J. BURKEN Nov. 1988 19 p Prepared in cooperation with Technion - Israel Inst. of Tech., Haifa (NASA-TP-2873; H-1492; NAS 1.60:2873) Avail: NTIS HC A03/MF A01 CSCL 20K ACTIVE CONTROL, CONTROL SURFACES, FLUTTER

ANALYSIS

N89-17298\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

**TURBINE ENGINE HOT SECTION TECHNOLOGY, 1987** 

Oct. 1987 464 p Workshop held in Cleveland, OH, 20-21 Oct. 1987

(NASA-CP-2493; E-3745; NAS 1.55:2493) Avail: NTIS HC A20/MF A03 CSCL 20K

AIRCRAFT ENGINES, COMBUSTION, CONFERENCES, FINITE ELEMENT METHOD, FRACTURE MECHANICS, GAS TURBINE ENGINES, HEAT TRANSFER, STRUCTURAL ANALYSIS, THERMAL CONTROL COATINGS, THERMAL FATIGUE, TURBINE BLADES

N89-17892\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MEASURED AND PREDICTED ROOT-MEAN-SQUARE ERRORS IN SQUARE AND TRIANGULAR ANTENNA MESH FACETS W. B. FICHTER Washington, DC Mar. 1989 17 p

(NASA-TP-2896; L-16525; NAS 1.60:2896) Avail: NTIS HC A03/MF A01 CSCL 20K

ANTENNA DESIGN, ANTENNA RADIATION PATTERNS, FABRICS, REFLECTORS, ROOT-MEAN-SQUARE ERRORS, STRUCTURAL ANALYSIS

N89-19579\*# National Aeronautics and Space Administration, Washington, DC.

#### MIXED FINITE ELEMENT MODELS FOR FREE VIBRATIONS OF THIN-WALLED BEAMS

AHMED K. NOOR, JEANNE M. PETERS, and BYUNG-JIN MIN Feb. 1989 28 p Prepared in cooperation with Joint Inst. for Advancement of Flight Sciences, Hampton, VA

(NASA-TP-2868; L-16506; NAS 1.60:2868) Avail: NTIS HC A03/MF A01 CSCL 20K

BEAMS (SUPPORTS), FINITE ELEMENT METHOD, FREE VIBRATION, THIN WALLS

N89-19580\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### MIXED FORMULATION FOR FRICTIONLESS CONTACT PROBLEMS

AHMED K. NOOR and KYUN O. KIM 1989 26 p Prepared in cooperation with George Washington Univ., Hampton, VA and Joint Inst. for Advancement of Flight Sciences, Hampton, VA (NASA-TP-2897; L-16513; NAS 1.60:2897) Avail: NTIS HC

A03/MF A01 CSCL 20K

CONTACT LOADS, CURVED BEAMS, DEFORMATION, FINITE ELEMENT METHOD, FRICTION FACTOR, STRESS ANALYSIS

N89-22940\*# Computer Software Management and Information Center, Athens, GA.

SEVENTEENTH NASTRAN (R) USERS' COLLOQUIUM

Mar. 1989 400 p Colloquium held in San Antonio, TX, 24-28 Apr. 1989

(NASA-CP-3029; NAS 1.55:3029; AD-A226755) Avail: NTIS HC A17/MF A03; also available from COSMIC, Athens, GA 30602 CSCL 20/11

CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRAIN ENERGY METHODS, STRUCTURAL ANALYSIS

## **39 STRUCTURAL MECHANICS**

**N89-23892\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THE 23RD AEROSPACE MECHANISMS SYMPOSIUM

Washington Mar. 1989 342 p Symposium held in Huntsville, AL, 3-5 May 1989; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, CA (NASA-CP-3032; M-611; NAS 1.55:3032) Avail: NTIS HC

(NASA-CF-3032; M-611; NAS 1.55:3032) AVail: NTIS HC A15/MF A02 CSCL 20K

AEROSPACE SYSTEMS, CONFERENCES, DEPLOYMENT, LUBRICANTS, MANIPULATORS, SPACE STATIONS, SPACECRAFT DOCKING, TELEOPERATORS

**N89-24626\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# RESEARCH IN STRUCTURES, STRUCTURAL DYNAMICS AND MATERIALS, 1989

WILLIAM F. HUNTER, comp. and AHMED K. NOOR, comp. (George Washington Univ., Hampton, VA.) Apr. 1989 88 p Proceedings of the AIAA/ASME/ASCE/AHS/ASC 30th Structures, Structural Dynamics and Materials Conference, Mobile, AL, 3-5 Apr. 1989

(NASA-CP-10024; NAS 1.55:10024) Avail: NTIS HC A05/MF A01 CSCL 20K

ACOUSTIC EMISSION, BUCKLING, COMPOSITE STRUCTURES, CONFERENCES, CONTROL SYSTEMS DESIGN, DISPLACEMENT, DYNAMIC STRUCTURAL ANALYSIS, MATHEMATICAL MODELS

**N89-24638\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

COMPUTATIONAL METHODS FOR STRUCTURAL MECHANICS AND DYNAMICS, PART 1

W. JEFFERSON STROUD, ed., JERROLD M. HOUSNER, ed., JOHN A. TANNER, ed., and ROBERT J. HAYDUK, ed. Washington May 1989 329 p Workshop held in Hampton, VA, 19-21 Jun. 1985

(NASA-CP-3034-PT-1; L-16560-PT-1; NAS 1.55:3034-PT-1) Avail: NTIS HC A15/MF A02 CSCL 20K

COMPUTATION, COMPUTERIZED SIMULATION, CONFER-ENCES, SHELLS (STRUCTURAL FORMS), STRESS ANALYSIS, STRUCTURAL ANALYSIS, TIRES

N89-24654\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### COMPUTATIONAL METHODS FOR STRUCTURAL MECHANICS AND DYNAMICS

W. JEFFERSON STROUD, ed., JERROLD M. HOUSNER, ed., JOHN A. TANNER, ed., and ROBERT J. HAYDUK, ed. Washington May 1989 256 p Workshop held in Hampton, VA, 19-21 Jun. 1985

(NASA-CP-3034-PT-2; L-16560-PT-2; NAS 1.55:3034-PT-2) Avail: NTIS HC A12/MF A02 CSCL 20K

AIRCRAFT DESIGN, COMPUTERIZED SIMULATION, CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, MANY BODY PROBLEM, STRESS ANALYSIS

**N89-26255\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# DERIVATION OF A TAPPERED P-VERSION BEAM FINITE ELEMENT

HOWARD E. HINNANT (Army Aviation Systems Command, Hampton, VA.) Aug. 1989 45 p

(DA PROJ. 1L1-62211-A-47-AB)

(NASA-TP-2931; L-16577; NAS 1.60:2931; AVSCOM-TR-B-002; AD-A213443) Avail: NTIS HC A03/MF A01 CSCL 20/11

BEAMS, FINITE ELEMENT METHOD, MATHEMATICAL MODELS, TAPERING

N89-27214\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. WELD STRESSES BEYOND ELASTIC LIMIT: MATERIALS DISCONTINUITY V. VERDERAIME Washington Aug. 1989 28 p

(NASA-TP-2935; NAS 1.60:2935) Avail: NTIS HC A03/MF A01 CSCL 20L

ELASTIC PROPERTIES, STRAIN HARDENING, STRESS CONCENTRATION, STRESSES, WELDING

N89-28034\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

EVALUATION OF A STRAIN-GAGE LOAD CALIBRATION ON A LOW-ASPECT-RATIO WING STRUCTURE AT ELEVATED TEMPERATURE

LAWRENCE F. REARDON Jun. 1989 39 p (NASA-TP-2921; H-1331; NAS 1.60:2921) Avail: NTIS HC A03/MF A01 CSCL 20K AIRCRAFT CONFIGURATIONS, AIRCRAFT STRUCTURES,

AIRCRAFT CONFIGURATIONS, AIRCRAFT STRUCTURES, CALIBRATING, HIGH TEMPERATURE ENVIRONMENTS, LOAD TESTS, LOW ASPECT RATIO WINGS, STRAIN GAGES, WING LOADING

N89-29773\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### NAŠA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 1

NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 383 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH

(NASA-CP-10012-PT-1; NAS 1.55:10012-PT-1) Avail: NTIS HC A17/MF A03 CSCL 20K

ARCHITECTURE (COMPUTERS), CONFERENCES, FINITE ELEMENT METHOD, MULTIPROCESSING (COMPUTERS), PARALLEL PROCESSING (COMPUTERS), SOFTWARE ENGINEERING, STRUCTURAL ANALYSIS

**N89-29789\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

NAŠA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 2

NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 374 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH

(NASA-CP-10012-PT-2; NAS 1.55:10012-PT-2) Avail: NTIS HC A16/MF A02 CSCL 20K

ARCHITECTURE (COMPUTERS), COMPUTER AIDED DESIGN, COMPUTER SYSTEMS PROGRAMS, COMPUTERIZED SIMULATION, CONFERENCES, FINITE ELEMENT METHOD, STRUCTURAL ANALYSIS, STRUCTURAL ENGINEERING

**N89-29799\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### NAŠA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 3

NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 419 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH

(NASA-CP-10012-PT-3; NAS 1.55:10012-PT-3) Avail: NTIS HC A18/MF A03 CSCL 20K

COMPUTER TECHNIQUES, CONFERENCES, FINITE ELEMENT METHOD, LARGE SPACE STRUCTURES, SOFTWARE ENGINEERING, STRUCTURAL ANALYSIS

**N89-29811\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

APPLICATION OF NEWTON'S METHOD TO THE POSTBUCKLING OF RINGS UNDER PRESSURE LOADINGS GAYLEN A. THURSTON Oct. 1989 26 p (NASA-TP-2941; L-16578; NAS 1.60:2941) Avail: NTIS HC A03/MF A01 CSCL 20K BUCKLING, CYLINDRICAL SHELLS, DEFORMATION, LOADS (FORCES), NEWTON METHODS, RING STRUCTURES, STRUCTURAL FAILURE

**N90-12042\*#** National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.

EFFECT OF CONTROL SURFACE MASS UNBALANCE ON THE STABILITY OF A CLOSED-LOOP ACTIVE CONTROL SYSTEM E. NISSIM (Technion - Israel Inst. of Tech., Haifa.) Oct. 1989 26 p

(NASA-TP-2952; H-1534; NAS 1.60:2952) Avail: NTIS HC A03/MF A01 CSCL 20K

ACTIVE CONTROL, AERODYNAMIC STABILITY, AERODYNAMICS, BALANCE, CONTROL SURFACES, FEEDBACK CONTROL, FLUTTER, INERTIA, MASS DISTRIBUTION

**N90-18081\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

INTEGRATED FORCE METHOD VERSUS DISPLACEMENT METHOD FOR FINITE ELEMENT ANALYSIS

SURYA N. PATNAIK, LASZLO BERKE, and RICHARD H. GALLAGHER (Clarkson Univ., Potsdam, NY.) Washington Feb. 1990 33 p

(NASA-TP-2937; E-4604; NAS 1.60:2937) Avail: NTIS HC A03/MF A01 CSCL 20K

DISPLACEMENT, EQUILIBRIUM EQUATIONS, FINITE ELEMENT METHOD, LOADS (FORCES), STIFFNESS, STRUCTURAL ANALYSIS, STRUCTURAL STABILITY

**N90-22079\*#** National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.

THE 24TH AEROSPACE MECHANISMS SYMPOSIUM

Washington Apr. 1990 370 p Symposium held at Kennedy Space Center, FL, 18-20 Apr. 1990; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, CA

(NASA-CP-3062; NAS 1.55:3062) Avail: NTIS HC A16/MF A03 CSCL 20K

ACTUATORS, AEROSPACE ENGINEERING, CONFERENCES, GROUND SUPPORT EQUIPMENT, LARGE SPACE STRUCTURES, TRIBOLOGY

**N90-24637\*#** Computer Software Management and Information Center, Athens, GA.

EIGHTEENTH NASTRAN (R) USERS' COLLOQUIUM

Washington NASA Apr. 1990 176 p Colloquium held in Portland, OR, 23-27 Apr. 1990 Sponsored by NASA, Washington

(NASA-CP-3069; NAS 1.55:3069; AD-A226756) Avail: NTIS HC A09/MF A01; also available from COSMIC, Athens, GA 30602 CSCL 20/11

CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS, STRUCTURAL VIBRATION

**N90-25366\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. **LOADS ANALYSIS AND TESTING OF FLIGHT** 

## CONFIGURATION SOLID ROCKET MOTOR OUTER BOOT RING SEGMENTS

RAFIQ AHMED Washington Jun. 1990 47 p

(NASA-TP-3028; NAS 1.60:3028) Avail: NTIS HC A03/MF A01 CSCL 20K

BEAMS (SUPPORTS), BENDING, COMPUTER PROGRAMS, FAILURE ANALYSIS, MATHEMATICAL MODELS, SOLID PROPELLANT ROCKET ENGINES, STIFFNESS

N90-27121\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. MODAL INTERACTION IN POSTBUCKLED PLATES. THEORY GAYLEN A. THURSTON Washington Nov. 1989 21 p (NASA-TP-2943; L-16573; NAS 1.60:2943) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, FAILURE MODES, PLATES (STRUCTURAL MEMBERS), STRUCTURAL ANALYSIS, STRUCTURAL FAILURE

**N90-28099\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

CERAMICS ANALYSIS AND RELIABILITY EVALUATION OF STRUCTURES (CARES). USERS AND PROGRAMMERS MANUAL

NOEL N. NEMETH (Aerospace Design and Fabrication, Inc., Brook Park, OH.), JANE M. MANDERSCHEID, and JOHN P. GYEKENYESI Washington Aug. 1990 232 p

(NASA-TP-2916; E-4722-1; NAS 1.60:2916) Avail: NTIS HC A11/MF A02 CSCL 11C

CERAMICS, COMPUTER PROGRAMS, FAILURE MODES, NASTRAN, PROBABILITY THEORY, RELIABILITY ANALYSIS, STRUCTURAL ANALYSIS

**N90-28859\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

BUČKLING AND POSTBUCKLING BEHAVIOR OF COMPRESSION-LOADED ISOTROPIC PLATES WITH CUTOUTS

MICHAEL P. NEMETH Washington Sep. 1990 22 p Presented at the 31st AIAA/ASME/ASCE/AHS Structures, Structural Dynamics, and Materials Conference, Long Beach, CA, 2-4 Apr. 1990 Previously announced in IAA as A90-29311 (NASA-TP-3024; L-16789; NAS 1.60:3024) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, METAL PLATES, OPENINGS, RECTANGULAR PLATES, STIFFNESS

## 42

### **GEOSCIENCES (GENERAL)**

N87-18139\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

## GEOMORPHOLOGY FROM SPACE: A GLOBAL OVERVIEW OF REGIONAL LANDFORMS

NICHOLAS M. SHORT, ed. and ROBERT W. BLAIR, JR., ed. (Fort Lewis A&M Coll., Durango, Colo.) 1986 737 p Original contains color illustrations

(NASA-SP-486; NAS 1.21:486; LC-86-17974) Avail: SOD HC \$41.00 as 033-000-00994-1; NTIS MF E03 CSCL 08E

This book, Geomorphology from Space: A Global Overview of Regional Landforms, was published by NASA STIF as a successor to the two earlier works on the same subject: Mission to Earth: LANDSAT views the Earth, and ERTS-1: A New Window on Our Planet. The purpose of the book is threefold: first, to serve as a stimulant in rekindling interest in descriptive geomorphology and landforms analysis at the regional scale; second, to introduce the community of geologists, geographers, and others who analyze the Earth's surficial forms to the practical value of space-acquired remotely sensed data in carrying out their research and applications; and third, to foster more scientific collaboration between geomorphologists who are studying the Earth's landforms and astrogeologists who analyze landforms on other planets and moons in the solar system, thereby strengthening the growing field of comparative planetology. F.M.R.

N88-13774\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

SCIENTIFIC AND OPERATIONAL REQUIREMENTS FOR TOMS DATA

ARLIN J. KRUEGER, ed. Dec. 1987 112 p Conference held in Greenbelt, Md., 10-11 Sep. 1986

(NASA-CP-2497; REPT-87B0206; NAS 1.55:2497) Avail: NTIS HC A06/MF A01 CSCL 04A

ATMOSPHERIC CHEMISTRY, CONFERENCES, MAPPING, OZONE DEPLETION, OZONOMETRY, PHOTOCHEMICAL

## 42 GEOSCIENCES (GENERAL)

REACTIONS, SATELLITE SOUNDING, TOTAL OZONE MAPPING SPECTROMETER, TROPOSPHERE

N88-17096\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. NIMBUS 7 SOLAR BACKSCATTER ULTRAVIOLET (SBUV)

SPECTRAL SCAN SOLAR IRRADIANCE AND EARTH RADIANCE PRODUCT USER'S GUIDE

BARRY M. SCHLESINGER, RICHARD P. CEBULA (ST Systems Corp., Hyattsville, Md.), DONALD F. HEATH, and ALBERT J. FLEIG Feb. 1988 65 p

(NAS5-29386)

(NASA-RP-1199; NAS 1.61:1199; REPT-88-0004) Avail: NTIS HC A04/MF A01 CSCL 04A

The archived tape products from the spectral scan mode measurements of solar irradiance (SUNC tapes) and Earth radiance (EARTH tapes) by the Solar Backscatter UV (SBUV) instrument aboard Nimbus 7 are described. Incoming radiation from 160 to 400 nm is measured at intervals of 0.2 nm. The scan-to-scan repeatability of the solar irradiance measurements ranges from approximately 0.5 to 1 percent longward of 280 nm, to 2 percent around 210 nm and 4 percent near 175 nm. The repeatability of the Earth radiance values ranges from 2 to 3 percent at longer wavelengths and low zenith angles to 10 percent at shorter wavelengths and high zenith angles. The tape formats are described in detail, including file structure and contents of each type of record. Catalogs of the tapes and the time period covered are provided, along with lists of the days lacking solar irradiance measurements and the days dedicated to Earth radiance measurements. The method for production of the tapes is outlined and quality control measures are described. How radiances and irradiances are derived from the raw counts, the corrections for changes in instrument sensitivity, and related uncertainties are discussed. Author

**N89-22152\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

NIMBUS-7 DATA PRODUCT SUMMARY

ARNOLD G. OAKES, DAESOO HAN, H. LEE KYLE, GENE CARL FELDMAN, ALBERT J. FLEIG, EDWARD J. HURLEY, and BARBARA A. KAUFMAN (General Sciences Corp., Laurel, MD.) Feb. 1989 103 p

(NAS5-29386)

(NASA-RP-1215; REPT-89B00074; NAS 1.61:1215) Avail: NTIS HC A06/MF A01 CSCL 04A

Data sets resulting from the first nine years of operations of the Nimbus-7 Satellite are briefly described. After a brief description of the Nimbus-7 Mission, each of the eight experiments on-board the satellite (Coastal Zone Color Scanner (CZCS), Earth Radiation Budget (ERB), Limb Infrared Monitor of the Stratosphere (MIMS), Stratospheric Aerosol Measurement II (SAM II), Stratospheric and Mesospheric Sounder (SAMS), Solar Backscatter Ultraviolet/Total Ozone Mapping Spectrometer (SBUV/TOMS), Scanning Multichannel Microwave Radiometer (SMMR) and the Temperature Humidity Infrared Radiometer (THIR) are introduced and their respective data products are described in terms of media, general format, and suggested applications. Extensive references are provided. Instructions for obtaining further information, and for ordering data products are given. Author

**N89-26274\*#** National Aeronautics and Space Administration, Washington, DC.

## PLANETARY GEOSCIENCES, 1988

MARIA T. ZUBER, ed., JEFF L. PLESCIA, ed., ODETTE B. JAMES, ed., and GLENN MACPHERSON, ed. (Smithsonian Institution, Washington, DC.) Aug. 1989 113 p Original contains color illustrations

(NASA-SP-498; NAS 1.21:498; LC-88-600456) Avail: NTIS HC A06/MF A01 CSCL 08G

Research topics within the NASA Planetary Geosciences Program are presented. Activity in the fields of planetary geology, geophysics, materials, and geochemistry is covered. The investigator's current research efforts, the importance of that work in understanding a particular planetary geoscience problem, the context of that research, and the broader planetary geoscience effort is described. As an example, theoretical modelling of the stability of water ice within the Martian regolith, the applicability of that work to understanding Martian volatiles in general, and the geologic history of Mars is discussed. Author

**N89-26275\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### POLAR MICROWAVE BRIGHTNESS TEMPERATURES FROM NIMBUS-7 SMMR: TIME SERIES OF DAILY AND MONTHLY MAPS FROM 1978 TO 1987

JOSEFINO C. COMISO and H. JAY ZWALLY Jul. 1989 89 p (NAS5-29386)

(NASA-RP-1223; REPT-89B00167; NAS 1.61:1223) Avail: NTIS HC A05/MF A01 CSCL 04A

A time series of daily brightness temperature gridded maps (October 25, 1978 through August 15, 1987) were generated from all ten channels of the Nimbus-7 Scanning Multichannel Microwave Radiometer orbital data. This unique data set can be utilized in a wide range of applications including heat flux, ocean circulation, ice edge productivity, and climate studies. Two sets of data in polar stereographic format are created for the Arctic region; one with a grid size of about 30 km on a 293 by 293 array similar to that previously utilized for the Nimbus-5 Electrically Scanning Microwave Radiometer, while the other has a grid size of about 25 km on a 448 by 304 array identical to what is now being used for the DMSP Scanning Multichannel Microwave Imager, Data generated for the Antaractic region are mapped using the 293 by 293 grid only. The general technique for mapping, and a quality assessment of the data set are presented. Monthly and yearly averages are also generated from the daily data and sample geophysical ice images and products derived from the data are given. Contour plots of monthly ice concentrations derived from the data for October 1978 through August 1987 are presented to demonstrate spatial and temporal detail which this data set can offer, and to show potential research applications. Author

**N90-22824\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### SEARISE: A MULTIDISCIPLINARY RESEARCH INITIATIVE TO PREDICT RAPID CHANGES IN GLOBAL SEA LEVEL CAUSED BY COLLAPSE OF MARINE ICE SHEETS

ROBERT A. BINDSCHADLER, ed. 1990 55 p Workshop held in College Park, MD, 23-25 Jan. 1990; sponsored by NASA and NSF

(NASA-CP-3075; REPT-90-077; NAS 1.55:3075) Avail: NTIS HC A04/MF A01 CSCL 08C

ANTARCTIC REGIONS, ATMOSPHERIC TEMPERATURE, CLIMATE CHANGE, ICE ENVIRONMENTS, POLAR REGIONS, PROJECT PLANNING, SEA ICE, SEA LEVEL

## 43

## EARTH RESOURCES AND REMOTE SENSING

Includes remote sensing of earth resources by aircraft and spacecraft; photogrammetry; and aerial photography.

**N87-22281\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SURFACE BIDIRECTIONAL REFLECTANCE PROPERTIES OF TWO SOUTHWESTERN ARIZONA DESERTS FOR

## WAVELENGTHS BETWEEN 0.4 AND 2.2 MICROMETERS

CHARLES H. WHITLOCK, G. CARLTON PURGOLD, and STUART R. LECROY (PRC Kentron, Inc., Hampton, Va.) May 1987 48 p

(NASA-TP-2643; L-16159; NAS 1.60:2643) Avail: NTIS HC A03/MF A01 CSCL 20F

#### ALBEDO, BIDIRECTIONAL REFLECTANCE, DESERTS. DIRECTIVITY, SOLAR POSITION, ZENITH

N87-27315\* National Aeronautics and Space Administration, Washington, DC

#### EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH **INDEXES (ISSUE 54)**

Aug. 1987 164 p (NASA-SP-7041(54); NAS 1.21:7041(54)) Avail: NTIS HC A08 CSCL 05B

This bibliography lists 562 reports, articles, and other documents introduced into the NASA scientific and technical information system between April 1 and June 30, 1987. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

Author

N87-28162\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### EFFECTS OF AEROSOLS AND SURFACE SHADOWING ON **BIDIRECTIONAL REFLECTANCE MEASUREMENTS OF** DESERTS

DAVID E. BOWKER and RICHARD E. DAVIS Sep. 1987 26 p (NASA-TP-2756; L-16327; NAS 1.60:2756) Avail: NTIS HC A03/MF A01 CSCL 04A

AEROSOLS, BIDIRECTIONAL REFLECTANCE, DESERTS, DUST, REMOTE SENSING, SHADOWS, SURFACE PROPERTIES

N87-28955\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. ATLAS OF ABSORPTION LINES FROM 0 TO 17900 CM (SUP)-1

J. H. PARK, L. S. ROTHMAN, C. P. RINSLAND, H. M. PICKETT, D. J. RICHARDSON, and J. S. NAMKUNG (ST Systems Corp., Hampton, Va.) Sep. 1987 197 p

(NASA-RP-1188; L-16330; NAS 1.61:1188) Avail: NTIS HC A09/MF A02 CSCL 04A

Plots of logarithm (base 10) of absorption line strength versus wavenumber from 0 to 17900/cm(sup)-1 are shown for the 28 atmospheric gases (H2O, CO2, O3, N2O, CO, CH4, O2, NO, SO2, NO2, NH3, HNO3, OH, HF, HCI, HBr, HI, CIO, OCS, H2CO, HOCI, N2, HCN, CH3Cl, H2O2, C2H2, C2H6, PH3), which appear in the 1986 Air Force Geophysics Laboratory high-resolution transmission molecular absorption data base (HITRAN) compilation, and for O(P-3), O-18 isotopic ozone, and HO2 from the 1984 JPL compilation in the 0- to 200/cm(sup)-1 region, and infrared solar CO lines at 4500 K. Also shown are plots of logarithm (base 10) of approximate infrared absorption cross sections of 11 heavy molecules versus wavenumber. The cross-section data cover 700 to 1800/cm(sup)-1 and are included as a separate data file in the 1986 HITRAN database. Author

N88-20714\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### THE 1987 AIRBORNE ANTARCTIC OZONE EXPERIMENT: THE NIMBUS-7 TOMS DATA ATLAS

ARLIN J. KRUEGER, PHILIP E. ARDANUY, FRANK S. SECHRIST, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and **REGINALD N. GALIMORE (Science Applications Research,** Lanham, Md.) Mar. 1988 246 p

(NASA-RP-1201; REPT-88B0107; NAS 1.61:1201) Avail: NTIS HC A11/MF A02 CSCL 04B

Total ozone data taken by the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) played a central role in the successful outcome of the 1987 Airborne Antarctic Ozone Experiment. The near-real-time TOMS total ozone observations were suppled within hours of real time to the operations center in Punta Arenas, Chile, over a telecommunications network designed specifically for this

## 43 EARTH RESOURCES AND REMOTE SENSING

purpose. The TOMS data preparation and method of transfer over the telecommunications links are reviewed. This atlas includes a complete set of the near-real-time TOMS orbital overpass data over regions around the Palmer Peninsula of Antarctica for the period of August 8 through September 29, 1987. Also provided are daily polar orthographic projections of TOMS total ozone measurements over the Southern Hemisphere from August through November 1987. In addition, a chronology of the salient points of the experiment, along with some latitudinal cross sections and time series at locations of interest of the TOMS total ozone observations are presented. The TOMS total ozone measurements are evaluated along the flight tracks of each of the ER-2 and DC-8 missions during the experiment. The ozone hole is shown here to develop in a monotonic progression throughout late August and September. The minimum total ozone amount was found on 5 October, when its all-time lowest value of 109 DU is recorded. The hole remains well defined, but fills gradually from mid-October through mid-November. The hole's dissolution is observed here to begin in mid-November, when it elongates and begins to rotate. By the end of November, the south pole is no longer located within the ozone hole. Author

N88-23314\* National Aeronautics and Space Administration, Washington, DC.

#### EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 57) May 1988 129 p

(NASA-SP-7041(57); NAS 1.21:7041(57)) Avail: NTIS HC A07 CSCL 08B

This bibliography lists 451 reports, articles and other documents introduced into the NASA scientific and technical information system between January 1 and March 31, 1988. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis. Author

N89-10401\*# National Aeronautics and Space Administration, Washington, DC.

#### SAPPING FEATURES OF THE COLORADO PLATEAU: A COMPARATIVE PLANETARY GEOLOGY FIELD GUIDE

ALAN D. HOWARD, ed., R. CRAIG KOCHEL, ed., and HENRY E. HOLT, ed. (Geological Survey, Flagstaff, Ariz.) 115 p 1987 Original contains color illustrations

(NSG-7572)

(NASA-SP-491; NAS 1.21:491; LC-87-15305) Avail: NTIS HC A06/MF A01; also available SOD HC \$6.00 as 003-000-01027-3 CSCL 08H

This book is an attempt to determine geomorphic criteria to be used to distinguish between channels formed predominantly by sapping and seepage erosion and those formed principally by surface runoff processes. The geologic nature of the Colorado Plateau has resulted in geomorphic features that show similarities to some areas on Mars, especially certain valley networks within thick sandstone formations. Where spring sapping is an effective process, the valleys that develop are unique in terms of their morphology and network pattern. Author

N89-12114\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

LANDSAT-4 AND LANDSAT-5 MULTISPECTRAL SCANNER COHERENT NOISE CHARACTERIZATION AND REMOVAL

JAMES C. TILTON and WILLIAM L. ALFORD (Defense Mapping Agency, Washington, D.C.) Feb. 1988 46 p (NASA-TP-2595-REV; NAS 1.60:2595-REV; REPT-86B0040) Avail: NTIS HC A03/MF A01 CSCL 08B

COHERENT ELECTROMAGNETIC RADIATION, ELEC-

TROMAGNETIC NOISE, LANDSAT 4, LANDSAT 5, MULTI-SPECTRAL BAND SCANNERS, NOISE REDUCTION

## 43 EARTH RESOURCES AND REMOTE SENSING

**N89-29825\*** National Aeronautics and Space Administration, Washington, DC.

## EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 62)

Nov. 1988 146 p

(NASA-SP-7041(62); NAS 1.21:7041(62)) Avail: NTIS HC A07; NTIS standing order as PB89-903800, \$15.50 domestic, \$31.00 foreign CSCL 08B

This bibliography lists 544 reports, articles, and other documents introduced into the NASA scientific and technical information system between April 1 and June 30, 1989. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis.

Author

**N90-12091\*** National Aeronautics and Space Administration, Washington, DC.

#### EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 63)

Oct. 1989 128 p

(NASA-SP-7041(63); NAS 1.21:7041(63)) Avail: NTIS HC A07; NTIS standing order as PB89-903800, \$15.50 domestic, \$31.00 foreign CSCL 08B

This bibliography lists 449 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1 and September 31, 1989. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, oceanography and marine resources, hydrology and water management, data processing and distribution systems, and instrumentation and sensors. Author

N90-23780\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

SENSOR PERFORMANCE ANALYSIS

H. E. MONTGOMERY, H. OSTROW, and G. M. RESSLER (Ressler Associates, Inc., Laurel, MD.) Washington Jul. 1990 90 p (NASA-RP-1241; REPT-89B00057; NAS 1.61:1241) Avail: NTIS HC A05/MF A01 CSCL 14B

The theory is described and the equations required to design are developed and the performance of electro-optical sensor systems that operate from the visible through the thermal infrared spectral regions are analyzed. Methods to compute essential optical and detector parameters, signal-to-noise ratio, MTF, and figures of merit such as NE delta rho and NE delta T are developed. A set of atmospheric tables are provided to determine scene radiance in the visible spectral region. The Planck function is used to determine radiance in the infrared. The equations developed were incorporated in a spreadsheet so that a wide variety of sensor studies can be rapidly and efficiently conducted. Author

**N90-27140\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EARTH SCIENCES REQUIREMENTS FOR THE INFORMATION SCIENCES EXPERIMENT SYSTEM

DAVID E. BOWKER, ed., STEVE J. KATZBERG, ed., and R. GALE WILSON, ed. Washington Jul. 1990 220 p Workshop held in Williamsburg, VA, 1-4 May 1989

(NASA-CP-3072; L-16773; NAS 1.55:3072) Avail: NTIS HC A10/MF A02 CSCL 05B

CONFERENCES, DATA PROCESSING EQUIPMENT, EARTH OBSERVING SYSTEM (EOS), EQUIPMENT SPECIFICATIONS, REAL TIME OPERATION, SUPPORT SYSTEMS 44

## **ENERGY PRODUCTION AND CONVERSION**

Includes specific energy conversion systems, e.g., fuel cells; global sources of energy; geophysical conversion; and windpower.

N87-26413\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY

1986. HIGH EFFICIENCY, SPACE ENVIRONMENT, AND ARRAY TECHNOLOGY

Jun. 1987 375 p Conference held in Cleveland, Ohio, 7-9 Oct. 1986

(NASA-CP-2475; E-3450; NAS 1.55:2475) Avail: NTIS HC A16/MF A03 CSCL 10B

CONFERENCES, ENERGY CONVERSION EFFICIENCY, PHOTOVOLTAIC CONVERSION, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

**N87-29914\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY (SERT)

Sep. 1987 364 p Conference held in Cleveland, Ohio, 14-16 Apr. 1987

(NASA-CP-2484; E-3506; NAS 1.55:2484) Avail: NTIS HC A16/MF A03 CSCL 10C

ELECTRIC BATTERIES, ELECTROCATALYSTS, ELECTRO-CHEMISTRY, MATHEMATICAL MODELS, REGENERATIVE FUEL CELLS

**N89-22982\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY CONFERENCE: ABSTRACTS Abstracts Only

Washington 1989 49 p Conference held in Cleveland, OH, 11-13 Apr. 1989

(NASA-CP-10029; E-4708; NAS 1.55:10029) Avail: NTIS HC A03/MF A01 CSCL 10A

AEROSPACE SYSTEMS, CONFERENCES, ELECTRO-CATALYSTS, ELECTROCHEMISTRY, ELECTRODES, ENER-GY STORAGE, HYDROGEN OXYGEN FUEL CELLS, STOR-AGE BATTERIES

**N89-24704\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY, 1988. HIGH EFFICIENCY, SPACE ENVIRONMENT, AND ARRAY TECHNOLOGY

Washington Apr. 1989 362 p Conference held in Cleveland, OH, 19-21 Apr. 1988

(NASA-CP-3030; E-4587; NAS 1.55:3030) Avail: NTIS HC A16/MF A03 CSCL 10A

CONFERENCES, PHOTOVOLTAIC EFFECT, SOLAR ARRAYS, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

**N90-20454\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

# SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY (SERT), 1989

RICHARD S. BALDWIN, ed. Washington Dec. 1989 351 p Conference held in Cleveland, OH, 11-13 Apr. 1989 (NASA-CP-3056; E-4708; NAS 1.55:3056) Avail: NTIS HC

A16/MF A02 CSCL 10A

CONFERENCES, ELECTRIC BATTERIES, ELECTRIC ENERGY STORAGE, ELECTROCATALYSTS, ELECTROCHEMISTRY, ELECTRODE MATERIALS, HYDROGEN OXYGEN FUEL CELLS, NICKEL HYDROGEN BATTERIES, SPACECRAFT POWER SUPPLIES

## **ENVIRONMENT POLLUTION**

Includes atmospheric, noise, thermal, and water pollution.

N89-14503\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

POLAR OZONE WORKSHOP. ABSTRACTS

ARTHUR C. AIKIN May 1988 306 p Workshop held in Snowmass, CO, 9-13 May 1988; sponsored by NASA, NOAA, NSF, Chemical Mfgrs. Association, WMO, and the United Nations Environment Program Sponsored by NASA, Washington, DC (NASA-CP-10014; REPT-88B0234; NAS 1.55:10014) Avail: NTIS HC A14/MF A03 CSCL 13B

ANTARCTIC REGIONS, ATMOSPHERIC CHEMISTRY. ATMOSPHERIC COMPOSITION, CONFERENCES, EARTH OBSERVATIONS (FROM SPACE), OZONE, OZONE DEPLETION, OZONOMETRY, POLAR METEOROLOGY, STRATOSPHERE

## 46

#### GEOPHYSICS

Includes aeronomy; upper and lower atmosphere studies; ionospheric and magnetospheric physics; and geomagnetism.

N87-11358\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AIRBORNE LIDAR MEASUREMENTS OF EL CHICHON

STRATOSPHERIC AEROSOLS, MAY 1983

M. P. MCCORMICK and M. T. OSBORN (SASC Technologies, Inc., Hampton, Va.) Oct. 1986 91 p

(NASA-RP-1172; L-16176; NAS 1.61:1172) Avail: NTIS HC A05/MF A01

An experimental survey flight to determine the spatial distribution and aerosol characteristics of the El Chichon-produced stratospheric aerosol was conducted in May 1983. The mission included several different sensors flown abroad the NASA Convair 990 at latitudes between 72 deg. and 56 deg. S. This report presents the lidar data from that flight mission. Representative profiles of lidar backscatter ratio, plots of integrated backscattering function versus latitude, and contours of backscatter mixing ratio versus altitude and latitude are given. In addition, tables containing numerical values of the backscatter ratio and backscattering function versus altitude are supplied for each profile. By May 1983, material produced by the El Chichon eruptions of late March-early April 1982 had spread throughout the latitudes covered by this mission. However, the most massive portion of the material resided north of 33 deg. N and was concentrared below 21 km. In this latitude region (33 deg. N to 72 deg. N), peak backscatter ratios at a wavelength of 0.6943 microns varied between 3.5 and 4.5, and the peak integratred backscattering function was about 18 X 10 to the -4 power/sr, corresponding to a peak optical depth calculated to be approximately 0.08. This report presents the results of this mission in a ready-to-use format for atmospheric and climatic studies. Author

National Aeronautics and Space Administration. N87-13022\*# Langley Research Center, Hampton, VA. DESCRIPTION OF DATA ON THE NIMBUS 7 LIMS MAP

## ARCHIVE TAPE: OZONE AND NITRIC ACID

E. E. REMSBERG, R. J. KURZEJA, K. V. HAGGARD, J. M. RUSSELL, III, and L. L. GORDLEY Dec. 1986 73 p (NASA-TP-2625; L-16136; NAS 1.60:2625) Avail: NTIS HC A04/MF A01 CSCL 04A

INFRARED DETECTORS, KALMAN FILTERS, NIMBUS 7 SATELLITE, NITRIC ACID, OZONE, STRATOSPHERE

N87-15528\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA

FUTURE DIRECTIONS FOR H SUB X O SUB Y DETECTION

DAVID R. CROSLEY, ed. (SRI International Corp., Menlo Park, Calif.) and JAMES M. HOELL, ed. Dec. 1986 67 p Workshop held in Menlo Park, Calif., 12-15 Aug. 1985

(NASA-CP-2448; L-16216; NAS 1.55;2448) Avail: NTIS HC A04/MF A01 CSCL 04A

ATMOSPHERIC COMPOSITION, HYDROGEN PEROXIDE, HYDROXYL RADICALS, TROPOSPHERE, WATER

N87-17417\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA SAGE AEROSOL MEASUREMENTS. VOLUME 3: JANUARY 1.

1981 ТО NOVEMBER 18, 1981 М. PATRICK MCCORMICK Feb. 1987 274 р

(NASA-RP-1173; L-16177; NAS 1.61:1173) Avail: NTIS HC

A12/MF A02 CSCL 04A

The Stratospheric Aerosol and Gas Experiment (SAGE) satellite system, launched February 18, 1979, obtained profiles of aerosol extinction at 1.00 micron and 0.45 micron ozone concentration, and nitrogen dioxide concentration. Data taken during sunset events are presented in the form of zonal and seasonal averages of aerosol extinction of 1.00 micron and 0.45 micron, ratios of aerosol extinction to molecular extinction at 1.00 micron and ratios of aerosol extinction at 0.45 micron to aerosol extinction at 1.00 micron. Averages for 1981 are shown in tables, and in profile and contour plots (as a function of altitude and latitude). In addition, temperature data provided by NOAA for the time and location of each SAGE measurement are averaged and shown in a similar format. The stratospheric aerosol distribution for 1981 shows effects of volcanically injected material from eruptions of Ulawun, Alaid, and Pagan. Peak values of aerosol extinction at 0.45 micron and 1.00 micron were 2 to 4 times higher than typical peak values observed during near background conditions. Stratospheric aerosol optical depth values at 1.00 microns increased by a factor of about 2 from near background levels in regions of volcanic activity. During the year, these values ranged from between 0.001 and 0.006. The largest were near the location of a recent eruption. The distribution of the ratio of aerosol to molecular extinction at 1.00 microns also showed that maximum values are found in the vicinity of an eruption. These maximums varied in altitude, but remained below a height of about 25 km. No attempt has been made to give detailed explanations or interpretations of these data. The intent is to provide, in a ready-to-use visual format, representative zonal and seasonal averages of aerosol extinction data for the third calendar year of the SAGE data set to facilitate atmospheric and climatic studies. Author

N87-18248\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SPACE OPPORTUNITIES FOR TROPOSPHERIC CHEMISTRY

RESEARCH

JOEL S. LEVINE, ed. Feb. 1987 92 p Workshop held in New York, N.Y., 9-13 Sep. 1985

(NASA-CP-2450; L-16250; NAS 1.55:2450) Avail: NTIS HC A05/MF A01 CSCL 04A

AEROSOLS, AIR POLLUTION, ATMOSPHERIC CHEMISTRY, ATMOSPHERIC COMPOSITION, CONFERENCES, GASES, REMOTE SENSING, TROPOSPHERE

National Aeronautics and Space Administration. N87-20663\*# Langley Research Center, Hampton, VA.

AIRBORNE LIDAR MEASUREMENTS OF EL CHICHON STRATOSPHERIC AEROSOLS, JANUARY 1984

M. PATRICK MCCORMICK and M. T. OSBORN (ST Systems Corp.,

Hampton, Va.) Apr. 1987 49 p (NASA-RP-1175; L-16234; NAS 1.61:1175) Avail: NTIS HC A03/MF A01 CSCL 04A

A lidar-equipped NASA Electra aircraft was flown in January 1984 between the latitude of 38 and 90 deg N. One of the primary purposes of this mission was to determine the spatial distribution and aerosol characteristics of El Chichon produced stratospheric

## 46 GEOPHYSICS

material. Lidar data from that portion of the flight mission between 38 deg N and 77 deg N is presented. Representative profiles of lidar backscatter ratio, a plot of the integral backscattering function versus latitude, and contours of backscatter mixing ratio versus altitude and latitude are given. In addition, tables containing numerical values of the backscatter ratio and backscattering function versus altitude are applied for each profile. These data clearly show that material produced by the El Chichon eruptions of late March-early April 1982 had spread throughout the latitudes covered by this mission, and that the most massive portion of the material resided north of 55 deg N and was concentrated below 17 km in a layer that peaked at 13 to 15 km. In this latitude region, peak backscatter ratios at a wavelength of 0.6943 microns were approximately 3 and the peak integrated backscattering function was about 15 X 10 to the -4/sr corresponding to a peak optical depth of approximately 0.07. This report presents the results of this mission in a ready-to-use format for atmospheric and climatic studies. Author

**N87-20665\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

#### UPPER AND MIDDLE ATMOSPHERIC DENSITY MODELING REQUIREMENTS FOR SPACECRAFT DESIGN AND OPERATIONS

M. H. DAVIS, ed. (Universities Space Research Association, Boulder, Colo.), R. E. SMITH, ed., and D. L. JOHNSON, ed. Feb. 1987 290 p Workshop held in Huntsville, Ala., 19-21 1985 (NAS8-36400)

(NASA-CP-2460; M-548; NAS 1.55:2460) Avail: NTIS HC A13/MF A02 CSCL 04A AEROSPACE ENVIRONMENTS, ATMOSPHERIC DENSITY,

AEROSPACE ENVIRONMENTS, ATMOSPHERIC DENSITY, ATMOSPHERIC MODELS, SPACECRAFT DESIGN, THERMOSPHERE

 $\textbf{N88-18084^{*}\#}$  National Aeronautics and Space Administration, Washington, DC.

INTO THE THERMOSPHERE: THE ATMOSPHERE EXPLORERS ERIC BURGESS and DOUGLASS TORR 1987 172 p Original document contains color illustrations

(NASA-SP-490; NAS 1.21:490; LC-87-14156) Avail: SOD HC \$14.00 as 033-000-01013-3; NTIS MF A01 CSCL 04A

The need to study the lower thermosphere with the new instrument, data handling, and spacecraft technology available in the 1960s led to the formulation and establishment of the Atmospheric Explorer program. This book provides an overview of this program with particular emphasis on the AE3, AE4, and AE5 satellites, which represent early examples of problem-dedicated missions. Both the satellites and their instrumentation on the one hand and the experimental and scientific considerations in studying the thermosphere on the other are discussed. J.P.B.

N88-19037\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. CRUSTAL DYNAMICS PROJECT: CATALOGUE OF SITE

#### INFORMATION

CAREY E. NOLL, ed. Mar. 1988 539 p

(NASA-RP-1198; REPT-88B9999; NAS 1.61:1198) Avail: NTIS HC A23/MF A03 CSCL 08G

This document represents a catalog of site information for the Crustal Dynamics Project. It contains information on and descriptions of those sites used by the Project as observing stations for making the precise geodetic measurements necessary for studies of the Earth's crustal movements and deformation.

Author

N88-25094\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SAM 2 DATA USER'S GUIDE

W. P. CHU, M. T. OSBORN (ST Systems Corp., Hampton, Va.), and L. R. MCMASTER Jul. 1988 29 p

(NASA-RP-1200; L-16377; NAS 1.61:1200) Avail: NTIS HC

A03/MF A01 CSCL 04A

This document is intended to serve as a guide to the use of

the data products from the Stratospheric Aerosol Measurement (SAM) 2 experiment for scientific investigations of polar stratospheric aerosols. Included is a detailed description of the Beta and Aerosol Number Density Archive Tape (BANAT), which is the SAM 2 data product containing the aerosol extinction data available for these investigations. Also included are brief descriptions of the instrument operation, data collection, processing and validation, and some of the scientific analyses conducted to date. Author

**N88-29233\*#** National Aeronautics and Space Administration, Washington, DC.

#### PRESENT STATE OF KNOWLEDGE OF THE UPPER ATMOSPHERE 1988: AN ASSESSMENT REPORT

R. T. WATSON, M. J. PRATHER, and M. J. KURYLO Jun. 1988 203 p

(NASA-RP-1208; NAS 1.61:1208) Avail: NTIS HC A10/MF A02 CSCL 04A

This document was issued in response to the Clean Air Act Amendments of 1977, Public Law 95-95, mandating that NASA and other key agencies submit biennial reports to Congress and EPA. NASA is to report on the state of our knowledge of the upper atmosphere, particularly the stratosphere. This is the sixth ozone assessment report submitted to Congress and the concerned regulatory agencies. Part 1 contains an outline of the NASA Upper Atmosphere Research Program and summaries of the research efforts supported during the last two years. An assessment is presented of the state of knowledge as of March 15, 1988 when the Ozone Trends Panel, organized by NASA and co-sponsored by the World Meteorological Organization, NOAA, FAA and the United Nations Environment Program released an executive summary of its findings from a critical in-depth study involving over 100 scientists from 12 countries. Chapter summaries of the International Ozone Trends Panel Report form the major part of this report. Two other sections are Model Predictions of Future Ozone Change and Chemical Kinetics and Photochemical Data for Use in Stratospheric Modeling. Each of these sections and the report in its entirety were peer reviewed. Author

**N88-29234\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### FORTY-EIGHT-INCH LIDAR AEROSOL MEASUREMENTS TAKEN AT THE LANGLEY RESEARCH CENTER, MAY 1974 TO DECEMBER 1987

W. H. FULLER, JR., M. T. OSBORN, and W. H. HUNT (Wyle Labs., Inc., Hampton, Va.) Oct. 1988 102 p (NASA-RP-1209; L-16473; NAS 1.61:1209) Avail: NTIS HC

(NASA-HP-1209; L-16473; NAS 1.61:1209) Avail: NTIS HC A06/MF A01 CSCL 04A

A ground based lidar system located at NASA Langley Research Center in Hampton, Va., was used to obtain high resolution vertical profiles of the stratospheric and upper tropospheric aerosol since 1974. More than 200 measurements obtained at a wavelength of 0.6943 microns during 1974 to 1987 are summarized. Plots of peak backscatter mixing ratio and integrated backscatter vs time are presented for the entire measurement sequence. The plots highlight the influence of several major volcanic eruptions on the long term stratospheric aerosol layer. In particular, the eruptions of El Chichon in late Mar. to early Apr. 1982, produced a massive aerosol layer. Aerosol enhancement from El Chichon reached Hampton, Va. by May 1982, with a scattering ratio of approx. 50 detected on Jul. 1, 1982. In addition, scattering ratio profiles for June 1982 to December 1987, along with tables containing numerical values of the backscatter ratio and backscattering function versus altitude, are included to further describe the upper tropospheric and stratospheric aerosol layer. A 14 year summary is presented, in a ready to use format, of lidar observations at a fixed midlatitude location to be used for further study. Author

**N89-10420\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

COMPILATION OF METHODS IN ORBITAL MECHANICS AND SOLAR GEOMETRY

## 46 GEOPHYSICS

JAMES J. BUGLIA Washington Oct. 1988 81 p (NASA-RP-1204; L-16451; NAS 1.61:1204) Avail: NTIS HC A05/MF A01 CSCL 04A

This paper contains a collection of computational algorithms for determining geocentric ephemerides of Earth satellites, useful for both mission planning and data reduction applications. Special emphasis is placed on the computation of sidereal time, and on the determination of the geocentric coordinate of the center of the Sun, all to the accuracy found in the Astronomical Almanac. The report is completely self-contained in that no requirement is placed on any external source of information, and hence, these methods are ideal for computer application. Author

**N89-25540\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## COMPARISON OF SATELLITE-DERIVED DYNAMICAL

QUANTITIES FOR THE STRATOSPHERE OF THE SOUTHERN HEMISPHERE

THOMAS MILES, ed. and ALAN ONEILL, ed. Washington Jul. 1989 39 p Presented at the Workshop on the Middle Atmosphere in the Southern Hemisphere, Williamsburg, VA, 14-17 Apr. 1986; sponsored by NASA, Washington, DC

(NASA-CP-3044; L-16593; NAS 1.55:3044) Avail: NTIS HC A03/MF A01 CSCL 04A

ATMOSPHERIC CIRCULATION, GEOPOTENTIAL HEIGHT, SATELLITE OBSERVATION, STRATOSPHERE, ZONAL FLOW (METEOROLOGY)

**N89-26304\***# Oxford Univ. (England). Dept. of Atmospheric Physics.

#### NIMBUS-7 STRATOSPHERIC AND MESOSPHERIC SOUNDER (SAMS) EXPERIMENT DATA USER'S GUIDE

F. W. TAYLOR, C. D. RODGERS, S. T. NUTTER, and N. OSLIK (ST Systems Corp., Lanham, MD.) Washington May 1989 149 p

(NAS5-28063)

(NASA-RP-1221; NAS 1.61:1221; REPT-89B00074) Avail: NTIS HC A07/MF A01 CSCL 08G

The Stratospheric and Mesospheric Sounder (SAMS) aboard Nimbus-7 observes infrared radiation from the atmospheric limb. Global upper atmosphere temperature profiles and vertical concentrations of H2O, NO, N2O, CH4 and CO2 are derived from these measurements. The status of all channels was carefully monitored. Temperature and composition were retrieved from the measurements by linearizing the direct equation about an a priori profile and using an optimum statistical estimator to find the most likely solution. The derived temperature and composition profiles are archived on two tape products whose file structure and record formats are described in detail. The gridded retrieved temperature tape (GRID-T) contains daily day and night average temperatures at 62 pressure levels in a 2.5 degree latitude by 10 degree longitude grid extending from 67.5 degrees N to 50 degrees S. The zonal mean methane and nitrous oxide composition tape (ZMT-G) contains zonal mean day and night average CH4 and N2O mixing ratios at 31 pressure levels for 2.5 degrees latitude zones extending from 67.5 degrees N to 50 degrees S. Author

N89-28969\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

A HIGH-RESOLUTION ATLAS OF THE INFRARED SPECTRUM OF THE SUN AND THE EARTH ATMOSPHERE FROM SPACE. A COMPILATION OF ATMOS SPECTRA OF THE REGION FROM 650 TO 4800 CM-1 (2.3 TO 16 MICRONS). VOLUME 2: STRATOSPHERE AND MESOSPHERE, 650 TO 3350 CM-1 CROFTON B. FARMER and ROBERT H. NORTON Washington 1989 688 p

(NAS7-918) (NASA-RP-1224-VOL-2; JPL-400-370-VOL-2; NAS

1.61:1224-VOL-2; LC-89-600203) Avail: NTIS HC A99/MF A04 CSCL 04A

During the period April 29 to May 2, 1985, the Atmospheric Trace Molecule Spectroscopy (ATMOS) experiment was operated for the first time, as part of the Spacelab-3 payload of the shuttle

Challenger. The principal purpose of this experiment was to study the distributions of the atmosphere's minor and trace molecular constituents. The instrument, a modified Michelson interferometer covering the frequency range from 600 to 5000/cm-1 at a spectral resolution of 0.01/cm-1, recorded infrared absorption spectra of the sun and of the earth's atmosphere at times close to entry into and exit from occultation by the earth's limb. Spectra were obtained that are free from absorptions due to constituents of the atmosphere (i.e., they are pure solar spectra), as well as spectra of the atmosphere itself, covering line-of-sight tangent altitudes that span the range from the lower thermosphere to the bottom of the troposphere. This atlas presents a compilation of these spectra arranged in a hardcopy format suitable for quick-look reference purposes. Volume 2 covers the stratosphere and mesosphere (i.e., tangent altitudes from 20 to 80 km) for frequencies from 650 to 3350/cm-1. Author

N90-11405\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

# TWO-DIMENSIONAL INTERCOMPARISON OF STRATOSPHERIC MODELS

CHARLES H. JACKMAN, ed., ROBERT K. SEALS, JR., ed., and MICHAEL J. PRATHER, ed. (National Aeronautics and Space Administration. Goddard Inst. for Space Studies, New York, NY.) Aug. 1989 606 p Workshop held in Virginia Beach, VA, 11-16 Sep. 1988; sponsored by NASA, Washington

(NASA-CP-3042; REPT-89B00192; NAS 1.55:3042) Avail: NTIS HC A99/MF A04 CSCL 04A

ATMOSPHERIC MODELS, CONFERENCES, DATA BASES, PHOTOCHEMICAL REACTIONS, RADIATIVE TRANSFER, STRATOSPHERE, TWO DIMENSIONAL MODELS

N90-13893\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

A HIGH-RESOLUTION ATLAS OF THE INFRARED SPECTRUM OF THE SUN AND THE EARTH ATMOSPHERE FROM SPACE: A COMPILATION OF ATMOS SPECTRA OF THE REGION FROM 650 TO 4800 CM (2.3 TO 16 MICRON). VOLUME 1: THE SUN

CROFTON B. FARMER and ROBERT H. NORTON 1989 535 p

(NAS7-918)

(NASA-RP-1224-VOL-1; NAS 1.61:1224-VOL-1;

JPL-400-370-VOL-1) Avail: NTIS HC A23/MF A03 CSCL 04A

During the period April 29 through May 2, 1985, the Atmospheric Trace Molecular Spectroscopy experiment was operated as part of the Spacelab-3 payload of the shuttle Challenger. The instrument, a modified Michelson Interferometer covering the frequency range from 600 to 5000/cm, at a spectral resolution of 0.01/cm, recorded infrared spectra of the Sun and of the Earth's atmosphere at times close to entry into and exit from occultation by the Earth's limb as seen from the shuttle orbit of 360 km. Spectra were obtained that are free from absorptions due to constituents of the atmosphere (i.e., solar pure spectra), as well as spectra of the atmosphere itself, covering line-of-sight tangent altitudes that span the range from the lower thermosphere to the bottom of the troposphere. This atlas, believed to be the first record of observations of the continuous high resolution infrared spectrum of the Sun and the Earth's atmosphere from space, provides a compilation of these spectra arranged in a hardcopy format suitable for guick-look reference purposes; the data are also available in digital form. Author

N90-17227\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. NIMBUS 7 SOLAR BACKSCATTER ULTRAVIOLET (SBUV)

## OZONE PRODUCTS USER'S GUIDE

ALBERT J. FLEIG, R. D. MCPETERS, P. K. BHARTIA, BARRY M. SCHLESINGER, RICHARD P. CEBULA, K. F. KLENK, STEVEN L. TAYLOR (ST Systems Corp., Lanham, MD.), and DONALD F. HEATH Jan. 1990 117 p (NAS5-29386)

(NASA-RP-1234; REPT-636; NAS 1.61:1234) Avail: NTIS HC A06/MF A01 CSCL 04A

Three ozone tape products from the Solar Backscatter Ultraviolet (SBUV) experiment aboard Nimbus 7 were archived at the National Space Science Data Center. The experiment measures the fraction of incoming radiation backscattered by the Earth's atmosphere at 12 wavelengths. In-flight measurements were used to monitor changes in the instrument sensitivity. Total column ozone is derived by comparing the measurements with calculations of what would be measured for different total ozone amounts. The altitude distribution is retrieved using an optimum statistical technique for the inversion. The estimated initial error in the absolute scale for total ozone is 2 percent, with a 3 percent drift over 8 years. The profile error depends on latitude and height, smallest at 3 to 10 mbar; the drift increases with increasing altitude. Three tape products are described. The High Density SBUV (HDSBUV) tape contains the final derived products - the total ozone and the vertical ozone profile - as well as much detailed diagnostic information generated during the retrieval process. The Compressed Ozone (CPOZ) tape contains only that subset of HDSBUV information, including total ozone and ozone profiles, considered most useful for scientific studies. The Zonal Means Tape (ZMT) contains daily, weekly, monthly and quarterly averages of the derived quantities over 10 deg latitude zones. Author

**N90-20562\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### SATELLITE RADAR ALTIMETRY OVER ICE. VOLUME 1: PROCESSING AND CORRECTIONS OF SEASAT DATA OVER GREENLAND

H. JAY ZWALLY, ANITA C. BRENNER, JUDITH A. MAJOR, THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.), and ROBERT A. BINDSCHADLER Jan. 1990 147 p (NASA-RP-1233-VOL-1; REPT-89B00239; NAS 1.61:1233-VOL-1) Avail: NTIS HC A07/MF A01 CSCL 08C

The data-processing methods and ice data products derived from Seasat radar altimeter measurements over the Greenland ice sheet and surrounding sea ice are documented. The corrections derived and applied to the Seasat radar altimeter data over ice are described in detail, including the editing and retracking algorithm to correct for height errors caused by lags in the automatic range tracking circuit. The methods for radial adjustment of the orbits and estimation of the slope-induced errors are given. Author

**N90-20563\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### SATELLITE RADAR ALTIMETRY OVER ICE. VOLUME 2: USERS' GUIDE FOR GREENLAND ELEVATION DATA FROM SEASAT

H. JAY ZWALLY, JUDITH A. MAJOR, ANITA C. BRENNER, ROBERT A. BINDSCHADLER, and THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.) Jan. 1990 84 p (NASA-RP-1233-VOL-2; REPT-89B00240; NAS 1.61:1233-VOL-2) Ayail: NTIS HC A05/MF A01 CSCL 08C

A gridded surface-elevation data set and a geo-referenced data base for the Seasat radar altimeter data over Antarctica are described. It is intended to be a user's guide to accompany the data provided to data centers and other users. The grid points are on a polar stereographic projection with a nominal spacing of 20 km. The gridded elevations are derived from the elevation data in the geo-referenced data base by a weighted fitting of a surface in the neighborhood of each grid point. The gridded elevations are useful for the creating smaller-scale contour maps, and examining individual elevation measurements in specific geographic areas. Tape formats are described, and a FORTRAN program for reading the data tape is listed and provided on the tape.

**N90-20564\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

SATELLITÉ RADAR ALTIMETRY OVER ICE. VOLUME 4: USERS' GUIDE FOR ANTARCTICA ELEVATION DATA FROM SEASAT H. JAY ZWALLY, JUDITH A. MAJOR, ANITA C. BRENNER, ROBERT A. BINDSCHADLER, and THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.) Jan. 1990 57 p (NASA-RP-1233-VOL-4; REPT-89B00241; NAS 1.61:1233-VOL-4) Avail: NTIS HC A04/MF A01 CSCL 08C

A gridded surface-elevation data set and a geo-referenced data base for the Seasat radar altimeter data over Greenland are described. This is a user guide to accompany the data provided to data centers and other users. The grid points are on a polar stereographic projection with a nominal spacing of 20 km. The gridded elevations are derived from the elevation data in the geo-referenced data base by a weighted fitting of a surface in the neighborhood of each grid point. The gridded elevations are useful for the creating of large-scale contour maps, and the geo-referenced data base is useful for regridding, creating smaller-scale contour maps, and examinating individual elevation measurements in specific geographic areas. Tape formats are described, and a FORTRAN program for reading the data tape is listed and provided on the tape.

N90-22850\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### SURFACE TOPOGRAPHY OF THE GREENLAND ICE SHEET FROM SATELLITE RADAR ALTIMETRY

ROBERT A. BINDSCHADLER, H. JAY ZWALLY, JUDITH A. MAJOR, and ANITA C. BRENNER (ST Systems Corp., Greenbelt, MD.) 1989 127 p Original contains color illustrations (NASA-SP-503; REPT-89B00170; NAS 1.21:503; LC-89-600282) Avail: NTIS HC A16/MF A02; 3 functional color pages CSCL 08E

Surface elevation maps of the southern half of the Greenland subcontinent are produced from radar altimeter data acquired by the Seasat satellite. A summary of the processing procedure and examples of return waveform data are given. The elevation data are used to generate a regular grid which is then computer contoured to provide an elevation contour map. Ancillary maps show the statistical quality of the elevation data and various characteristics of the surface. The elevation map is used to define ice flow directions and delineate the major drainage basins. Regular maps of the Jakobshavns Glacier drainage basin and the ice divide in the vicinity of Crete Station are presented. Altimeter derived elevations are compared with elevations measured both by satellite geoceivers and optical surveying.

**N90-28929\*#** National Aeronautics and Space Administration, Washington, DC.

PRESENT STATE OF KNOWLEDGE OF THE UPPER ATMOSPHERE 1990: AN ASSESSMENT REPORT Report to the Congress

R. T. WATSON, M. J. KURYLO, M. J. PRATHER, and F. M. ORMOND Sep. 1990 145 p

(NASA-RP-1242; NAS 1.61:1242) Avail: NTIS HC A07/MF A01 CSCL 04A

NASA is charged with the responsibility to report on the state of the knowledge of the Earth's upper atmosphere, particularly the stratosphere. Part 1 of this report, issued earlier this year, summarized the objectives, status, and accomplishments of the research tasks supported under NASA's Upper Atmosphere Research Program during the last two years. New findings since the last report to Congress was issued in 1988 are presented. Several scientific assessments of the current understanding of the chemical composition and physical structure of the stratosphere are included, in particular how the abundance and distribution of ozone is predicted to change in the future. These reviews include: a summary of the most recent international assessment of stratospheric ozone; a study of future chlorine and bromine loading of the atmosphere; a review of the photochemical and chemical kinetics data that are used as input parameters for the atmospheric models; a new assessment of the impact of Space Shuttle launches on the stratosphere; a summary of the environmental issues and needed research to evaluate the impact of the newly re-proposed fleet of stratospheric supersonic civil aircraft; and a list of the

contributors to this report and the science assessments which have formed our present state of knowledge of the upper atmosphere and ozone depletion. Author

## 47

## METEOROLOGY AND CLIMATOLOGY

Includes weather forecasting and modification.

N87-12086\*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

PRELIMINARY ESTIMATES OF RADIOSONDE THERMISTOR ERRORS

F. J. SCHMIDLIN, J. K. LUERS (Dayton Univ., Ohio.), and P. D. HUFFMAN Washington, D.C. Sep. 1986 19  $\rm p$ 

(NASA-TP-2637; NAŠ 1.60:2637) Avail: NTIS HC A03/MF A01 CSCL 04B

ERROR ANALYSIS, RADIOSONDES, THERMISTORS

N87-13043\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

NASA/MSFC FY-85 ATMOSPHERIC PROCESSES RESEARCH REVIEW

W. W. VAUGHAN, comp. and F. PORTER, comp. Oct. 1985 143 p Review held in Huntsville, Ala. 7-9 May 1985 and in Columbia, Md., 8-12 Jul. 1985

(NASA-CP-2402; M-503; NAS 1.55:2402) Avail: NTIS HC A07/MF A02 CSCL 04B

ATMOSPHERIC ELECTRICITY, ATMOSPHERIC SOUNDING, DATA PROCESSING, DOPPLER RADAR, GEOPHYSICS, MESOSCALE PHENOMENA, OPTICAL RADAR, SATELLITE IMAGERY, THUNDERSTORMS, WIND (METEOROLOGY)

N87-20701\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. ON REQUIREMENTS FOR A SATELLITE MISSION TO

MEASURE TROPICAL RAINFALL

OTTO W. THIELE, ed. Apr. 1987 67 p

(NASA-RP-1183; NAS 1.61:1183) Avail: NTIS HC A04/MF A01 CSCL 04B

Tropical rainfall data are crucial in determining the role of tropical latent heating in driving the circulation of the global atmosphere. Also, the data are particularly important for testing the realism of climate models, and their ability to simulate and predict climate accurately on the seasonal time scale. Other scientific issues such as the effects of El Nino on climate could be addressed with a reliable, extended time series of tropical rainfall observations. A passive microwave sensor is planned to provide information on the integrated column precipitation content, its areal distribution, and its intensity. An active microwave sensor (radar) will define the layer depth of the precipitation and provide information about the intensity of rain reaching the surface, the key to determining the latent heat input to the atmosphere. A visible/infrared sensor will provide very high resolution information on cloud coverage, type, and top temperatures and also serve as the link between these data and the long and virtually continuous coverage by the geosynchronous meteorological satellites. The unique combination of sensor wavelengths, coverages, and resolving capabilities together with the low-altitude, non-Sun synchronous orbit provide a sampling capability that should yield monthly precipitation amounts to a reasonable accuracy over a 500- by 500-km grid.

Author

**N87-22341\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

### ATMOSPHERIC TURBULENCE RELATIVE TO AVIATION, MISSILE, AND SPACE PROGRAMS

DENNIS W. CAMP, ed. and WALTER FROST, ed. (FWG Associates, Inc., Tullahoma, Tenn.) Apr. 1987 257 p Workshop

47 METEOROLOGY AND CLIMATOLOGY

held in Hampton, Va., 2-4 Apr. 1986 (NASA-CP-2468; L-16296; NAS 1.55:2468) Avail: NTIS HC A12/MF A02 CSCL 048

AIRCRAFT SAFETY, ATMOSPHERIC MODELS, ATMOSPHERIC TURBULENCE, CONFERENCES, MISSILES, SPACE PROGRAMS, WEATHER FORECASTING

**N87-26489\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ATLAS OF WIDE-FIELD-OF-VIEW OUTGOING LONGWAVE RADIATION DERIVED FROM NIMBUS 6 EARTH RADIATION BUDGET DATA SET, JULY 1975 TO JUNE 1978

T. DALE BESS and G. LOUIS SMITH Aug. 1987 80 p (NASA-RP-1185; L-16325; NAS 1.61:1185) Avail: NTIS HC A05/MF A01 CSCL 04B

An atlas of monthly mean outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 36 months of continuous data from July 1975 to June 1978. The data were derived from the first Earth radiation budget experiment, which was flown on the Nimbus-6 Sun-synchronous satellite in 1975. Only the wide-field-of-view longwave measurements are cataloged in this atlas. The contour maps along with the associated sets of spherical harmonic coefficients form a valuable data set for studying different aspects of our changing climate over monthly, annual, and interannual scales in the spatial domain. Author

**N87-26491\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### CALIBRATION OF THE SPIN-SCAN OZONE IMAGER ABOARD THE DYNAMICS EXPLORER 1 SATELLITE

WALTER E. BRESSETTE, GERALD M. KEATING, and DAVID F. YOUNG (ST Systems Corp., Hampton, Va.) Aug. 1987 44 p (NASA-TP-2723; L-16150; NAS 1.60:2723) Avail: NTIS HC A03/MF A01 CSCL 048

ALGORITHMS, CALIBRATING, DYNAMICS EXPLORER 1 SATELLITE, OZONE, REGRESSION ANALYSIS, ULTRAVIOLET SPECTROMETERS

N87-29996\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FIVE YEAR GLOBAL DATASET: NMC OPERATIONAL ANALYSES (1978 TO 1982)

DAVID STRAUS and JOSEPH ARDIZZONE Sep. 1987 50 p Prepared in cooperation with Sigma Data Services Corp., Rockville, Md.

(NASA-RP-1194; REPT-87B0273; NAS 1.61:1194) Avail: NTIS HC A03/MF A01 CSCL 04B

This document describes procedures used in assembling a five year dataset (1978 to 1982) using NMC Operational Analysis data. These procedures entailed replacing missing and unacceptable data in order to arrive at a complete dataset that is continuous in time. In addition, a subjective assessment on the integrity of all data (both preliminary and final) is presented. Documentation on tapes comprising the Five Year Global Dataset is also included.

Author

**N88-10451\*#** National Aeronautics and Space Administration, Washington, DC.

ATLAS OF WIDE-FIELD-OF-VIEW OUTGOING LONGWAVE RADIATION DERIVED FROM NIMBUS 7 EARTH RADIATION BUDGET DATA SET - NOVEMBER 1978 TO OCTOBER 1985 T. DALE BESS and G. LOUIS SMITH Aug. 1987 176 p (NASA-RP-1186; L-16326; NAS 1.61:1186) Avail: NTIS HC A09/MF A01 CSCL 04B

An atlas of monthly mean outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 84 months of continuous data from November 1978 to October 1985. The data were derived from the second Earth radiation budget experiment, which was flown on the Nimbus 7 Sun-synchronous satellite in 1978. This data set is a companion set and extension to a similar report of the Nimbus

#### 47 METEOROLOGY AND CLIMATOLOGY

6 satellite. Together these two reports give a data set covering a 10 year time period and will be very valuable in studying different aspects of our changing climate over monthly, annual, and interannual scales in the time domain and over regional, zonal, and global scales in the spatial domain. Author

National Aeronautics and Space Administration. N88-14572\*# Langley Research Center, Hampton, VA.

DESCRIPTION OF DATA ON THE NIMBUS 7 LIMS MAP ARCHIVE TAPE: WATER VAPOR AND NITROGEN DIOXIDE KENNETH V. HAGGARD, B. T. MARSHALL (G and A Technical

Software, Hampton, Va.), ROBERT J. KURZEJA (Du Pont de Nemours, E. I. and Co., Aiken, S.C ), ELLIS E. REMSBERG, and JAMES M. RUSSELL, III Feb. 1988 69 p (NASA-TP-2761; L-16313; NAS 1.60:2761) Avail: NTIS HC

A04/MF A01 CSCL 04B

ATMOSPHERIC COMPOSITION, EARTH LIMB, INFRARED DETECTORS, MAPPING, NIMBUS 7 SATELLITE, STRATOSPHERE

N88-20772\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### SUMMARY OF ALONG-TRACK DATA FROM THE EARTH **RADIATION BUDGET SATELLITE FOR SEVERAL MAJOR** DESERT REGIONS

DAVID R. BROOKS and MARTA A. FENN May 1988 147 p (NASA-RP-1197; L-16401; NAS 1.61:1197) Avail: NTIS HC A07/MF A01 CSCL 04B

For several days in January and August 1985, the Earth Radiation Budget Satellite, a component of the Earth Radiation Budget Experiment (ERBE), was operated in an along-track scanning mode. A survey of radiance measurements is given for four desert areas in Africa, the Arabian Peninsula, Australia, and the Sahel region of Africa. Each overflight provides radiance information for four scene categories: clear, partly cloudy, mostly cloudy, and overcast. The data presented include the variation of radiance in each scene classification as a function of viewing zenith angle during each overflight of the five target areas. Several features of interest in the development of anisotropic models are evident, including day-night differences in longwave limb darkening and the azimuthal dependence of short wave radiance. There is some evidence that surface features may introduce thermal or visible shadowing that is not incorporated in the usual descriptions of the anisotropic behavior of radiance as viewed from space. The data also demonstrate that the ERBE scene classification algorithms give results that, at least for desert surfaces, are a function of viewing geometry. Author

#### N88-25105\*# Tennessee Univ. Space Inst., Tullahoma. METEOROLOGICAL AND ENVIRONMENTAL INPUTS TO **AVIATION SYSTEMS**

DENNIS W. CAMP, ed. and WALTER FROST, ed. Jun. 1988 Workshop held in Tullahoma, Tenn., 12-14 Mar. 1985; 226 p sponsored by NASA, Washington, NOAA, FAA, DOD, and Office of the Federal Coordinator for Meteorology

(NASA-CP-2498; L-16338; NAS 1.55:2498) Avail: NTIS HC A11/MF A02 CSCL 04B

AVIATION METEOROLOGY, FLIGHT SAFETY, WEATHER

N88-27677\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ANGULAR RADIATION MODELS FOR EARTH-ATMOSPHERE SYSTEM. VOLUME 1: SHORTWAVE RADIATION

J. T. SUTTLES, R. N. GREEN, P. MINNIS, G. L. SMITH, W. F. STAYLOR, B. A. WIELICKI, I. J. WALKER, D. F. YOUNG, V. R. TAYLOR, and L. L. STOWE (National Oceanic and Atmospheric Administration, Washington, D. C.) Jul. 1988 148 p (NASA-RP-1184; L-16414; NAS 1.61:1184) Avail: NTIS HC A07/MF A01 CSCL 04B

Presented are shortwave angular radiation models which are required for analysis of satellite measurements of Earth radiation, such as those fro the Earth Radiation Budget Experiment (ERBE). The models consist of both bidirectional and directional parameters.

The bidirectional parameters are anisotropic function, standard deviation of mean radiance, and shortwave-longwave radiance correlation coefficient. The directional parameters are mean albedo as a function of Sun zenith angle and mean albedo normalized to overhead Sun. Derivation of these models from the Nimbus 7 ERB (Earth Radiation Budget) and Geostationary Operational Environmental Satellite (GOES) data sets is described. Tabulated values and computer-generated plots are included for the bidirectional and directional modes. Author

N89-14634\*# National Aeronautics and Space Administration, Washington, DC.

#### SUMMARY OF ALONG-TRACK DATA FROM THE EARTH **RADIATION BUDGET SATELLITE FOR SEVERAL REPRESENTATIVE OCEAN REGIONS**

DAVID R. BROOKS and MARTA A. FENN (Planning Research Corp., Hampton, Va.) Nov. 1988 216 p

(NASA-RP-1206; L-16449; NAS 1.61:1206) Avail: NTIS HC A10/MF A02 CSCL 04B

For several days in January and August 1985, the Earth Radiation Budget Satellite, a component of the Earth Radiation Budget Experiment (ERBE), was operated in an along-track scanning mode. A survey of radiance measurements taken in this mode is given for five ocean regions: the north and south Atlantic, the Arabian Sea, the western Pacific north of the Equator, and part of the Intertropical Convergence Zone. Each overflight contains information about the clear scene and three cloud categories: partly cloudy, mostly cloudy, and overcast. The data presented include the variation of longwave and shortwave radiance in each scene classification as a function of viewing zenity angle during each overflight of one of the five target regions. Several features of interest in the development of anisotropic models are evident, including the azimuthal dependence of shortwave radiance that is an essential feature of shortwave bidirectional models. The data also demonstrate that the scene classification algorithm employed by the ERBE results in scene classifications that are a function of viewing geometry. Author

N89-14648\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### USER'S GUIDE FOR THE NIMBUS 7 SCANNING **MULTICHANNEL MICROWAVE RADIOMETER (SMMR) CELL-ALL TAPE**

C. C. CU, D. HAN, S. T. KIM (ST Systems Corp., Lanham, Md.), and P. GLOERSEN Oct. 1988 152 p

(NAS5-29386)

(NASA-RP-1210; REPT-88-181; NAS 1.61:1210) Avail: NTIS HC A08/MF A01 CSCL 04B

The SMMR instrument onboard the Nimbus-7 satellite has been in operation since October 1978. It provided global coverage of passive microwave observations at 6.6, 10.7, 18, 21, and 37 GHz. The oberved brightness temperature can be used to retrieve geophysical parameters, principally sea surface temperature, atmospheric water vapor and liquid water content over oceans, sea ice concentration, and snow cover over land. The SMME CELL-ALL Tape contains earth-located calibrated brightness temperature data which have been appropriately binned into cells of various grid sizes, allowing intercomparisons of observations made at different frequencies (with corresponding different footprint sizes). This user's guide describes the operation of the instrument, the flow of the data processing the calibration procedure, and the characteristics of the calibrated brightness temperatures and how they are binned. Detailed tape specifications and lists of available data are also provided. Author

N89-17374\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### LIMB-DARKENING FUNCTIONS AS DERIVED FROM ALONG-TRACK OPERATION OF THE ERBE SCANNING **RADIOMETER FOR JANUARY 1985**

G. LOUIS SMITH, NATIVIDAD MANALO, JOHN T. SUTTLES, and IRA WALKER (Planning Research Corp., Hampton, VA.)

## 47 METEOROLOGY AND CLIMATOLOGY

Washington, DC Mar. 1989 26 p (NASA-RP-1214; L-16487; NAS 1.61:1214) Avail: NTIS HC A03/MF A01 CSCL 04B

During January 1985, the scanning radiometer aboard the Earth Radiation Budget Satellite was operated to scan along-track. These data have been analyzed to produce limb-darkening functions for Earth emitted radiation, which relate the radiance in any given direction to the radiant exitance. Limb-darkening functions are presented in tabular form and shown as figures for 10 day cases and 12 night cases, corresponding to various scene types and latitude zones. The scene types were computed using measurements within 10 deg of zenith. The limb-darkening functions have values of 1.03 to 1.09 at zenith, with 1.06 being typical. It is found that latitude causes a variation on the order of 1 percent, except for zenith angles greater than 70 deg. These limb-darkening models are about 2 percent higher at zenith than the models derived from Nimbus 7 data. Author

N89-20587\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ANGULAR RADIATION MODELS FOR EARTH-ATMOSPHERE SYSTEM. VOLUME 2: LONGWAVE RADIATION

J. T. SUTTLES, R. N. GREEN, G. L. SMITH, B. A. WIELICKI, I. J. WALKER, V. R. TAYLOR, and L. L. STOWE (National Oceanic and Atmospheric Administration, Washington, DC.) Apr. 1989 88 p

(NASA-RP-1184-VOL-2; L-16503; NAS 1.61:1184-VOL-2) Avail: NTIS HC A05/MF A01 CSCL 04B

The longwave angular radiation models that are required for analysis of satellite measurements of Earth radiation, such as those from the Earth Radiation Budget Experiment (ERBE) are presented. The models contain limb-darkening characteristics and mean fluxes. Limb-darkening characteristics are the longwave anisotropic factor and the standard deviation of the longwave radiance. Derivation of these models from the Nimbus 7 ERB (Earth Radiation Budget) data set is described. Tabulated values and computer-generated plots are included for the limb-darkening and mean-flux models.

Author

National Aeronautics and Space Administration. N89-20588\*# Goddard Space Flight Center, Greenbelt, MD. AN ASSESSMENT MODEL FOR ATMOSPHERIC

COMPOSITION

MICHAEL J. PRATHER, ed. Jan. 1988 56 p Proceedings of a workshop held at NASA Goddard Inst. for Space Studies, New York, NY, 10-13 Jan. 1988

(NASA-CP-3023; REPT-89-31; NAS 1.55:3023) Avail: NTIS HC A04/MF A01 CSCL 04B

AIR QUALITY, ATMOSPHERIC COMPOSITION, EARTH ATMOSPHERE, ENVIRONMENTAL MONITORING, PHOTO-CHEMICAL OXIDANTS

National Aeronautics and Space Administration. N89-27302\*# Goddard Space Flight Center, Greenbelt, MD.

#### THE 1989 AIRBORNE ARCTIC STRATOSPHERIC EXPEDITION NIMBUS-7 TOMS DATA ATLAS

ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Washington Jul. 1989 154 p (NAS5-29373)

(NASA-RP-1227; REPT-89B00188; NAS 1.61:1227) Avail: NTIS HC A08/MF A01 CSCL 04B

Over the past several years, world scientific attention was focused on the rapid and unanticipated decrease in the abundance of ozone over Antarctica during the Austral spring. A major aircraft campaign was conducted from December 1988 to February 1989 in response to the recently published Ozone Trends Panel Report which found that the largest decreases in Arctic ozone occurred during January to February at latitudes near the edge of the Arctic vortex. This atlas provides a complete set of TOMS ozone measurements over Europe and the North Atlantic for the duration of the experiment. These were the orbital TOMS measurements provided to the experimenters in near-real-time. In addition, a set of Northern Hemisphere TOMS ozone measurements for the period December 26, 1988 to March 20, 1989 is presented. A comparison of January and February 1989 mean ozone values to prior years is also presented. Author

#### N89-28983\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. THE 1988 ANTARCTIC OZONE MONITORING NIMBUS-7 TOMS

## DATA ATLAS

ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Aug. 1989 153 p (NAS5-29375)

(NASA-RP-1225; REPT-89B00176; NAS 1.61:1225) Avail: NTIS HC A08/MF A01 CSCL 04B

Because of the great environmental significance of ozone and to support continuing research at McMurdo, Syowa, and other Southern Hemisphere stations, the development of the 1988 ozone hole was monitored using data from the Nimbus-7 Total Ozone Spectrometer (TOMS) instrument, produced in Mapping near-real-time. This Atlas provides a complete set of daily polar orthographic projections of the TOMS total ozone measurements over the Southern Hemisphere for the period August 1 through November 17, 1988. Although total ozone in mini-holes briefly dropped below 150 DU in late August, the main ozone hole is seen to be much less pronounced than in 1987. Minimum values, observed in late September and early October 1988, were seldom less than 175 DU. Compared with the same period in 1987, when a pronounced ozone hole whose minimum value of 109 Dobson Units (DU) was the lowest total ozone ever observed, the 1988 ozone hole is displaced from the South Pole, opposing a persistent maximum with values consistently above 500 DU. Daily ozone values above selected Southern Hemisphere stations are presented, along with comparisons of the 1988 ozone distribution to that of other years. Author

N90-14741\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA

ATLAS OF ALBEDO AND ABSORBED SOLAR RADIATION **DERIVED FROM NIMBUS 6 EARTH RADIATION BUDGET** DATA SET, JULY 1975 TO MAY 1978

G. LOUIS SMITH, T. DALE BESS, and DAVID RUTAN (PRC Kentron, Inc., Hampton, VA.) 1989 88 p (NASA-RP-1230; L-16601; NAS 1.61:1230) Avail: NTIS HC

A05/MF A01 CSCL 04B

An atlas of monthly mean global contour maps of albedo and absorbed solar radiation is presented. The atlas is based on 35 months of continuous measurements from July 1975 through May 1978. The data were retrieved from measurements made by the shortwave wide field-of-view radiometer of the first Earth Radiation Budget (ERB) instrument, which flew on the Nimbus 6 spacecraft in 1975. Profiles of zonal mean albedos and absorbed solar radiation are tabulated. These geographical distributions are provided as a resource for studying the radiation budget of the earth. This atlas of albedo and absorbed solar radiation complements the atlases of outgoing longwave radiation by Bess and Smith in NASA-RP-1185 and RP-1186, also based on the Nimbus 6 and 7 ERB data. Author

National Aeronautics and Space Administration. N90-17233\*# Langley Research Center, Hampton, VA.

ATLAS OF ALBEDO AND ABSORBED SOLAR RADIATION **DERIVED FROM NIMBUS 7 EARTH RADIATION BUDGET** DATA SET, NOVEMBER 1978 TO OCTOBER 1985

G. LOUIS SMITH, DAVID RUTAN (PRC Kentron, Inc., Hampton, VA.), and T. DALE BESS Washington Jan. 1990 213 p (NASA-RP-1231; L-16591; NAS 1.61:1231) Avail: NTIS HC A10/MF A02 CSCL 04B

An atlas of monthly mean global contour maps of albedo and absorbed solar radiation is presented. This atlas contains 7 years of continuous data from November 1978 through October 1985. The data were retrieved from measurements made by the second Earth Radiation Budget (ERB) wide field-of-view instrument, which

## 47 METEOROLOGY AND CLIMATOLOGY

flew on the Nimbus 7 spacecraft in 1978. The deconvolution method used to produce these data is briefly discussed here so that the user may understand their generation and limitations. These deographical distributions of albedo and absorbed solar radiation are provided as a resource for researchers studying the radiation budget of the Earth. This atlas of albedo and absorbed solar radiation complements the atlases of outgoing longwave radiation by Bess and Smith, also based on the Nimbus 6 and 7 ERB data. Author

N90-19718\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### SPANWISE MEASUREMENTS OF VERTICAL COMPONENTS OF ATMOSPHERIC TURBULENCE

ROBERT K. SLEEPER Washington Apr. 1990 67 p (NASA-TP-2963; L-16550; NAS 1.60:2963) Avail: NTIS HC A04/MF A01 CSCL 04B

AUTOCORRELATION, CROSS CORRELATION, FLOW DISTRIBUTION, GUSTS, VERTICAL AIR CURRENTS, WIND VELOCITY

N90-23837\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### NIMBUS-7 TOMS ANTARCTIC OZONE ATLAS: AUGUST THROUGH NOVEMBER, 1989

ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Jul. 1990 176 p (NAS5-29373)

(NASA-RP-1237; NAS 1.61:1237; REPT-90B00114) Avail: NTIS HC A09/MF A01 CSCL 04B

Because of the great environmental significance of ozone and to support continuing research at the Antarctic and other Southern Hemisphere stations, the development of the 1989 ozone hole was monitored using data from the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) instrument, produced in near-real-time. This Atlas provides a complete set of daily polar orthographic projections of the TOMS total ozone measurements over the Southern Hemisphere for the period August 1 through November 30, 1989. The 1989 ozone hole developed in a manner similar to that of 1987, reaching a comparable depth in early October. This was in sharp contrast to the much weaker hole of 1988. The 1989 ozone hole remained at polar latitudes as it filled in November, in contrast to other recent years when the hole drifted to mid-latitudes before disappearing. Daily ozone values above selected Southern Hemisphere stations are presented, along with comparisons of the 1989 ozone distribution to that of other Author years.

N90-28224\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. FIRE SCIENCE RESULTS 1989

DAVID S. MCDOUGAL, ed. Washington Jul. 1990 434 p Meeting held in Monterey, CA, 10-14 Jul. 1989; sponsored in cooperation with NASA, NSF, ONR, DOE, AFGL, and NOAA (NASA-CP-3079; L-16792; NAS 1.55:3079) Avail: NTIS HC A19/MF A03 CSCL 04B

CIRRUS CLOUDS, CLIMATOLOGY, CLOUDS (METEOROL-OGY), CONFERENCES, MARINE METEOROLOGY, OPTICAL PROPERTIES, REMOTE SENSING, STRATOCUMULUS CLOUDS, THERMODYNAMIC PROPERTIES

48

## **OCEANOGRAPHY**

Includes biological, dynamic, and physical oceanography; and marine resources.

N87-24870\* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

## ARCTIC SEA ICE, 1973-1976: SATELLITE

PASSIVE-MICROWAVE OBSERVATIONS

CLAIRE L. PARKINSON, JOSEFINO C. COMISO, H. JAY ZWALLY, DONALD J. CAVALIERI, PER GLOERSEN, and WILLIAM J. CAMPBELL (Puget Sound Univ., Tacoma, Wash.) Jan. 1987 301 p Original contains color illustrations

(NASA-SP-489; NAS 1.21:489; LC-86-23876) Avail: NTIS HC A14 CSCL 08L

The Arctic region plays a key role in the climate of the earth. The sea ice cover affects the radiative balance of the earth and radically changes the fluxes of heat between the atmosphere and the ocean. The observations of the Arctic made by the Electrically Scanning Microwave Radiometer (ESMR) on board the Nimbus 5 research satellite are summarized for the period 1973 through 1976. B.G.

#### 51

#### LIFE SCIENCES (GENERAL)

N87-20727\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

#### LIQUID DROP STABILITY FOR PROTEIN CRYSTAL GROWTH IN MICROGRAVITY

ROBERT B. OWEN, BETH H. BROOM, ROBERT S. SNYDER,

and RON DANIEL Apr. 1987 17 p (NASA-TP-2724; NAS 1.60:2724) Avail: NTIS HC A03/MF A01 CSCL 06B

(LIQUIDS), APPLICATIONS. DROPS MICROGRAVITY CRYSTAL GROWTH, PROTEIN SYNTHESIS, PROTEIN STABILITY

N88-15354\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

MICROGRAVITY PARTICLE RESEARCH ON THE SPACE STATION

STEVEN W. SQUYRES, ed., CHRISTOPHER P. MCKAY, ed., and DEBORAH E. SCHWARTZ, ed. Dec. 1987 48 p Workshop held in Moffett Field, Calif., 22-24 Aug. 1985

(NASA-CP-2496; A-87361; NAS 1.55:2496) Avail: NTIS HC A03/MF A01 CSCL 06B

PARTICLES. REDUCED SPACE STATION GRAVITY, PAYLOADS, SPACEBORNE EXPERIMENTS

N88-17168\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

SPACE BIOREACTOR SCIENCE WORKSHOP

DENNIS R. MORRISON, ed. Dec. 1987 183 p Workshop held in Houston, Tex., 22-23 Aug. 1985 (NASA-CP-2485; S-564; NAS 1.55:2485) Avail: NTIS HC

A09/MF A02 CSCL 06B

BIOPROCESSING, BIOREACTORS,

BIOTECHNOLOGY, CELLS (BIOLOGY), CONFERENCES, CULTURE TECHNIQUES, GRAVITY, SPACE PROCESSING, REDUCED TISSUES (BIOLOGY)

**N88-19883\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 3: SPACE STATION HABITABILITY AND FUNCTION: ARCHITECTURAL RESEARCH

MARC M. COHEN, ed., ALICE EICHOLD, ed., and SUSAN HEERS, ed. Oct. 1987 211 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985

(NASA-CP-2426-VOL-3; A-86263-VOL-3; NAS 1.55:2426-VOL-3) Avail: NTIS HC A10/MF A02 CSCL 05H

ARCHITECTURE, HUMAN FACTORS ENGINEERING, SPACE STATIONS, SPACECRAFT DESIGN

**N88-24145\***# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 1: EVA RESEARCH AND DEVELOPMENT

MARC M. COHEN, ed. and H. C. VYKUKAL, ed. Apr. 1988 136 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985 (NASA-CP-2426-VOL-1; A-87163-VOL-1; NAS 1.55:2426-VOL-1) Avail: NTIS HC A07/MF A01 CSCL 06B

CONFERENCES, EXTRAVEHICULAR ACTIVITY, HUMAN FACTORS ENGINEERING, SPACE STATIONS

**N88-24148\***# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 4: INHOUSE ADVANCED DEVELOPMENT AND RESEARCH

TRIEVE TANNER, ed., YVONNE A. CLEARWATER, ed., and MARC M. COHEN, ed. May 1988 135 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985

(NASA-CP-2426-VOL-4; A-87247-VOL-4; NAS 1.55:2426-VOL-4) Avail: NTIS HC A07/MF A01 CSCL 06B

HUMAN FACTORS ENGINEERING, SPACE STATIONS, SPACECRAFT DESIGN

**N89-17997\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

# PROCEEDINGS OF A CONFERENCE ON CARDIOVASCULAR BIOINSTRUMENTATION

RODNEY W. BALLARD, CHARLES A. FULLER, RICHARD MAINS, and HERBERT J. FINGER Dec. 1988 71 p Conference held at Moffett Field, CA, 21-22 Jul. 1987

(NASA-CP-10022; A-88120; NAS 1.55:10022) Avail: NTIS HC A04/MF A01 CSCL 06C

BIOINSTRUMENTATION, CARDIOVASCULAR SYSTEM, CONFERENCES, GROUND SUPPORT SYSTEMS, MANNED SPACE FLIGHT

#### N89-24022\*# General Electric Co., Moffett Field, CA. GAS-GRAIN SIMULATION FACILITY: FUNDAMENTAL STUDIES OF PARTICLE FORMATION AND INTERACTIONS. VOLUME 1: EXECUTIVE SUMMARY AND OVERVIEW

GUY FOGLEMAN, ed., JUDITH L. HUNTINGTON, ed. (Search for Extraterrestrial Intelligence Inst., Los Altos, CA.), DEBORAH E. SCHWARTZ, ed., and MARK L. FONDA, ed. Mar. 1989 38 p Presented at the Gas-Grain Simulation Facility Experiments Workshop, Sunnyvale, CA, 31 Aug. - 1 Sep. 1987; sponsored by the Exobiology Flight Program

(NASA-CP-10026-VOL-1; A-88256-VOL-1; NAS

1.55:10026-VOL-1) Avail: NTIS HC A03/MF A01 CSCL 06C COSMIC DUST, AEROSOLS, CLOUDS, GRAINS, PARTICLE GRAVITATIONAL EFFECTS, NUCLEATION, PARTICLES. PARTICULATES, REDUCED INTERACTIONS. SPACE LABORATORIES, SPACE STATION GRAVITY, PAYLOADS, SPACEBORNE EXPERIMENTS

**N89-24023\*#** General Electric Co., Moffett Field, CA. GAS-GRAIN SIMULATION FACILITY: FUNDAMENTAL STUDIES OF PARTICLE FORMATION AND INTERACTIONS. VOLUME 2: ABSTRACTS, CANDIDATE EXPERIMENTS AND FEASIBILITY STUDY GUY FOGLEMAN, ed., JUDITH L. HUNTINGTON, ed. (Search for Extraterrestrial Intelligence Inst., Los Altos, CA.), DEBORAH E. SCHWARTZ, ed., and MARK L. FONDA, ed. Mar. 1989 199 p Presented at the Gas-Grain Simulation Facility Experiments Workshop, Sunnyvale, CA, 31 Aug. - 1 Sep. 1987; sponsored by the Exobiology Flight Program

(NASA-CP-10026-VOL-2; A-88256-VOL-2; NAS

1.55:10026-VOL-2) Avail: NTIS HC A09/MF A02 CSCL 06C AEROSOLS, CLOUDS, COSMIC DUST, GRAINS, PARTICLE INTERACTIONS, PARTICLES, PARTICULATES, REDUCED GRAVITY, SPACEBORNE EXPERIMENTS

**N89-26334\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

EXOBIOLOGY AND FUTURE MARS MISSIONS

CHRISTOPHER P. MCKAY, ed. and WANDA DAVIS, L., ed. Washington Mar. 1989 73 p Workshop held in Sunnyvale, CA, Mar. 1988

(NASA-CP-10027; A-89098; NAS 1.55:10027) Avail: NTIS HC A04/MF A01 CSCL 03B

BIOLOGICAL EVOLUTION, CHEMICAL EVOLUTION, CONFERENCES, ECOLOGY, EXOBIOLOGY, FOSSILS, MARS SAMPLE RETURN MISSIONS, SOILS

## **52** `

## **AEROSPACE MEDICINE**

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

**N87-18976\*** National Aeronautics and Space Administration, Washington, DC.

AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO THE 1986 ISSUES (SUPPLEMENT 293) Jan. 1987 251 p

(NASA-SP-7011(293); NAS 1.21:7011(293)) Avail: NTIS HC A12 CSCL 06E

This publication is a cumulative index to the abstracts contained in the Supplements 281 through 292 of Aerospace Medicine and Biology: A Continuing Bibliography. It includes seven indexes subject, personal author, corporate source, foreign technology, contract number, report number, and accession number. Author

**N87-30041\*** National Aeronautics and Space Administration, Washington, DC.

AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 302) Oct. 1987 55 p

(NASA-SP-7011(302); NAS 1.21:7011(302)) Avail: HC A04 CSCL 06E

This bibliography lists 131 reports, articles, and other documents introduced into the NASA scientific and technical information system in September, 1987. Author

**N88-14623\*#** National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

AIRBORNE PARTICULATE MATTER IN SPACECRAFT

Feb. 1988 15 p Presented at a Panel Discussion held in Houston, Tex., 23-24 Jul. 1987 (NAS9-17200)

(NASA-CP-2499; S-570; NAS 1.55:2499) Avail: NTIS HC A03/MF A01 CSCL 06K

AEROSOLS, AEROSPACE ENVIRONMENTS, AIR PURIFICATION, AIR QUALITY, SPACECRAFT DESIGN
## 52 AEROSPACE MEDICINE

**N88-18180\*** National Aeronautics and Space Administration, Washington, DC.

AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 306)

Jan. 1988 210 p

(NASA-SP-7011(306); NAS 1.21:7011(306)) Avail: NTIS HC A10 CSCL 06E

This publication is a cumulative index to the abstracts contained in the Supplements 294 through 305 of Aerospace Medicine and Biology: A Continuing Bibliography. It includes seven indexes subject, personal author, corporate source, foreign technology, contract number, report number, and accession number. Author

N88-30281\* National Aeronautics and Space Administration, Washington, DC.

#### AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 315) Oct. 1988 71 p

(NASA-SP-7011(315); NAS 1.21:7011(315)) Avail: NTIS HC A04; NTIS standing order as PB88-912300. \$9.00 domestic, \$18.00 foreign CSCL 06E

This bibliography lists 211 reports, articles and other documents introduced into the NASA scientific and technical information system in September, 1988. Author

**N89-29951\*** National Aeronautics and Space Administration, Washington, DC.

AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 327) Feb. 1989 53 p

(NASA-SP-7011(327); NAS 1.21:7011(327)) Avail: NTIS HC A04; NTIS standing order as PB89-912300, \$10.50 domestic, \$21.00 foreign CSCL 06E

This bibliography lists 127 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during August, 1989. Subject coverage includes: aerospace medicine and psychology, life support systems and controlled environments, safety equipment, exobiology and extraterrestrial life, and flight crew behavior and performance. Author

**N90-28963\*** National Aeronautics and Space Administration, Washington, DC.

AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 340) Feb. 1989 64 p

(NASA-SP-7011(340); NAS 1.21:7011(340)) Avail: NTIS HC A03; NTIS standing order as PB90-912300, \$11.50 domestic, \$23.00 foreign CSCL 06E

This bibliography lists 157 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during August 1990. Subject coverage includes: aerospace medicine and psychology, life support systems and controlled environments, safety equipment, exobiology and extraterrestrial life, and flight crew behavior and performance. Author

**N90-28965\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

JOINT US/USSR STUDY: COMPARISON OF EFFECTS OF HORIZONTAL AND HEAD-DOWN BED REST

HAROLD SANDLER and ANATOLI I. GRIGORIEV (Institute of Biomedical Problems, Moscow, USSR) Washington Aug. 1990 102 p

(NASA-TP-3037; A-85177; NAS 1.60:3037) Avail: NTIS HC A06/MF A01 CSCL 06S

BED REST, BIOCHEMISTRY, HEAD DOWN TILT, HYPOKINESIA, LOWER BODY NEGATIVE PRESSURE, PHYSICAL EXERCISE, PHYSIOLOGY, SPACE FLIGHT

## 53

# **BEHAVIORAL SCIENCES**

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

**N88-23370\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## **MENTAL-STATE ESTIMATION, 1987**

J. RAYMOND COMSTOCK, JR., comp. May 1988 393 p Workshop held in Williamsburg, Va., 3-4 Jun. 1987; sponsored by NASA, Langley Research Center, Hampton, Va. and Old Dominion Univ., Norfolk, Va. Sponsored by NASA, Washington (NASA-CP-2504; L-16420; NAS 1.55:2504) Avail: NTIS HC A17/MF A03 CSCL 05J

BIOMETRICS, ESTIMATING, HUMAN PERFORMANCE, MENTAL PERFORMANCE, OPERATOR PERFORMANCE, PSYCHOMOTOR PERFORMANCE, STRESS (PSYCHOLOGY), WORKLOADS (PSYCHOPHYSIOLOGY), WORKSTATIONS

54

## MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing.

**N88-12251\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEM: REGENERATIVE LIFE SUPPORT SYSTEMS IN SPACE

ROBERT D. MACELROY and DAVID T. SMERNOFF (New Hampshire Univ., Durham.) Sep. 1987 153 p The 26th COSPAR Meeting held in Toulouse, France, Jul. 1986 (NCC2-231)

(NASA-CP-2480; A-87256; NAS 1.55:2480) Avail: NTIS HC A08/MF A01 CSCL 06K

ALGAE, CLOSED ECOLOGICAL SYSTEMS, GAS EXCHANGE, VEGETATION GROWTH

**N88-13852'#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEM. DESIGN, DEVELOPMENT, AND USE OF A GROUND-BASED PLANT GROWTH MODULE

ROBERT D. MACELROY, DAVID T. SMERNOFF (New Hampshire Univ., Durham.), and JOHN D. RUMMEL Sep. 1987 83 p Meeting held at Moffett Field, Calif., Sep. 1984, in Cocca Beach, Fla., Apr. 1985 and in Carmel, Calif., 23-25 Apr. 1986 (NCC2-27)

(NASA-CP-2479; A-87255; NAS 1.55:2479) Avail: NTIS HC A05/MF A01 CSCL 06K

CLOSED ECOLOGICAL SYSTEMS, CROP GROWTH, EXPERIMENT DESIGN, FOOD, LABORATORY EQUIPMENT, PLANTS (BOTANY)

N89-13898\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA. REPORT OF THE 1ST PLANNING WORKSHOP FOR CELSS

#### REPORT OF THE 1ST PLANNING WORKSHOP FOR CELSS FLIGHT EXPERIMENTATION

JOHN W. TREMOR and ROBERT D. MACELROY 1988 28 p Workshop held at Moffett Field, Calif., 23-24 Mar. 1987 (NASA-CP-10020; A-88265; NAS 1.55:10020) Avail: NTIS HC A03/MF A01 CSCL 05H

BIOASTRONAUTICS, CLOSED ECOLOGICAL SYSTEMS,

## 59 MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

CONFERENCES, PLANTS (BOTANY), SPACECRAFT ENVIRONMENTS

N89-18039\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

INTERACTIVE ORBITAL PROXIMITY OPERATIONS PLANNING SYSTEM

ARTHUR J. GRUNWALD and STEPHEN R. ELLIS Nov. 1988 48 p

(NASA-TP-2839; A-88091; NAS 1.60:2839) Avail: NTIS HC A03/MF A01 CSCL 05H

COMPUTER GRAPHICS, ORBITAL MANEUVERS, PROXIMITY, SPACE STATIONS, SPACECRAFT TRAJECTORIES

N90-22918\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### SPATIAL DISPLAYS AND SPATIAL INSTRUMENTS

STEPHEN R. ELLIS, ed., MARY K. KAISER, ed., and ARTHUR J. GRUNWALD, ed. (Technion - Israel Inst. of Tech., Haifa.) Jul. 1989 623 p Conference held in Pacific Grove, CA, 31 Aug. - 3 Sep. 1987; sponsored by NASA, Ames Research Center, Moffett Field, CA and California Univ., Berkeley

(NASA-CP-10032; A-88090; NAS 1.55:10032) Avail: NTIS HC A99/MF A04 CSCL 05H

COMPUTER GRAPHICS, CONFERENCES, DISPLAY DEVICES, ANALYSIS, SPATIAL IMAGE RESOLUTION. VISUAL PERCEPTION

N90-22965\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DETERMINATION OF DEPTH-VIEWING VOLUMES FOR

STEREO THREE-DIMENSIONAL GRAPHIC DISPLAYS

RUSSELL V. PARRISH and STEVEN P. WILLIAMS (Army Aviation Systems Command, Saint Louis, MO.) Washington Jun. 1990 21 p

(DA PROJ. 1L1-61102-AH-45)

(NASA-TP-2999; L-16655; NAS 1.60:2999;

AVSCOM-TM-90-B-016) Avail: NTIS HC A03/MF A01 CSCL 05H

COMPUTER GRAPHICS, DEPTH, SPACE PERCEPTION, STEREOSCOPIC VISION, VISUAL SIGNALS

## 55

#### SPACE BIOLOGY

Includes exobiology; planetary biology; and extraterrestrial life.

N90-13939\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA. **CELLS IN SPACE** 

JEAN D. SIBONGA, ed., RICHARD C. MAINS, ed., THOMAS N. FAST, ed. (Santa Clara Univ., CA.), PAUL X. CALLAHAN, ed., and CHARLES M. WINGET, ed. Aug. 1989 310 p Conference held in San Juan Bautista, CA, 31 Oct. - 4 Nov. 1988

(NASA-CP-10034; A-89131; NAS 1.55:10034) Avail: NTIS HC A14/MF A02 CSCL 06C

CELLS (BIOLOGY), CONFERENCES, EXPERIMENT DESIGN, GRAVITATIONAL EFFECTS, GRAVITATIONAL PHYSIOLOGY, MANNED SPACE FLIGHT, SPACEBORNE EXPERIMENTS

## 59

## MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

N88-14629\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA. A GENERAL SOLUTION TO THE SILHOUETTE PROBLEM DAVID R. HEDGLEY, JR. Feb. 1987 9 p (NASA-TP-2695; H-1348; NAS 1.60:2695) Avail: NTIS HC A02/MF A01 CSCL 12A COMPUTER GRAPHICS, DISPLA ENHANCEMENT, IMAGE PROCESSING DISPLAY DEVICES, IMAGE

N88-17206\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

FIRST ANNUAL WORKSHOP ON SPACE OPERATIONS **AUTOMATION AND ROBOTICS (SOAR 87)** 

SANDY GRIFFIN, ed. Oct. 1987 530 p Workshop held in Houston, Tex., 5-7 Aug. 1987; sponsored by NASA, Johnson Space Flight Center and the US Air Force

(NASA-CP-2491; S-567; NAS 1.55:2491) Avail: NTIS HC A23/MF A04 CSCL 12B

ARCHITECTURE (COMPUTERS), AUTOMATIC CONTROL, COMPUTER AIDED DESIGN, CONFERENCES, DISTRIBUTED PROCESSING, EXPERT SYSTEMS, LOGISTICS, MAN MACHINE SYSTEMS. NEURAL PARALLEL PROCESSING NETS, (COMPUTERS), ROBOTICS

N88-21646\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CARE 3 USER'S WORKSHOP Apr. 1988 160 p Workshop held in Hampton, Va., 6-7 Oct. 1987; sponsored by NASA, Washington (NASA-CP-10011; NAS 1.55:10011) Avail: NTIS HC A08/MF A01 CSCL 12A

COMPUTER PROGRAMS, CONFERENCES, FAULT TOLERANCE, RELIABILITY ANALYSIS

N89-19817\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX. SECOND ANNUAL WORKSHOP ON SPACE OPERATIONS **AUTOMATION AND ROBOTICS (SOAR 1988)** SANDY GRIFFIN, ed./comp. Washington, DC Nov. 1988

517 p Workshop held in Dayton, OH, 20-23 Jul. 1988; sponsored by NASA, Johnson Space Flight Center, USAF, Washington, DC, and Wright State Univ., Dayton, OH

(NASA-CP-3019; S-585; NAS 1.55:3019) Avail: NTIS HC A22/MF A04 CSCL 12A

COMPUTER ASSISTED INSTRUCTION, COMPUTER TECHNIQUES, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, INFORMATION SYSTEMS, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), ROBOTICS, SYSTEMS INTEGRATION, TELEOPERATORS

N90-21524\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A TIME-ACCURATE ADAPTIVE GRID METHOD AND THE NUMERICAL SIMULATION OF A SHOCK-VORTEX INTERACTION

MICHAEL J. BOCKELIE and PETER R. EISEMAN (Columbia Univ., New York, NY.) Washington Jun. 1990 20 p (NAG1-427; AF-AFOSR-0307-86)

(NASA-TP-2998; L-16727; NAS 1.60:2998) Avail: NTIS HC A03/MF A01 CSCL 12A

COMPUTATIONAL GRIDS, COMPUTERIZED SIMULATION, (MATHEMATICS), SHOCK WAVE GENERATION GRID INTERACTION, VORTICES

## 59 MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

N90-25503\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX. THIRD ANNUAL WORKSHOP ON SPACE OPERATIONS

**AUTOMATION AND ROBOTICS (SOAR 1989)** 

SANDY GRIFFIN, ed. Washington Mar. 1990 651 p Workshop held in Houston, TX, 25-27 Jul. 1989; sponsored by NASA, Washington, the AF, and Houston-Clear Lake Univ.

(NASA-CP-3059; S-599; NAS 1.55:3059) Avail: NTIS HC A99/MF A04 CSCL 12A

AEROSPACE ENVIRONMENTS, AUTOMATIC CONTROL, CONFERENCES, END EFFECTORS, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), MANIPULATORS, ROBOTICS, ROBOTS, SPACE STATIONS, SPACECRAFT CONTAMINATION, TELEOPERATORS

## 60

## COMPUTER OPERATIONS AND HARDWARE

Includes hardware for computer graphics, firmware, and data processing.

N78-74659\* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THE MSFC/UAH DATA MANAGEMENT SYMPOSIUM

A. CASTELLI, ed. 16 Feb. 1978 423 p refs Symp. held at Huntsville, Ala., 18-19 Oct. 1977 (NASA-CP-2040)

ALABAMA, CONFERENCES, DATA MANAGEMENT, NASA **PROGRAMS, UNIVERSITIES** 

N88-20833\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DIGITAL ENHANCEMENT OF FLOW FIELD IMAGES

ROBERT A. KUDLINSKI and STEPHEN K. PARK Mar. 1988 25 p Original contains color illustrations

(NASA-TP-2770; L-16318; NAS 1.60:2770) Avail: NTIS HC A03/MF A01 CSCL 09B

DIGITAL TECHNIQUES, FLOW VISUALIZATION, IMAGE ENHANCEMENT, IMAGE PROCESSING, PHOTOGRAPHIC PROCESSING

N90-20651\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX. **GRAPHICS TECHNOLOGY IN SPACE APPLICATIONS (GTSA** 

1989)

SANDY GRIFFIN, ed. Aug. 1989 247 p Workshop held in Houston, TX, 12-14 Apr. 1989; sponsored by NASA, Washington and Houston Univ., Clear Lake

(NASA-CP-3045; S-594; NAS 1.55:3045) Avail: NTIS HC A11/MF A02 CSCL 09B

COMPUTER ANIMATION, COMPUTER GRAPHICS, CONFERENCES, DISPLAY DEVICES, MAN MACHINE SYSTEMS, SPACE SHUTTLES, SPACE STATIONS, SYSTEMS SIMULATION, TELEOPERATORS, TRAINING SIMULATORS

## 61

## **COMPUTER PROGRAMMING AND SOFTWARE**

Includes computer programs, routines, and algorithms, and specific applications, e.g., CAD/CAM.

N87-10720\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. PROCEEDINGS OF THE 5TH ANNUAL USERS' CONFERENCE

M. SZCZUR, ed. and E. HARRIS, ed. 1985 400 p Conference held at Greenbelt, Md., 4-6 Jun. 1985

(NASA-CP-2399; NAS 1.55:2399) Avail: NTIS HC A17/MF A03 CSCL 09B

ACCESS CONTROL, COMPUTER NETWORKS, FORMAT, IMAGE PROCESSING, SOFTWARE ENGINEERING, SOFTWARE TOOLS, SPACE STATIONS

N87-19931\*# National Aeronautics and Space Administration, Washington, DC.

COMPUTER SCIENCES AND DATA SYSTEMS, VOLUME 1

Mar. 1987 356 p Proceedings of a Symposium held in Williamsburg, Va., 18-20 Nov. 1986 (NASA-CP-2459-VOL-1; NAS 1.55:2459-VOL-1) Avail: NTIS HC

A16/MF A02 CSCL 09B

ARCHITECTURE (COMPUTERS), CONCURRENT PRO-CESSING, CONFERENCES, DATA MANAGEMENT, DISTRI-BUTED PROCESSING, EXPERT SYSTEMS, SOFTWARE ENGINEERING

N87-19932\*# National Aeronautics and Space Administration, Washington, DC.

COMPUTER SCIENCES AND DATA SYSTEMS, VOLUME 2 Mar. 1987 339 p Proceedings of a Symposium held in

Williamsburg, Va., 18-20 Nov. 1986 (NASA-CP-2459-VOL-2; NAS 1.55:2459-VOL-2) Avail: NTIS HC A15/MF A02 CSCL 09B

CONFERENCES, DATA STORAGE. DISTRIBUTED FIBER OPTICS, PROCESSING, MASSIVELY PARALLEL PROCESSORS, OPTICAL DATA PROCESSING, PARALLEL PROCESSING (COMPUTERS), VHSIC (CIRCUITS)

National Aeronautics and Space Administration. N87-23156\*# Goddard Space Flight Center, Greenbelt, MD.

SIXTH ANNUAL USERS' CONFERENCE

MARTHA SZCZUR, ed. and ELFRIEDA HARRIS, ed. (Science Applications Research, Lanham, Md.) Oct. 1986 228 p Conference held in Pasadena, Calif., 8-10 Oct. 1986; sponsored by JPL and NASA. Goddard Space Flight Center

(NASA-CP-2463; REPT-87B0176; NAS 1.55:2463) Avail: NTIS HC A11/MF A02 CSCL 09B

APPLICATIONS PROGRAMS (COMPUTERS), COMPUTER SYSTEMS PROGRAMS, CONFERENCES, IMAGE PROCESSING, INFORMATION SYSTEMS, MAN-COMPUTER INTERFACE, **OPERATING SYSTEMS (COMPUTERS)** 

N87-26531\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. FRONTIERS OF MASSIVELY PARALLEL SCIENTIFIC COMPUTATION

JAMES R. FISCHER, ed. Jul. 1987 293 p Symposium held in Greenbelt, Md., 24-25 Sep. 1986; sponsored by NASA Goddard Space Flight Center and Goodyear Aerospace Corp.

(NASA-CP-2478; REPT-87B9876; NAS 1.55:2478) Avail: NTIS HC A13/MF A02 CSCL 09B

ALGORITHMS. COMPUTER GRAPHICS. COMPUTER SYSTEMS PERFORMANCE, COMPUTERIZED SIMULATION, MASSIVELY PARALLEL PROCESSORS, PARALLEL PROCESSING (COMPUTERS)

National Aeronautics and Space Administration. N88-16360\*# Marshall Space Flight Center, Huntsville, AL.

THIRD CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR **SPACE APPLICATIONS, PART 1** 

JUDITH S. DENTON, comp., MICHAEL S. FREEMAN, comp., and MARY VEREEN, comp. Nov. 1987 421 p Conference held in Huntsville, Ala., 2-3 Nov. 1987; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville

(NASA-CP-2492-Pt-1; M-575-PT-1; NAS 1.55:2492-Pt-1) Avail: NTIS HC A18/MF A03 CSCL 09B

COMPUTER PROGRAMS, CONFERENCES, DATA BASE

MANAGEMENT SYSTEMS, EXPERT SYSTEMS, KNOWLEDGE, MAN MACHINE SYSTEMS, ROBOTICS, SCHEDULING, SPACE SHUTTLES, SPACE STATIONS, SPACECRAFT CONTROL

N88-24188\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

THIRD CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR **SPACE APPLICATIONS, PART 2** 

JUDITH S. DENTON, comp., MICHAEL S. FREEMAN, comp., and MARY VEREEN, comp. Jun. 1988 66 p Conference held in Huntsville, Ala., 2-3 Nov. 1987; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville Sponsored by NASA, Washington

(NASA-CP-2492-PT-2; M-576-PT-2; NAS 1.55:2492-PT-2) Avail: NTIS HC A04/MF A01 CSCL 09B

COMPUTER PROGRAMS, CONFERENCES, EXPERT SYSTEMS, SOFTWARE TOOLS, SPACE STATIONS

N88-29351\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SECOND CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS

THOMAS DOLLMAN, comp. Aug. 1988 709 p Conference held in Huntsville, Ala., 13-14 Nov. 1986; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville Sponsored by NASA, Washington, D.C.

(NASA-CP-3007; M-577; NAS 1.55:3007) Avail: NTIS HC A99/MF A04 CSCL 09B

AUTOMATIC CONTROL, COMPUTER AIDED DESIGN, COMPUTER VISION, EXPERT SYSTEMS, ROBOTICS, SPACE STATIONS

N89-11407\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. OEXP ANALYSIS TOOLS WORKSHOP

L. BERNARD GARRETT, ROBERT L. WRIGHT, DEBORAH BADI, and JOHN T. FINDLAY (Flight Mechanics and Control, Inc., Hampton, Va.) Aug. 1988 146 p Workshop held in Hampton, Va., 21-22 Jun. 1988 Sponsored by NASA, Washington, D.C. (NASA-CP-10013; NAS 1.55:10013) Avail: NTIS HC A07/MF A01 CSCL 09B

COMPUTER PROGRAMS, LUNAR EXPLORATION, MARS LANDING, MISSION PLANNING, SOFTWARE TOOLS

N89-12237\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ANALYSIS OF POSITRON LIFETIME SPECTRA IN POLYMERS JAG J. SINGH, GERALD H. MALL (Computer Sciences Corp., Hampton, Va.), and DANNY R. SPRINKLE Dec. 1988 61 p (NASA-TP-2853; L-16468; NAS 1.60:2853) Avail: NTIS HC A04/MF A01 CSCL 09B

COMPUTER PROGRAMS, EPOXY COMPOUNDS, HALF LIFE, POSITRONS, RADIATION SPECTRA

N89-13994\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. THE ESTIMATION ERROR COVARIANCE MATRIX FOR THE

IDEAL STATE RECONSTRUCTOR WITH MEASUREMENT NOISE

MICHAEL E. POLITES Dec. 1988 19 p

(NASA-TP-2881; NAS 1.60:2881) Avail: NTIS HC A03/MF A01 CSCL 09B

COVARIANCE, ERROR ANALYSIS, MATRICES (MATHEMATICS), RECONSTRUCTION, STATE ESTIMATION

National Aeronautics and Space Administration. N89-15549\*# Marshall Space Flight Center, Huntsville, AL.

### FOURTH CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS

STEPHEN L. ODELL, comp., JUDITH S. DENTON, comp., and MARY VEREEN, comp. Oct. 1988 485 p Conference held in Huntsville, AL, 15-16 Nov. 1988; sponsored by NASA and Alabama Univ., Huntsville

(NASA-CP-3013; M-599; NAS 1.55:3013) Avail: NTIS HC

61 COMPUTER PROGRAMMING AND SOFTWARE

A21/MF A03 CSCL 09B AEROSPACE SCIENCES.

ARTIFICIAL INTELLIGENCE. EXPERT SYSTEMS, ROBOTICS

N89-22332\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

PROCEEDINGS OF THE SCIENTIFIC DATA COMPRESSION WORKSHOP

H. K. RAMAPRIYAN, ed. Washington, DC Feb. 1989 448 p Workshop held in Snowbird, UT, 3-5 May 1988; sponsored by NASA, Washington

(NASA-CP-3025; REPT-89B0038; NAS 1.55:3025) Avail: NTIS HC A19/MF A03 CSCL 09B

CONFERENCES, DATA COMPRESSION. DATA MANAGEMENT, DATA TRANSMISSION, IMAGE PROCESSING, IMAGING TECHNIQUES, SIGNAL PROCESSING, TELEMETRY, **VECTORS (MATHEMATICS)** 

N89-23181\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A KNOWLEDGE-BASED TOOL FOR MULTILEVEL DECOMPOSITION OF A COMPLEX DESIGN PROBLEM JAMES L. ROGERS Washington May 1989 23 p (NASA-TP-2903; L-16557; NAS 1.60:2903) Availy NTIS HC A03/MF A01 CSCL 09B

COMPUTER AIDED DESIGN. KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), SCHEDULING, SOFTWARE TOOLS, SYSTEMS ENGINEERING

N90-11454\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

APPLICATIONS OF THE HYBRID AUTOMATED RELIABILITY PREDICTOR: REVISED EDITION

SALVATORE J. BAVUSO, JOANNE BECHTA DUGAN, KISHOR TRIVEDI, BETH ROTHMANN, and MARK BOYD (Duke Univ., Durham, NC.) Dec. 1988 30 p

(NASA-TP-2760-REV; L-16304; NAS 1.60:2760-REV) Avail: NTIS HC A03/MF A01 CSCL 09B

APPLICATIONS PROGRAMS (COMPUTERS), COMPUTER TECHNIQUES. TOLERANCE. FAULT PREDICTIONS. RELIABILITY

N90-14789\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SOFTWARE REUSE ISSUES

SUSAN J. VOIGT, ed. and KATHRYN A. SMITH, ed. Washington Dec. 1989 168 p Workshop held in Melbourne, FL, 17-18 Nov. 1988

(NASA-CP-3057; L-16667; NAS 1.55:3057) Avail: NTIS HC A08/MF A01 CSCL 09B

COMPUTER PROGRAMS, CONFERENCES, SOFTWARE ENGINEERING, SOFTWARE TOOLS, SPACE STATIONS

N90-18882\*# National Aeronautics and Space Administration. Landlev Research Center, Hampton, VA.

LOW-ENERGY GAMMA RAY ATTENUATION

CHARACTERISTICS OF AVIATION FUELS

JAG J. SINGH, CHIH-PING SHEN (Old Dominion Univ., Norfolk, VA.), and DANNY R. SPRINKLE Washington Mar. 1990 40 p

(NASA-TP-2974; L-16719; NAS 1.60:2974) Avail: NTIS HC A03/MF A01 CSCL 09B

AIRCRAFT FUELS, AIRPORTS, ENERGY ABSORPTION, FUEL SYSTEMS, GAMMA RAY ABSORPTION, GAMMA RAYS

National Aeronautics and Space Administration. N90-27275\*# Marshall Space Flight Center, Huntsville, AL. FIFTH CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS

STEVE L. ODELL, comp. Washington May 1990 587 p Conference held in Huntsville, AL, 22-23 May 1990; sponsored in cooperation with Alabama Univ., Huntsville, IEEE, and AIAA

## 62 COMPUTER SYSTEMS

(NASA-CP-3073; M-627; NAS 1.55:3073) Avail: NTIS HC A25/MF A04 CSCL 09B

ARTIFICIAL INTELLIGENCE, AUTOMATIC CONTROL. KNOWLEDGE CONFERENCES, BASES (ARTIFICIAL INTELLIGENCE), ROBOTICS

## 62

#### **COMPUTER SYSTEMS**

Includes computer networks and special application computer systems.

N87-23202\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

## APPLICATIONS AND REQUIREMENTS FOR REAL-TIME SIMULATORS IN GROUND-TEST FACILITIES

DALE J. ARPASI and RICHARD A. BLECH Dec. 1986 26 p (NASA-TP-2672; E-3189; NAS 1.60:2672) Avail: NTIS HC A03/MF A01 CSCL 09B

GROUND TESTS, REAL TIME OPERATION, SIMULATORS, TEST FACILITIES

N89-17422\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

#### PARALLEL GAUSSIAN ELIMINATION OF A BLOCK TRIDIAGONAL MATRIX USING MULTIPLE MICROCOMPUTERS

RICHARD A. BLECH Washington, DC Feb. 1989 35 p (NASA-TP-2892; E-4199; NAS 1.60:2892) Avail: NTIS HC A03/MF A01 CSCL 09B

GAUSSIAN ELIMINATION, MATRICES (MATHEMATICS), MICROCOMPUTERS, MULTIPROCESSING (COMPUTERS), PARALLEL PROGRAMMING

N89-24815\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### THE FAULT TREE COMPILER (FTC): PROGRAM AND MATHEMATICS

RICKY W. BUTLER and ANNA L. MARTENSEN (PRC Kentron, Inc., Hampton, VA.) Washington Jul. 1989 40 p (NASA-TP-2915; L-16529; NAS 1.60:2915) Avail: NTIS HC

A03/MF A01 CSCL 098 COMPUTER PROGRAMS, COMPUTER TECHNIQUES, FAULT

TOLERANCE, FAULT TREES, PROBABILITY THEORY, RELIABILITY ANALYSIS

## 63

#### **CYBERNETICS**

Includes feedback and control theory, artificial intelligence, robotics and expert systems.

N88-30330\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. THE 1988 GODDARD CONFERENCE ON SPACE **APPLICATIONS OF ARTIFICIAL INTELLIGENCE** 

JAMES RASH, ed. and PETER HUGHES, ed. Aug. 1988 Conference held in Greenbelt, Md., 24 May 1988 437 p Sponsored by NASA, Washington, D.C.

(NASA-CP-3009; REPT-88B0212; NAS 1.55:3009) Avail: NTIS HC A19/MF A03 CSCL 09B

AEROSPACE ENGINEERING, ARTIFICIAL INTELLIGENCE, COMPUTERIZED SIMULATION, CONFERENCES, EXPERT SYSTEMS, IMAGE PROCESSING, MISSION PLANNING

National Aeronautics and Space Administration. N89-26578\*# Goddard Space Flight Center, Greenbelt, MD.

THE 1989 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE

JAMES RASH, ed. Washington Apr. 1989 385 p Conference held in Greenbelt, MD, 16-17 May 1989

(NASA-CP-3033; REPT-89B00099; NAS 1.55:3033) Avail: NTIS HC A17/MF A03 CSCL 09B

INTELLIGENCE, ARTIFICIAL COMPUTER VISION. CONFERENCES. COMPUTERIZED SIMULATION. DATA MANAGEMENT, EXPERT SYSTEMS, FAILURE ANALYSIS, IMAGE PROCESSING, MISSION PLANNING

National Aeronautics and Space Administration, N90-10618\*# Langley Research Center, Hampton, VA. OPTIMIZED RESOLVED RATE CONTROL OF SEVEN-DEGREE-OF-FREEDOM LABORATORY TELEROBOTIC MANIPULATOR (LTM) WITH APPLICATION TO THREE-DIMENSIONAL GRAPHICS SIMULATION KEITH BARKER and WILLIAM S. MCKINNEY, JR. Washington Oct. 1989 80 p (NASA-TP-2938; L-16562; NAS 1.60:2938) Avail: NTIS HC A05/MF A01 CSCL 09B

DEGREES OF FREEDOM, MANIPULATORS, OPTIMAL CONTROL, REAL TIME OPERATION, ROBOT CONTROL, ROBOTICS, TELEROBOTICS

National Aeronautics and Space Administration. N90-22294\*# Goddard Space Flight Center, Greenbelt, MD. THE 1990 GODDARD CONFERENCE ON SPACE **APPLICATIONS OF ARTIFICIAL INTELLIGENCE** JAMES L. RASH, ed. May 1990 342 p Conference held in Greenbelt, MD, 1-2 May 1990 (NASA-CP-3068; REPT-90B00078; NAS 1.55:3068) Avail: NTIS HC A15/MF A02 CSCL 09B ARCHITECTURE (COMPUTERS), ARTIFICIAL INTELLIGENCE, CONFERENCES. FAULT TOLERANCE, PLANNING. SCHEDULING

#### 64

#### NUMERICAL ANALYSIS

Includes iteration. difference equations, and numerical approximation.

N87-14054\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SOME PATH-FOLLOWING TECHNIQUES FOR SOLUTION OF NONLINEAR EQUATIONS AND COMPARISON WITH PARAMETRIC DIFFERENTIATION

R. L. BARGER and R. W. WALTERS (Virginia Polytechnic Inst. and State Univ., Blacksburg.) 1986 16 p

(NASA-TP-2654; L-16199; NAS 1.60:2654) Avail: NTIS HC A03/MF A01 CSCL 12A

COMPUTER PROGRAMMING, CRITICAL PATH METHOD, DIFFERENTIAL EQUATIONS, NONLINEAR EQUATIONS. PARAMETER IDENTIFICATION

N87-14918\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

SOLUTION OF ELLIPTIC PARTIAL DIFFERENTIAL EQUATIONS BY FAST POISSON SOLVERS USING A LOCAL **RELAXATION FACTOR. 2: TWO-STEP METHOD** S. C. CHANG May 1986 17 p

(NASA-TP-2530; E-2528-1; NAS 1.60:2530) Avail: NTIS HC A03/MF A01 CSCL 12A

ELLIPTIC DIFFERENTIAL EQUATIONS. ELLIPTIC FUNCTIONS, PARTIAL DIFFERENTIAL EQUATIONS, PROBLEM SOLVING

**N87-22441\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

QUANTITATIVE ANALYSIS OF THE RECONSTRUCTION PERFORMANCE OF INTERPOLANTS

DONALD L. LANSING and STEPHEN K. PARK (College of William and Mary, Williamsburg, Va.) May 1987 35  $\rm p$ 

(NASA-TP-2688; L-16164; NAS 1.60:2688) Avail: NTIS HC A03/MF A01 CSCL 12A

INTERPOLATION, QUANTITATIVE ANALYSIS, RECON-STRUCTION

N87-22447\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. AN ALGORITHM FOR SURFACE SMOOTHING WITH RATIONAL SPLINES JAMES R. SCHIESS Jun. 1987 17 p

(NASA-TP-2708; L-16272; NAS 1.60:2708) Avail: NTIS HC A03/MF A01 CSCL 12A

ALGORITHMS, RATIONAL FUNCTIONS, SMOOTHING, SPLINE FUNCTIONS, SURFACE ROUGHNESS

N87-28367\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EXPERIMENTS IN ENCODING MULTILEVEL IMAGES AS QUADTREES

DONALD L. LANSING Sep. 1987 60 p

(NASA-TP-2722; L-16292; NAS 1.60:2722) Avail: NTIS HC

A04/MF A01 CSCL 12A

CODING, DATA COMPRESSION, DATA STORAGE, GRAY SCALE, IMAGE PROCESSING

**N89-12316\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THREE-DIMENSIONAL MULTIGRID ALGORITHMS FOR THE FLUX-SPLIT EULER EQUATIONS

W. KYLE ANDERSON, JAMES L. THOMAS, and DAVID L. WHITFIELD (Mississippi State Univ., Mississippi State.) Nov. 1988 41 p

(NASA-TP-2829; L-16416; NAS 1.60:2829) Avail: NTIS HC A03/MF A01 CSCL 12A

APPROXIMATION, COMPUTATIONAL FLUID DYNAMICS, EULER EQUATIONS OF MOTION, FLUX VECTOR SPLITTING, THREE DIMENSIONAL FLOW

**N89-16415\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EFFECT OF EPHEMERIS ERRORS ON THE ACCURACY OF THE COMPUTATION OF THE TANGENT POINT ALTITUDE OF A SOLAR SCANNING RAY AS MEASURED BY THE SAGE 1 AND 2 INSTRUMENTS

JAMES J. BUGLIA Washington, DC Feb. 1989 29 p (NASA-TP-2866; L-16485; NAS 1.60:2866) Avail: NTIS HC A03/MF A01 CSCL 12A

ALTITUDE, APPROXIMATION, EPHEMERIDES, POSITION ERRORS, SAGE SATELLITE, SCANNING, SPACECRAFT ORBITS, SUN, TANGENTS

## 65

## STATISTICS AND PROBABILITY

Includes data sampling and smoothing; Monte Carlo method; and stochastic processes.

N87-23244\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. DEVELOPMENT OF CONFIDENCE LIMITS BY PIVOTAL

FUNCTIONS FOR ESTIMATING SOFTWARE RELIABILITY KELLY J. DOTSON Jun. 1987 12 p (NASA-TP-2709; L-16264; NAS 1.60:2709) Avail: NTIS HC A03/MF A01 CSCL 12A

CONFIDENCE LIMITS, FAILURE ANALYSIS, PREDICTIONS, RELIABILITY ANALYSIS, SOFTWARE ENGINEERING

**N87-27474\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

PROBABILISTIC RISK ANALYSIS OF FLYING THE SPACE SHUTTLE WITH AND WITHOUT FUEL TURBINE DISCHARGE TEMPERATURE REDLINE PROTECTION LEONARD HOWELL Aug. 1987 22 p (NASA-TP-2759; NAS 1.60:2759) Avail: NTIS HC A03/MF A01

(NASA-TP-2759; NAS 1.60:2759) Avail: NTIS HC A03/MF A01 CSCL 12A

ENGINE FAILURE, MATHEMATICAL MODELS, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT RELIABILITY, STOCHASTIC PROCESSES, TEMPERATURE SENSORS

N88-17380\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. SURE RELIABILITY ANALYSIS: PROGRAM AND

MATHEMATICS RICKY W. BUTLER and ALLAN L. WHITE Mar. 1988 77 p (NASA-TP-2764; L-16263; NAS 1.60:2764) Avail: NTIS HC A05/MF A01 CSCL 12A APPLICATIONS PROGRAMS (COMPUTERS), FAULT TOLERANCE, MARKOV PROCESSES, MATHEMATICAL

MODELS, RELIABILITY ANALYSIS

N88-22653\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. ANALYSIS AND TESTING OF THE SURE PROGRAM KELLY J. DOTSON 1988 1 p

(NASA-TP-2817; L-16413; NAS 1.60:2817) PREVIEW CSCL 12A

COMPUTER PROGRAMS, ERROR ANALYSIS, FAULT TOLERANCE, MARKOV PROCESSES, MATHEMATICAL MODELS, RELIABILITY ANALYSIS

## 66

#### SYSTEMS ANALYSIS

Includes mathematical modeling; network analysis; and operations research.

N88-21740\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA. USER'S MANUAL FOR LINEAR, A FORTRAN PROGRAM TO DERIVE LINEAR AIRCRAFT MODELS EUGENE L. DUKE, BRIAN P. PATTERSON, and ROBERT F. ANTONIEWICZ Dec. 1987 109 p (NASA-TP-2768; H-1259; NAS 1.60:2768) Avail: NTIS HC A06/MF A01 CSCL 12B AIRCRAFT MODELS, COMPUTER PROGRAMS, FORTRAN, LINEARIZATION

N89-16437\*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA. USER'S MANUAL FOR INTERACTIVE LINEAR: A FORTRAN PROGRAM TO DERIVE LINEAR AIRCRAFT MODELS ROBERT F. ANTONIEWICZ, EUGENE L. DUKE, and BRIAN P. PATTERSON Sep. 1988 126 p (NASA-TP-2835; H-1443; NAS 1.60:2835) Avail: NTIS HC A07/MF A01 CSCL 12B AIRCRAFT DESIGN, FORTRAN, INTERACTIVE CONTROL, LINEAR SYSTEMS, USER MANUALS (COMPUTER PROGRAMS)

## 67 THEORETICAL MATHEMATICS

## 67

## THEORETICAL MATHEMATICS

Includes topology and number theory.

N89-14052\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. AN ECONOMICAL SEMI-ANALYTICAL ORBIT THEORY FOR

MICRO-COMPUTER APPLICATIONS

R. A. GORDON Washington, D.C. Mar. 1988 46 p (NASA-TP-2811; REPT-86B0451; NAS 1.60:2811) Avail: NTIS HC A03/MF A01 CSCL 12A

AERODYNAMIC DRAG, COMPUTER TECHNIQUES, ORBIT CALCULATION, ORBIT PERTURBATION, ZONAL HARMONICS

## 70

## PHYSICS (GENERAL)

**N89-14053\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A GENERAL FORMALISM FOR PHASE SPACE CALCULATIONS

JOHN W. NORBURY, PHILIP A. DEUTCHMAN, LAWRENCE W. TOWNSEND, and FRANCIS A. CUCINOTTA (Old Dominion Univ., Norfolk, Va.) Nov. 1988 23 p

(NSF PHY-84-11009)

(NASA-TP-2843; L-16463; NAS 1.60:2843) Avail: NTIS HC A03/MF A01 CSCL 20C

GALACTIC COSMIC RAYS, NORMALITY, PHASE-SPACE INTEGRAL

**N90-12282\*#** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

PARAMETRIC STUDY OF POWER ABSORPTION FROM ELECTROMAGNETIC WAVES BY SMALL FERRITE SPHERES GERALD W. ENGLERT Nov. 1989 22 p

(NASA-TP-2949; E-4601; NAS 1.60:2949) Avail: NTIS HC A03/MF A01 CSCL 20C

EDDY CURRENTS, ELECTROMAGNETIC RADIATION, FERRITES, HYSTERESIS, RADIATION ABSORPTION, SPHERES

N90-18957\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

ANNIHILATION IN GASES AND GALAXIES

RICHARD J. DRACHMAN, ed. Washington Jan. 1990 271 p Workshop held in Greenbelt, MD, 19-21 Jul. 1989 (NASA-CP-3058; REPT-90B00019; NAS 1.55:3058) Avail: NTIS

(NASA-CP-3058; HEP1-90800019; NAS 1.55:3058) Avail: NTIS HC A12/MF A02 CSCL 20H

ANNIHILATION REACTIONS, ANTIMATTER, POSITRONIUM, POSITRONS, SCATTERING CROSS SECTIONS

# 71

## ACOUSTICS

Includes sound generation, transmission, and attenuation.

N87-14120\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EFFECTS OF BACKGROUND NOISE ON TOTAL NOISE ANNOYANCE K. F. WILLSHIRE Jan. 1987 59 p (NASA-TP-2630; L-16153; NAS 1.60:2630) Avail: NTIS HC

A04/MF A01 CSCL 46A

BACKGROUND NOISE, EFFECTIVE PERCEIVED NOISE LEVELS, NOISE INTENSITY, NOISE POLLUTION, NOISE TOLERANCE

**N87-17479\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## POWER CEPSTRUM TECHNIQUE WITH APPLICATION TO MODEL HELICOPTER ACOUSTIC DATA

R. M. MARTIN and C. L. BURLEY Washington Jun. 1986 68 p

(NASA-TP-2586; L-16070; NAS 1.60:2586) Avail: NTIS HC A04/MF A01 CSCL 20A

ACOUSTIC MEASUREMENT, CEPSTRAL ANALYSIS, HELICOPTERS, MODELS, SIGNAL REFLECTION

N87-18399\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CORRÉLATION OF HELICOPTER IMPULSIVE NOISE FROM BLADE-VORTEX INTERACTION WITH ROTOR MEAN INFLOW ANDREW B. CONNOR and R. M. MARTIN Mar. 1987 23 p (NASA-TP-2650; L-16145; NAS 1.60:2650) Avail: NTIS HC A03/MF A01 CSCL 20A

BLADE SLAP NOISE, BLADE-VORTEX INTERACTION, ROTOR BLADES (TURBOMACHINERY), VORTICES, WIND TUNNEL TESTS

**N87-20798\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

EXPERIMENTAL VALIDATION OF A TWO-DIMENSIONAL SHEAR-FLOW MODEL FOR DETERMINING ACOUSTIC IMPEDANCE

TONY L. PARROTT, WILLIE R. WATSON, and MICHAEL G. JONES (PRC Kentron, Inc., Hampton, Va.) May 1987 50 p (NASA-TP-2679; L-16203; NAS 1.60:2679) Avail: NTIS HC A03/MF A01 CSCL 20A

ACOUSTIC IMPEDANCE, MODELS, SHEAR FLOW, TWO DIMENSIONAL FLOW, TWO DIMENSIONAL MODELS

**N87-24161\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ANNOYANCE RESPONSE TO SIMULATED ADVANCED TURBOPROP AIRCRAFT INTERIOR NOISE CONTAINING TONAL BEATS

JACK D. LEATHERWOOD Jul. 1987 28 p (NASA-TP-2689; L-16184; NAS 1.60:2689) Avail: NTIS HC A03/MF A01 CSCL 20A

AIRCRAFT COMPARTMENTS, AIRCRAFT NOISE, HUMAN TOLERANCES, PSYCHOLOGICAL EFFECTS, RESPONSES

N88-11450\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. EVALUATION OF A SCALE-MODEL EXPERIMENT TO INVESTIGATE LONG-RANGE ACOUSTIC PROPAGATION TONY L. PARROTT, GERRY L. MCANINCH, and INGRID A. CARLBERG Nov. 1987 55 p (NASA-TP-2748; L-16300; NAS 1.60:2748) Avail: NTIS HC A04/MF A01 CSCL 20A ACOUSTICS, FEASIBILITY ANALYSIS, MATHEMATICAL MODELS, SCALE MODELS, TERRAIN, WAVE PROPAGATION

N88-13002\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. MEASUREMENT OF VELOCITY AND VORTICITY FIELDS IN THE WAKE OF AN AIRFOIL IN PERIODIC PITCHING MOTION EARL R. BOOTH, JR. Dec. 1987 31 p (NASA-TP-2780; L-16339; NAS 1.60:2780) Avail: NTIS HC A03/MF A01 CSCL 20A AIRFOILS, PITCH (INCLINATION), VORTICES, VORTICITY, WAKES

N88-16510\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SHOCK STRUCTURE AND NOISE OF SUPERSONIC JETS IN SIMULATED FLIGHT TO MACH 0.4

THOMAS D. NORUM and JOHN G. SHEARIN Feb. 1988 187 p

(NASA-TP-2785; L-16341; NAS 1.60:2785) Avail: NTIS HC A09/MF A01 CSCL 20A

JET AIRCRAFT NOISE, MACH NUMBER, SHOCK WAVES, SUPERSONIC AIRCRAFT

N88-17440\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

MEASURED AND CALCULATED ACOUSTIC ATTENUATION RATES OF TUNED RESONATOR ARRAYS FOR TWO SURFACE IMPEDANCE DISTRIBUTION MODELS WITH FLOW TONY L. PARROTT, A. LOUIS ABRAHAMSON, and MICHAEL G. JONES (PRC Kentron, Inc., Hampton, Va.) Jan. 1988 51 p (NASA-TP-2766; L-16352; NAS 1.60:2766) Avail: NTIS HC A04/MF A01 CSCL 20A

ACOUSTIC ATTENUATION, ACOUSTIC IMPEDANCE, CAVITY RESONATORS, ENGINE NOISE, FINITE ELEMENT METHOD, GRAZING FLOW, NOISE REDUCTION

N88-17441\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ANNOYANCE CAUSED BY ADVANCED TURBOPROP AIRCRAFT FLYOVER NOISE: SINGLE-ROTATING PROPELLER CONFIGURATION

DAVID A. MCCURDY Mar. 1988 43 p

(NASA-TP-2782; L-16301; NAS 1.60:2782) Avail: NTIS HC A03/MF A01 CSCL 20A

ENGINE NOISE, JET AIRCRAFT NOISE, NOISE INTENSITY, NOISE TOLERANCE, PROPELLER FANS, TOLERANCES (PHYSIOLOGY)

N88-22710\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ADVANCING-SIDE DIRECTIVITY AND RETREATING-SIDE INTERACTIONS OF MODEL ROTOR BLADE-VORTEX INTERACTION NOISE

R. M. MARTIN, W. R. SPLETTSTOESSER, J. W. ELLIOTT, and K.-J. SCHULTZ (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Brunswick, West Germany ) May 1988 43 p

(NASA-TP-2784; L-16354; NAS 1.60:2784; AVSCOM-TR-87-B-3) Avail: NTIS HC A03/MF A01 CSCL 20A BLADE-VORTEX INTERACTION, ROTOR AERODYNAMICS

N88-26907\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

HELICOPTER MAIN-ROTOR NOISE: DETERMINATION OF SOURCE CONTRIBUTIONS USING SCALED MODEL DATA THOMAS F. BROOKS, J. RALPH JOLLY, JR. (Planning Research Corp., Hampton, Va.), and MICHAEL A. MARCOLINI Aug. 1988 66 p

(NASA-TP-2825; L-16399; NAS 1.60:2825) Avail: NTIS HC A04/MF A01 CSCL 20A AIRCRAFT NOISE,

BLADE SLAP NOISE, NOISE, BO-105 HELICOPTER, ROTARY WINGS, WIND TUNNEL TESTS

National Aeronautics and Space Administration. N89-25673\*# Langley Research Center, Hampton, VA.

AIRFOIL SELF-NOISE AND PREDICTION

THOMAS F. BROOKS, D. STUART POPE (PRC Kentron, Inc., Hampton, VA.), and MICHAEL A. MARCOLINI Jul. 1989 145 p (NASA-RP-1218; L-16528; NAS 1.61:1218) Avail: NTIS HC A07/MF A01 CSCL 20A

A prediction method is developed for the self-generated noise of an airfoil blade encountering smooth flow. The prediction methods for the individual self-noise mechanisms are semiempirical and are based on previous theoretical studies and data obtained from tests of two- and three-dimensional airfoil blade sections. The self-noise mechanisms are due to specific boundary-layer phenomena, that is, the boundary-layer turbulence passing the trailing edge, separated-boundary-layer and stalled flow over an airfoil, vortex shedding due to laminar boundary layer instabilities, vortex shedding from blunt trailing edges, and the turbulent vortex flow existing near the tip of lifting blades. The predictions are compared successfully with published data from three self-noise studies of different airfoil shapes. An application of the prediction method is reported for a large scale-model helicopter rotor, and the predictions compared well with experimental broadband noise measurements. A computer code of the method is given. Author

N90-10680\*# National Aeronautics and Space Administration. Landlev Research Center, Hampton, VA.

FLUCTUATING PRESSURES MEASURED BENEATH A HIGH-TEMPERATURE, TURBULENT BOUNDARY LAYER ON A FLAT PLATE AT MACH NUMBER OF 5

TONY L. PARROTT, MICHAEL G. JONES (Planning Research Corp., Hampton, VA.), and CINDY W. ALBERTSON Washington Nov. 1989 39 p

(NASA-TP-2947; L-16596; NAS 1.60:2947) Avail: NTIS HC A03/MF A01 CSCL 20A

HIGH TEMPERATURE, MACH NUMBER, PIEZORESISTIVE TRANSDUCERS. PRESSURE MEASUREMENT. SIGNAL PROCESSING, TURBULENT BOUNDARY LAYER

National Aeronautics and Space Administration. N90-24853\*# Langley Research Center, Hampton, VA.

## FAA/NASA EN ROUTE NOISE SYMPOSIUM

CLEMANS A. POWELL, comp. Washington Apr. 1990 301 p Symposium held in Hampton, VA, 12-13 Sep. 1989

(NASA-CP-3067; L-16763; NAS 1.55:3067) Avail: NTIS HC À14/MF A02 CSCL 20A

AIRCRAFT NOISE, AIRPORTS, CONFERENCES, NASA PROGRAMS, NOISE POLLUTION, NOISE TOLERANCE, **PROPELLERS, ROUTES** 

N90-29166\* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### ANNOYANCE CAUSED BY ADVANCED TURBOPROP AIRCRAFT FLYOVER NOISE:

#### COUNTER-ROTATING-PROPELLER CONFIGURATION DAVID A. MCCURDY Washington Sep. 1990 88 p

(NASA-TP-3027; L-16780; NAS 1.60:3027) Avail: NTIS HC A05/MF A01 CSCL 20A

HUMAN TOLERANCES, NOISE INTENSITY, NOISE TOLERANCE, PROPELLER NOISE, PSYCHOACOUSTICS, SOUND PRESSURE

## 72

## ATOMIC AND MOLECULAR PHYSICS

Includes atomic structure, electron properties, and molecular spectra.

National Aeronautics and Space Administration. N89-30022\*# Langley Research Center, Hampton, VA.

AUGER ELECTRON INTENSITY VARIATIONS IN OXYGEN-EXPOSED LARGE GRAIN POLYCRYSTALLINE SILVER

W. S. LEE, R. A. OUTLAW, G. B. HOFLUND, and M. R. DAVIDSON (Florida Univ., Gainesville.) 1989 18 p

(NASA-TP-2930; L-16579; NAS 1.60:2930) Avail: NTIS HC A03/MF A01 CSCL 20H

AUGER SPECTROSCOPY, CRYSTALLOGRAPHY, ELECTRON FLUX DENSITY, OXYGEN RECOMBINATION, POLYCRYSTALS. SILVER

## 73

## NUCLEAR AND HIGH-ENERGY PHYSICS

Includes elementary and nuclear particles; and reactor theory.

N87-17487\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DOUBLY DIFFERENTIAL CROSS SECTIONS FOR GALACTIC **HEAVY-ION FRAGMENTATION** 

FRANCIS A. CUCINOTTA (Old Dominion Univ., Norfolk, Va.), JOHN W. NORBURY, GOVIND S. KHANDELWAL, and LAWRENCE W. TOWNSEND Feb. 1987 23 p

(NASA-TP-2659; L-16187; NAS 1.60:2659) Avail: NTIS HC A03/MF A01 CSCL 20H

COLLISION PARAMETERS, GALAXIES, HEAVY IONS, PARTICLE COLLISIONS, SCATTERING CROSS SECTIONS

N87-24977\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

## POSSIBLE COMPLEMENTARY COSMIC-RAY SYSTEMS: NUCLEI AND ANTINUCLEI

WARREN W. BUCK, JOHN W. WILSON, LAWRENCE W. TOWNSEND, and JOHN W. NORBURY (Idaho Univ., Moscow.) Jul. 1987 47 p

(NASA-TP-2741; L-16275; NAS 1.60:2741) Avail: NTIS HC A03/MF A01 CSCL 20H

ANTIMATTER, ANTIPARTICLES, GALACTIC COSMIC RAYS, HEAVY IONS, NUCLEI (NUCLEAR PHYSICS)

National Aeronautics and Space Administration. N88-13015\*# Langley Research Center, Hampton, VA.

#### NUCLEAR TECHNIQUES IN STUDIES OF CONDENSED MATTER

JAG J. SINGH Aug. 1987 22 p (NASA-RP-1195; L-16361; NAS 1.61:1195) Avail: NTIS HC A03/MF A01 CSCL 20H

Nuclear techniques have played an important role in the studies of materials over the past several decades. For example, X-ray diffraction, neutron diffraction, neutron activation, and particle- or photon-induced X-ray emission techniques have been used extensively for the elucidation of structural and compositional details of materials. Several new techniques have been developed recently. Four such techniques are briefly reviewed which have great potential in the study and development of new materials. Of these four, Mossbauer spectroscopy, muon spin rotation, and positron annihilation spectroscopy techniques exploit their great sensitivity to the local atomic environments in the test materials. Interest in synchrotron radiation, on the other hand, stems from its special properties, such as high intensity, high degree of polarization, and high monochromaticity. It is hoped that this brief review will stimulate interest in the exploitation of these newer techniques for the development of improved materials. Author

N88-30402\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

#### EIKONAL SOLUTIONS TO OPTICAL MODEL **COUPLED-CHANNEL EQUATIONS**

FRANCIS A. CUCINOTTA, GOVIND S. KHANDELWAL, KHIN M. MAUNG (Old Dominion Univ., Norfolk, Va.), LAWRENCE W. TOWNSEND, and JOHN W. WILSON Nov. 1988 30 p (NASA-TP-2830; L-16462; NAS 1.60:2830) Avail: NTIS HC A03/MF A01 CSCL 20H

EIKONAL EQUATION, ELASTIC SCATTERING, HEAVY IONS, INELASTIC SCATTERING, IONIC COLLISIONS, NUCLEAR SCATTERING, SCATTERING AMPLITUDE

N90-14890\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. CALCULATION OF TWO-NEUTRON MULTIPLICITY IN PHOTONUCLEAR REACTIONS

JOHN W. NORBURY (Rider Coll., Lawrenceville, NJ.) and

LAWRENCE W. TOWNSEND Jan. 1990 11 p (NASA-TP-2968; L-16610; NAS 1.60:2968) Avail: NTIS HC A03/MF A01 CSCL 20H EJECTION, EXCITATION, PARTICLE COLLISIONS, PARTICLE EMISSION, PHOTONUCLEAR REACTIONS

# 74

## **OPTICS**

Includes light phenomena; and optical devices.

N87-13264\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THEORY FOR COMPUTING THE FIELD SCATTERED FROM A SMOOTH INFLECTED SURFACE

R. L. BARGER and A. K. DOMINEK 1986 23 p

(NASA-TP-2632; L-16157; NAS 1.60:2632) Avail: NTIS HC A03/MF A01 CSCL 20F

BODIES OF REVOLUTION, ELECTROMAGNETIC RADIATION, MICROWAVES, REFLECTANCE, SURFACE PROPERTIES, WAVE SCATTERING

N90-25673\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

MODE-MEDIUM INSTABILITY AND ITS CORRECTION WITH A GAUSSIAN REFLECTIVITY MIRROR

K. L. WEBSTER and C. C. SUNG (Alabama Univ., Huntsville.) Washington Jun. 1990 26 p

(NASA-TP-3023; NAS 1.60:3023) Avail: NTIS HC A03/MF A01 CSCL 20F

CARBON DIOXIDE LASERS, HIGH POWER LASERS, LASER LASER BEAMS, STABILITY, LASING, MIRRORS. REFLECTANCE

## 75

## PLASMA PHYSICS

Includes magnetohydrodynamics and plasma fusion.

N87-10764\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. LASER-POWERED MHD GENERATORS FOR SPACE APPLICATION

N. W. JALUFKA Oct. 1986 15 p

(NASA-TP-2621; NAS 1.60:2621) Avail: NTIS HC A03/MF A01 CSCL 201

ENERGY CONVERSION EFFICIENCY, LASER PLASMA INTERACTIONS, MAGNETOHYDRODYNAMIC GENERATORS

N87-14998\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. ASYMPTOTIC ANALYSIS OF CORONA DISCHARGE FROM THIN ELECTRODES P. A. DURBIN Sep. 1986 7 p (NASA-TP-2645; E-3151; NAS 1.60:2645) Avail: NTIS HC A02/MF A01 CSCL 201 ASYMPTOTIC METHODS, ELECTRIC CORONA, ELECTRIC DISCHARGES, ELECTRODES

N88-18443\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. LASER PRODUCTION AND HEATING OF PLASMA FOR MHD APPLICATION N. W. JALUFKA Mar. 1988 11 p

## 81 ADMINISTRATION AND MANAGEMENT

(NASA-TP-2798; L-16373; NAS 1.60:2798) Avail: NTIS HC A03/MF A01 CSCL 201

ELECTRIC GENERATORS, ENERGY CONVERSION EFFICIENCY, MAGNETOHYDRODYNAMIC GENERATORS. PLASMA HEATING

N89-14842\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. LUNAR HELIUM-3 AND FUSION POWER

Washington, DC Sep. 1988 234 p Workshop held in Cleveland, Ohio, 25-26 Apr. 1988

(NASA-CP-10018; E-4254; NAS 1.55:10018) Avail: NTIS HC

A11/MF A02 CSCL 201 HELIUM ISOTOPES, LUNAR SOIL, MINING, NUCLEAR FUSION, REGOLITH

# 76

## SOLID-STATE PHYSICS

Includes superconductivity.

N90-12348\*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH. FORTRAN PROGRAM FOR X RAY PHOTOELECTRON SPECTROSCOPY DATA REFORMATTING PHILLIP B. ABEL Nov. 1989 10 p (NASA-TP-2957; E-4867; NAS 1.60:2957) Avail: NTIS HC A02/MF A01 CSCL 20L BINARY DATA, COMPUTER PROGRAMS. ELECTRON SPECTROSCOPY, FORMAT, FORTRAN, х RAY SPECTROSCOPY

## 81

## ADMINISTRATION AND MANAGEMENT

Includes management planning and research.

N87-20833\* National Aeronautics and Space Administration. Washington, DC.

#### MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS (SUPPLEMENT 21)

Apr. 1987 70 p (NASA-SP-7500(21); NAS 1.21:7500(21)) Avail: NTIS HC A04 CSCL 05A

This bibliography lists 664 reports, articles and other documents introduced into the NASA scientific and technical information system in 1986. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories: human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs, and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

N88-21867\* National Aeronautics and Space Administration, Washington, DC.

#### MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS Apr. 1988 158 p

(NASA-SP-7500(22); NAS 1.21:7500(22)) Avail: NTIS HC A08 CSCL 05A

This bibliography lists 653 reports, articles and other documents introduced into the NASA scientific and technical information system in 1987. Items are selected and grouped according to their usefulness to the manager as manager. Citiations are grouped

into ten subject categories; human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management, reliability and quality control; and legality, legislation, and policy. Author

N89-12479\*# National Aeronautics and Space Administration, Washington, DC.

**ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT** FRANCIS T. HOBAN, ed. Oct. 1988 51 p

(NASA-SP-6101; NAS 1.21:6101) Avail: NTIS HC A04/MF A01 CSCL 05A

This collection of papers and resources on aerospace management issues is inspired by a desire to benefit from the lessons learned from past projects and programs. Inherent in the NASA culture is a respect for divergent viewpoints and innovative ways of doing things. This publication presents a wide variety of views and opinions. Good management is enhanced when program and project managers examine the methods of veteran managers, considering the lessons they have learned and reflected on their own guiding principles. Author

N89-26766\* National Aeronautics and Space Administration, Washington, DC.

#### MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS Apr. 1989 198 p

(NASA-SP-7500(23); NAS 1.21:7500(23)) Avail: NTIS HC A09 CSCL 05A

This bibliography lists 822 reports, articles and other documents introduced into the NASA Scientific and Technical Information System in 1988. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories; human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

N90-12385\*# National Aeronautics and Space Administration, Washington, DC.

WORKING WITH PEOPLE TO IMPROVE PRODUCTIVITY AND QUALITY: A BIBLIOGRAPHY WITH INDEXES, 1984-1988 Oct. 1989 72 p

(NASA-SP-7078; NAS 1.21:7078) Avail: NTIS HC A04 CSCL 05A

This bibliography contains 253 anotated references to reports and journal articles entered into the NASA scientific and technical information database 1984 to 1988. Author

National Aeronautics and Space Administration, N90-13277\*# Washington, DC.

**ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT** FRANCIS T. HOBAN, ed. 1989 57 p

(NASA-SP-6101(02); NAS 1.21:6101(02)) Avail: NTIS HC

A04/MF A01; SOD HC \$15.00 as 033-000-010-64-8 CSCL 05A This new collection of papers on aerospace management issues contains a history of NASA program and project management, some lessons learned in the areas of management and budget from the Space Shuttle Program, an analysis of tools needed to keep large multilayer programs organized and on track, and an update of resources for NASA managers. A wide variety of opinions Author and techniques are presented.

N90-24174\* National Aeronautics and Space Administration, Washington, DC.

MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS Mar. 1990 190 p

(NASA-SP-7500(24); NAS 1.21:7500(24)) Avail: NTIS HC A09 CSCL 05A

This bibliography lists 755 reports, articles and other documents introduced into the NASA Scientific and Technical Information

## 82 DOCUMENTATION AND INFORMATION SCIENCE

System in 1989. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories: human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

## 82

#### DOCUMENTATION AND INFORMATION SCIENCE

Includes information management; information storage and retrieval technology; technical writing; graphic arts; and micrography.

₩87-25023\* National Aeronautics and Space Administration, Washington, DC.

#### NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING **BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 31)** Jul. 1987 45 p

(NASA-SP-7039(31)-Sect-1; NAS 1.21:7039(31)-Sect-1) Avail: NTIS HC A03; NTIS standing order as PB86-911100, \$11.50 domestic, \$23.00 foreign CSCL 05B

Abstracts are provided for 85 patents and patent applications entered into the NASA scientific and technical information system during the period January 1987 through June 1987. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

#### N87-26689\* National Aeronautics and Space Administration, Washington, DC.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING **BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 31)** Jul. 1987 493 p

(NASA-SP-7039(31)-SECT-2; NAS 1.21:7039(31)-SECT-2) Avail: NTIS HC A21 CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1987. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, and NASA accession numbers. Author

₩87-27557\* National Aeronautics and Space Administration, Washington, DC.

#### NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1985 EDITION OF THE NASA THESAURUS (SUPPLEMENT 3)

Jul. 1987 325 p

(NASA-SP-7053-SUPPL-3; NAS 1.21:7053-SUPPL-3) Avail: NTIS HC A14 CSCL 05B

The four part cumulative NASA Thesaurus Supplement to the 1985 edition of the NASA Thesaurus includes Part 1, Hierarchical Listing, Part 2, Access Vocabulary, Part 3, NASA Thesaurus Definitions, and Part 4, Changes. The semiannual supplement gives complete hierarchies for new terms. Author

N87-30218\*# National Aeronautics and Space Administration, Washington, DC.

#### MASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1977-1986

Sep. 1987 390 p (NASA-SP-7063(01); NAS 1.21:7063(01)) Avail: NTIS HC free as PR-655B; NASA Scientific and Technical Information Facility, P.O. Box 8757, BWI Airport, Md. 21240 HC free CSCL 05B

This catalog lists 2311 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered into the NASA scientific and technical database during the decade 1977 through 1986. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N88-15732\* National Aeronautics and Space Administration, Washington, DC.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING **BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 32)** Jan. 1988 61 p

(NASA-SP-7039(32)-SECT-1; NAS 1.21:7039(32)-SECT-1) Avail: NTIS HC A04; NTIS standing order as PB 88-911100, \$12.50 domestic, \$25.00 foreign CSCL 05B

Abstracts are provided for 136 patents and patent applications entered into the NASA scientific and technical information system during the period July through December 1987. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N88-18511\* National Aeronautics and Space Administration, Washington, DC.

#### NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING **BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 32)** Jan. 1988 499 p

(NASA-SP-7039(32)-SECT-2; NAS 1.21:7039(32)-SECT-2) Avail: NTIS HC A21; NTIS standing order as PB88-911100, \$26.50 domestic, \$53.00 foreign CSCL 05B

A subject index is provided for over 4700 patents and patent applications for the period May 1969 through December 1987. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

N88-22830\*# National Aeronautics and Space Administration, Washington, DC.

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND **TECHNICAL PAPERS, 1987** Mar. 1988 69 p

(NASA-SP-7063(02); NAS 1.21:7063(02)) Avail: NTIS HC free as PR-828; NASA Scientific and Technical Information Facility, P.O. Box 8757, BWI Airport, Md. 21240 HC free CSCL 05B

This catalog lists 239 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered in the NASA scientific and technical information database during accession year 1987. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N89-13301\*# National Aeronautics and Space Administration, Washington, DC.

#### NASA THESAURUS. VOLUME 3: DEFINITIONS Jul. 1988 148 p

(NASA-SP-7064-VOL-3; NAS 1.21:7064-VOL-3) Avail: NTIS HC A07 CSCL 05B

Publication of NASA Thesaurus definitions began with Supplement 1 to the 1985 NASA Thesaurus. The definitions given here represent the complete file of over 3,200 definitions. complimented by nearly 1,000 use references. Definitions of more common or general scientific terms are given a NASA slant if one exists. Certain terms are not defined as a matter of policy: common names, chemical elements, specific models of computers, and nontechnical terms. The NASA Thesaurus predates by a number of years the systematic effort to define terms, therefore not all Thesaurus terms have been defined. Nevertheless, definitions of older terms are continually being added. The following data are provided for each entry: term in uppercase/lowercase form, definition, source, and year the term (not the definition) was added to the NASA Thesaurus. The NASA History Office is the authority for capitalization in satellite and spacecraft names. Definitions with no source given were constructed by lexicographers at the NASA

Scientific and Technical Information (STI) Facility who rely on the following sources for their information: experts in the field, literature searches from the NASA STI database, and specialized references. Author

 $\textbf{N89-15779}^{\bullet} \#$  National Aeronautics and Space Administration, Washington, DC.

# THE NASA SCIENTIFIC AND TECHNICAL INFORMATION SYSTEM: ITS SCOPE AND COVERAGE

Dec. 1988 216 p

(NASA-SP-7065; NAS 1.21:7065) Avail: NTIS HC A10/MF A02 CSCL 05B

A general description of the subject areas covered in the NASA scientific and technical information system is presented. In addition, it establishes subject-based selection criteria for guiding decisions related to the addition of new documents to the NASA collection. Author

**N89-25775\*** National Aeronautics and Space Administration, Washington, DC.

#### NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 35) Jun. 1989 38 p

(NASA-SP-7039(35)-SECT-1; NAS 1.21:7039(35)-SECT-1) Avail: NTIS HC A03; NTIS standing order as PB89-911100, \$13.75 domestic, \$27.50 foreign CSCL 05B

Abstracts are provided for 58 patents and patent applications entered into the NASA scientific and technical information systems during the period January 1989 through June 1989. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

**N89-29264\*** National Aeronautics and Space Administration, Washington, DC.

#### NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 35) Jan. 1989 512 p

(NASA-SP-7039(35)-SECT-2; NAS 1.21:7039(35)-SECT-2) Avail: NTIS HC A22; NTIS standing order as PB89-911100, \$29.00 domestic, \$58.00 foreign CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1989. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

**N90-10782\*#** National Aeronautics and Space Administration, Washington, DC.

### NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1988

Feb. 1989 57 p

(NASA-SP-7063(03); NAS 1.21:7063(03)) Avail: NTIS HC free as PR-849; NASA Scientific and Technical Information Facility, BWI Airport, MD free CSCL 05B

This catalog lists 179 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered into the NASA scientific and technical information database during accession year 1988. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

 $\textbf{N90-22438}^{\star}\#$  National Aeronautics and Space Administration, Washington, DC.

NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1988 EDITION OF THE NASA THESAURUS (SUPPLEMENT 3) Semiannual Report Mar. 1989 33 p

(NASA-SP-7064-SUPPL-3; NAS 1.21:7064-SUPPL-3) Avail: NTIS HC A03/MF A01 CSCL 05B

The four-part cumulative supplement to the 1988 edition of

## 82 DOCUMENTATION AND INFORMATION SCIENCE

the NASA Thesaurus includes the Hierarchical Listing (Part 1), Access Vocabulary (Part 2), Definitions (Part 3), and Changes (Part 4). The semiannual supplement gives complete hierarchies and accepted upper/lowercase forms for new terms. Author

**N90-25698\*** National Aeronautics and Space Administration, Washington, DC.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 37) Jan. 1989 43 p

(NASA-SP-7039(37)-SECT-1; NAS 1.21:7039(37)-SECT-1) Avail: NTIS HC A04; NTIS standing order as PB89-911100, \$15.00 domestic, \$30.00 foreign CSCL 05B

Abstracts are provided for 76 patents and patent applications entered into the NASA scientific and technical information systems during the period January 1990 through June 1990. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

**N90-26700\*** National Aeronautics and Space Administration, Washington, DC.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 37) Jan. 1989 507 p

(NASA-SP-7039(37)-SECT-2; NAS 1.21:7039(37)-SECT-2) Avail: NTIS HC A22; NTIS standing order as PB90-911100, \$32.00 domestic, \$64.00 foreign CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1990. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

**N90-26710\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

GRAMMAR, PUNCTUATION, AND CAPITALIZATION: A HANDBOOK FOR TECHNICAL WRITERS AND EDITORS MARY K. MCCASKILL Washington 1990 112 p (NASA-SP-7084; L-16617; NAS 1.21:7084) Avail: NTIS HC A06/MF A01 CSCL 05B

Writing problems are addressed which are often encountered in technical documents and preferences are indicated (Langley's) when authorities do not agree. It is directed toward professional writers, editors, and proofreaders. Those whose profession lies in other areas (for example, research or management), but who have occasion to write or review others' writing will also find this information useful. A functional attitude toward grammar and punctuation is presented. Chapter 1 on grammar presents grammatical problems related to each part of speech. Chapter 2 on sentence structure concerns syntax, that is, effective arrangement of words, with emphasis on methods of revision to improve writing effectiveness. Chapter 3 addresses punctuation marks, presenting their function, situations when they are required or incorrect, and situations when they are appropriate but optional. Chapter 4 presents capitalization, which is mostly a matter of editorial style and preference rather than a matter of generally accepted rules. An index and glossary are included. Author

**N90-27548\*#** National Aeronautics and Space Administration, Washington, DC.

INFORMATION RESOURCES MANAGEMENT, 1984-1989: A BIBLIOGRAPHY WITH INDEXES May 1990 202 p

(NÁSA-SP-7079; NAS 1.21:7079) Avail: NTIS HC A10 CSCL 05B

This bibliography contains 768 annotated references to reports and journal articles entered into the NASA scientific and technical information database 1984 to 1989. Author

## 84

## LAW, POLITICAL SCIENCE AND SPACE POLICY

Includes NASA appropriation hearings; aviation law; space law and policy; international law; international cooperation; and patent policy.

**N88-19375\*#** National Aeronautics and Space Administration, Washington, DC.

SPACELAB: AN INTERNATIONAL SUCCESS STORY

DOUGLAS R. LORD (Science Applications International Corp., Washington, D.C.) 1987 565 p Original contains color illustrations

(NASW-4092)

(NASA-SP-487; NAS 1.21:487; LC-86-17979) Avail: NTIS HC A24/MF A03 CSCL 05D

Spacelab is a European-developed and U.S.-operated space laboratory carried in the cargo bay of the Space Shuttle Orbiter. This story of the Spacelab Development Program traces the program from the origin of the Spacelab concept, describing negotiations and agreements for European participation and the role of Europe and the United States in system development, operational capability development, and utilization planning. It also considers the joint management structure, coordination, and experience in solving management and technical interface problems. The book is not an exhaustive historical treatise, but an informative and readable story of the evolution and technical accomplishments of this unique program in manned space flight and of some of the unusual political and human interest aspects of the program from the viewpoint of one of the key participants. Author

## 85

## **URBAN TECHNOLOGY AND TRANSPORTATION**

Includes applications of space technology to urban problems; technology transfer; technology assessment; and surface and mass transportation.

**N87-70425\*** National Aeronautics and Space Administration, Washington, DC.

SIGNIFICANT NASA INVENTIONS. AVAILABLE FOR LICENSING IN FOREIGN COUNTRIES

1977 103 p

(NASA-SP-7038(04); NAS 1.21:7038(04)) Avail: SOD HC \$5.00 as 003-000-00986-1; NTIS MF A01

## 88

### SPACE SCIENCES (GENERAL)

**N87-23313\*#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL. **DOUBLE LAYERS IN ASTROPHYSICS** 

ALTON C. WILLIAMS, ed. and TAUNA W. MOOREHEAD, ed. May 1987 321 p Workshop held in Huntsville, Ala., 17-19 Mar. 1986; sponsored by NASA, Washington and USRA (NASA-CP-2469; M-560; NAS 1.55:2469) Avail: NTIS HC A14/MF A02 CSCL 03B

CONFERENCES, ELECTRIC FIELDS, ENERGY TRANSFER,

MATHEMATICAL MODELS, PLASMA LAYERS, PLASMA PHYSICS, SPACE PLASMAS

N87-24247\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

ESSAYS IN SPACE SCIENCE

REUVEN RAMATY, ed., THOMAS L. CLINE, ed., and JONATHAN F. ORMES, ed. Jun. 1987 424 p Symposium held in Greenbelt, Md., 23 Apr. 1985

(NASA-CP-2464; REPT-87B0055; NAS 1.55:2464) Avail: NTIS HC A18/MF A03 CSCL 03B

ASTROPHYSICS, CONFERENCES, COSMIC RAYS, GAMMA RAY ASTRONOMY, INFRARED ASTRONOMY, X RAY ASTRONOMY

**N87-28471\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CALCULATION AND ACCURACY OF ERBE SCANNER MEASUREMENT LOCATIONS

LAWRENCE H. HOFFMAN, WILLIAM L. WEAVER, and JAMES F. KIBLER Sep. 1987 34  $\ensuremath{\mathsf{p}}$ 

(NASA-TP-2670; L-16218; NAS 1.60:2670) Avail: NTIS HC A03/MF A01 CSCL 03B

COMPUTATION, EARTH ATMOSPHERE, EARTH RADIATION BUDGET EXPERIMENT, POSITION (LOCATION), REMOTE SENSING, SCANNING

**N88-25390\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

A STUDY OF SPACE STATION CONTAMINATION EFFECTS M. R. TORR, ed., J. F. SPANN, ed., and T. W. MOOREHEAD, ed. May 1988 141 p Workshop held in Hilton Head Island, S.C., 29-30 Oct. 1987 Sponsored by NASA, Washington (NASA-CP-3002; M-586; NAS 1.55:3002) Avail: NTIS HC A07/MF A01 CSCL 22B

CONFERENCES, CONTAMINANTS, EARTH ORBITAL ENVIRONMENTS, SPACE STATIONS, SPACECRAFT CONTAMINATION

**N89-14188'#** National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

REPORT OF THE IN SITU RESOURCES UTILIZATION WORKSHOP

KYLE FAIRCHILD, ed. and WENDELL W. MENDELL, ed. Nov. 1988 85 p Workshop held in Lake Buena Vista, Fla., 28-30 Jan. 1987; sponsored by NASA, DOE, Large Scale Programs Inst., United Technologies Corp., Kraft Foods and Disney Imagineering (NASA-CP-3017; S-581; NAS 1.55:3017) Avail: NTIS HC A05/MF A01 CSCL 03B

LUNAR EXPLORATION, SPACE COMMERCIALIZATION, SPACE HABITATS, TECHNOLOGY ASSESSMENT

**N89-14189\*#** National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

REMOTE SENSING IN POLARIZED LIGHT

VICTOR S. WHITEHEAD and KINSELL L. COULSON (California Univ., Davis.) Oct. 1988 40 p Proceedings of Workshop held in Houston, Tex., 3-5 Nov. 1987

(NASA-CP-3014; S-577; NAS 1.55:3014) Avail: NTIS HC A03/MF A01 CSCL 05B

CAMERAS, EARTH OBSERVATIONS (FROM SPACE), IMAGING TECHNIQUES, POLARIZATION (WAVES), RADIATIVE TRANSFER, SPACE SHUTTLE PAYLOADS

N89-14998\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

EXPERIMENTS IN PLANETARY AND RELATED SCIENCES AND THE SPACE STATION

RONALD GREELEY, ed. (Arizona State Univ., Tempe.) and RICHARD J. WILLIAMS, ed. Washington, DC Nov. 1987 188 p Workshop held in Tempe, AZ, 15-16 Sep. 1986 (NCC9-14; NAS9-17023) (NASA-CP-2494; S-566; NAS 1.55:2494) Avail: NTIS HC A09/MF A02 CSCL 03B

ASTROPHYSICS, CONFERENCES, INTERSTELLAR CHEMISTRY, PARTICLE INTERACTIONS, ROBOTICS, SPACE STATION PAYLOADS, SPACEBORNE EXPERIMENTS

N89-15790\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SPACE STATION INDUCED MONITORING

JAMES F. SPANN, ed. and MARSHA R. TORR, ed. Washington, DC Nov. 1988 85 p Conference held in Huntsville, AL, 10-11 May 1988 Sponsored by NASA, Washington

(NASA-CP-3021; M-602; NAS 1.55:3021) Avail: NTIS HC

A05/MF A01 CSCL 22B AEROSPACE ENVIRONMENTS,

**ENVIRONMENTAL** MONITORING, SPACE STATIONS, SPACECRAFT CHARGING

N90-18329\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

SOLAR-TERRESTRIAL SCIENCE STRATEGY WORKSHOP

PETER M. BANKS, ed., WILLIAM T. ROBERTS, ed., and JACK KROPP, ed. (TRW, Inc., Redondo Beach, CA.) Washington Sep. 1989 73 p Workshop held in Stanford, CA, 12-16 Sep. 1988 Original contains color illustrations

(NASA-CP-3048; M-617; NAS 1.55:3048) Avail: NTIS HC A04/MF A01; 4 functional color pages CSCL 03B

CONFERENCES, MISSION PLANNING, NASA PROGRAMS, TERRESTRIAL INTERACTIONS, SPACEBORNE SOLAR EXPERIMENTS, STRATEGY, TECHNOLOGY ASSESSMENT

National Aeronautics and Space Administration. N90-27562\*# Ames Research Center, Moffett Field, CA

CARBON IN THE GALAXY: STUDIES FROM EARTH AND SPACE

JILL C. TARTER, ed., SHERWOOD CHANG, ed., and DOUG J. DEFREES, ed. (Molecular Research Inst., Palo Alto, CA.) Washington Apr. 1990 350 p Meeting held at Moffett Field, CA, 5-6 Nov. 1987

(NASA-CP-3061; A-90031; NAS 1.55:3061) Avail: NTIS HC A15/MF A02 CSCL 03B

CARBON, COMETS, CONFERENCES, INTERPLANETARY DUST, INTERSTELLAR CHEMISTRY, METEORITIC DIAMONDS, MILKÝ WAY GALAXY

## 89

#### ASTRONOMY

Includes radio, gamma-ray, and infrared astronomy; and astrometry.

N87-14219\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

**TEN YEAR PLANETARY EPHEMERIS: 1986-1995** 

F. ESPENAK Nov. 1986 249 p

(NASA-RP-1176; NAS 1.61:1176; REPT-86B0471) Avail: NTIS HC A11/MF A02 CSCL 03A

Accurate geocentric positions are tabulated at five day intervals for the Sun, Mercury, Venus, Mars, Jupiter, Saturn, Uranus and Neptune during the ten year period 1986 through 1995. The apparent angular diameters, radial velocities, declinations and mean times of meridian transit of the seven planets and the Sun are graphically depicted for each year in the interval. Appendices are included which discuss the theory of planetary orbits and a FORTRAN program for calculating planetary ephemerides.

Author

N87-22573\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

INFRARED SOURCE CROSS-INDEX. FIRST EDITION

MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.),

JAYLEE M. MEAD, and DANIEL Y. GEZARI Apr. 1987 323 p (NASA-RP-1182; REPT-87B0058; NAS 1.61:1182) Avail: NTIS HC A14/MF A02 CSCL 03A

The Infrared Source Cross-Index is a listing of correlated infrared source names (and positions) for astronomical objects observed at 1-1000 microns. The source names have been obtained from the database of the first edition of the Catalog of Infrared Observations (CIO: NASA RP 1118), covering observations published through 1982. Additional identifications were located by correlating these names with identifications contained in other machine-readable astronomical catalogs in the NASA National Space Science Data Center (NSSDC). There are some 80,000 different source names in the Cross-Index, corresponding to over 27,000 unique infrared sources. Author

N87-24266\*# National Aeronautics and Space Administration, Washington, DC.

## STAR FORMATION IN GALAXIES

May 1987 755 p Conference held in Pasadena, Calif., 16-19 Jun. 1986

(NASA-CP-2466; NAS 1.55:2466) Avail: NTIS HC A99/MF E06 CSCL 03A

CONFERENCES, GALACTIC STRUCTURE, GALAXIES, INFRARED ASTRONOMY, MOLECULAR CLOUDS, RADIO ASTRONOMY, STAR FORMATION, STELLAR LUMINOSITY

N87-25906\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FIFTY YEAR CANON OF SOLAR ECLIPSES: 1986 - 2035 FRED ESPENAK Jul. 1987 272 p

(NASA-RP-1178-REV; REPT-87B0252; NAS 1.61:1178-REV)

Avail: NTIS HC A12/MF A02 CSCL 03A A complete catalog is presented, listing the general characteristics of every solar eclipse from 1901 through 2100. To complement this catalog, a detailed set of cylindrical projection world maps shows the umbral paths of every solar eclipse over the 200 year interval. Focusing in on the next 50 years, accurate geodetic path coordinates and local circumstances for the 71 central eclipses from 1987 through 2035 are tabulated. Finally, the geodetic paths of the umbral and penumbral shadows of all 109 solar eclipses in this period are plotted on orthographic projection maps of the Earth. Appendices are included which discuss eclipse geometry, eclipse frequency and occurrence, modern eclipse prediction and time determination. Finally, code for a simple Fortran program is given to predict the occurrence and characteristics of solar eclipses. Author

N88-15738\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### CATALOG OF INFRARED OBSERVATIONS. PART 1: DATA Second Edition

DANIEL Y. GEZARI, MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.), and JAYLEE M. MEAD Dec. 1987 625 p (NASA-RP-1196-PT-1-ED-2; NAS 1.61:1196-PT-1-ED-2) Avail: NTIS HC A99/MF A04 CSCL 03A

The Catalog of Infrared Observations (CIO) is a compilation of infrared astronomical observational data obtained from an extensive literature search of astronomical journals and major astronomical catalogs and surveys. The literature searches are complete for 1965 through 1986 in this Second Edition. The Catalog is published in two parts, with the observational data (roughly 200,000 observations of 20,000 individual sources) listed in Part I, and supporting appendices in Part II. The expanded Second Edition contains a new feature: complete IRAS 4-band data for all CIO sources detected, listed with the main Catalog observations, as well as in complete detail in the Appendix. The appendices include an atlas of infrared source positions, two bibliographies of infrared literature upon which the search was based, and, keyed to the main Catalog listings (organized alphabetically by author and then chronologically), an atlas of infrared spectral ranges, and IRAS data from the CIO sources. The complete CIO database is available to qualified users in printed microfiche and magnetic tape formats. Author

## 89 ASTRONOMY

N88-16615\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### CATALOG OF INFRARED OBSERVATIONS. PART 2: APPENDIXES Second Edition

DANIEL Y. GEZARI, MARION SCHMITZ, and JAYLEE M. MEAD Dec. 1987 343 p

(NASA-RP-1196-PT-2-ED-2; NAS 1.61:1196-PT-2-ED-2) Avail: NTIS HC A15/MF A02 CSCL 03A

The Catalog of Infrared Observations (CIO) is a compilation of infrared astronomical observational data obtained from an extensive literature search of astronomical journals and major astronomical catalogs and surveys. The literature searches are complete for years 1965 to 1986. Supporting appendixes are published in this part. The appendices include an atlas of infrared source positions, two bibliographies of infrared literature upon which the search was based, and, keyed to the main Catalog listings (organized alphabetically by first author, and by date), an atlas of infrared spectral ranges, and IRAS data for the CIO sources. The complete CIO database is available to qualified users in printed microfiche and magnetic tape formats.

N88-24553\*# National Aeronautics and Space Administration, Washington, DC.

#### NASA THESAURUS: ASTRONOMY VOCABULARY

1988 112 p Presented at the International Astronomical Union Conference, Baltimore, Md., 27-31 Jul. 1988

(NASA-SP-7069; NAS 1.21:7069) Avail: NTIS HC A06 CSCL 03A

A terminology of descriptors used by the NASA Scientific and Technical information effort to index documents in the area of astronomy is presented. The terms are listed in hierarchical format derived from the 1988 edition of the NASA Thesaurus Volume 1 -- Hierarchical Listing. Over 1600 terms are included. In addition to astronomy, space sciences covered include astrophysics, cosmology, lunar flight and exploration, meteors and meteorites, celestial mechanics, planetary flight and exploration, and planetary science. Author

N88-30545\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

# FAR INFRARED SUPPLEMENT: CATALOG OF INFRARED OBSERVATIONS, SECOND EDITION

DANIEL Y. GEZARI, MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.), and JAYLEE M. MEAD Aug. 1988 233 p (NASA-RP-1205; REPT-88B-121; NAS 1.61:1205) Avail: NTIS HC A11/MF A02 CSCL 03A

The Far Infrared Supplement: Catalog of Infrared Observations summarizes all infrared astronomical observations at far infrared wavelengths (5 to 1000 microns) published in the scientific literature from 1965 through 1986. The Supplement list contain 25 percent of the observations in the full Catalog of Infrared Observations (CIO), and essentially eliminates most visible stars from the listings. The Supplement is thus more compact than the main catalog, and is intended for easy reference during astronomical observations. The Far Infrared Supplement (2nd Edition) includes the Index of Infrared Source Positions and the Bibliography of Infrared Astronomy for the subset of far infrared observations listed. Author

**N89-11657\*#** National Aeronautics and Space Administration, Washington, DC.

#### O STARS AND WOLF-RAYET STARS

PETER S. CONTI, ANNE B. UNDERHILL, STUART JORDAN, ed., and RICHARD THOMAS, ed. 1988 508 p Prepared in cooperation with Centre National de la Recherche Scientifique, Paris (France)

(NASA-SP-497; NAS 1.21:497) Avail: SOD HC \$24.00 as 033-000-01021-4; NTIS A01 CSCL 03A

Basic information is given about O and Wolf-Rayet stars indicating how these stars are defined and what their chief observable properties are. Part 2 of the volume discussed four related themes pertaining to the hottest and most luminous stars. Presented are: an observational overview of the spectroscopic classification and extrinsic properties of O and Wolf-Rayet stars; the intrinsic parameters of luminosity, effective temperature, mass, and composition of the stars, and a discussion of their viability; stellar wind properties; and the related issues concerning the efforts of stellar radiation and wind on the immediate interstellar environment are presented. B.G.

N89-12513\* National Aeronautics and Space Administration, Washington, DC.

# ATLAS OF GALAXIES USEFUL FOR MEASURING THE COSMOLOGICAL DISTANCE SCALE

ALLAN SANDAGE and JOHN BEDKE (Space Telescope Science Inst., Baltimore, Md.) 1988 462 p Prepared for Computer Sciences Corp., Baltimore, Md. Prepared in cooperation with Johns Hopkins Univ., Baltimore, Md.

(NASA-SP-496; NAS 1.21:496; LC-88-600056) Avail: NTIS HC A20; also available SOD HC \$80.00 as 033-000-01020-6 CSCL 03A

A critical first step in determining distances to galaxies is to measure some property of primary objects such as stars of specific types, H II regions, and supernovae remnants that are resolved out of the general galactic star content. With the completion of the Mount Wilson/Palomar/Las Campanas survey of bright galaxies in 1985, excellent large-scale photographs of the complete Shapley-Ames sample were on hand. Most of the galaxies useful for distance scale calibration are in this collection. This atlas contains photographs of 322 galaxies including the majority of all Shapley-Ames bright galaxies, plus cluster members in the Virgo Cluster core that might be usefully resolved by the Hubble Space Telescope (HST). Because of crowding and high background-disk surface brightness, the choice of field position is crucial for programs involving resolution of particular galaxies into stars. The purpose of this atlas is to facilitate this choice. Enough information is given herein (coordinates of the galaxy centers and the scale of the photography) to allow optimum placement of the HST wide-field planetary camera format of approximately 150 arc-seconds on a side. Author

**N89-13310\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

SECOND WORKSHOP ON IMPROVEMENTS TO PHOTOMETRY WILLIAM J. BORUCKI, ed. Sep. 1988 314 p Workshop held in Gaithersburg, Md., 5-6 Oct. 1987; sponsored by NASA, Arnes Research Center, Moffett Field, Calif. and NBS, Gaithersburg, Md. (NASA-CP-10015; A-88125; NAS 1.55:10015) Avail: NTIS HC A14/MF A02 CSCL 03A

ASTRONOMICAL PHOTOMETRY, CONFERENCES, FIBER OPTICS, PHOTOMETERS

**N89-13330\*#** National Aeronautics and Space Administration, Washington, DC.

INFRARED OBSERVATIONS OF COMETS HALLEY AND WILSON AND PROPERTIES OF THE GRAINS

MARTHA S. HANNER, ed. (Jet Propulsion Lab., California Inst. of Tech., Pasadena.) Sep. 1988 200 p Workshop held at Ithaca, N.Y., 10-12 Aug. 1987

(NASA-CP-3004; NAS 1.55:3004) Avail: NTIS HC A09/MF A02 CSCL 03A

COMETARY ATMOSPHERES, COSMIC DUST, HALLEY'S COMET, INFRARED SPECTRA

**N89-15810\*** *#* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.

**FUTURE ASTRONOMICAL OBSERVATORIES ON THE MOON** JACK O. BURNS, ed. (New Mexico Univ., Albuquerque.) and WENDELL W. MENDELL, ed. Washington, DC Mar. 1988 129 p Workshop held in Houston, TX, 10 Jan. 1986; sponsored by NASA, Johnson Space Flight Center, Houston, TX and American Astronomical Society, Washington, DC

(NASA-CP-2489; S-569; NAS 1.55:2489) Avail: NTIS HC A07/MF A01 CSCL 03A

ASTRONOMICAL OBSERVATORIES, LUNAR BASES, LUNAR OBSERVATORIES, RADIO ASTRONOMY, RADIO TELESCOPES

N90-10805\*# New Mexico Univ., Albuquerque. Inst. for Astrophysics.

A LUNAR FAR-SIDE VERY LOW FREQUENCY ARRAY

JACK O. BURNS, ed., NEBOJSA DURIC, ed., STEWART JOHNSON, ed. (BDM Corp., Albuquerque, NM.), and G. JEFFREY TAYLOR, ed. Nov. 1989 75 p Workshop held in Albuquerque, NM, 18-19 Feb. 1988; sponsored by NASA, Washington, New Mexico Univ., Albuquerque, and BDM Corp., Albuquerque, NM Sponsored by NASA, Washington

(NASA-CP-3039; NAS 1.55:3039) Avail: NTIS HC A04/MF A01 CSCL 03A

ARRAYS, CONFERENCES, LIBRATION, LUNAR BASES, MOON, RADIO ASTRONOMY, STRUCTURAL DESIGN, VERY LOW FREQUENCIES

**N90-10807\*#** National Aeronautics and Space Administration. Arnes Research Center, Moffett Field, CA.

AUTOMATIC CLASSIFICATION OF SPECTRA FROM THE INFRARED ASTRONOMICAL SATELLITE (IRAS)

PETER CHEESEMAN, JOHN STUTZ, MATTHEW SELF, WILLIAM TAYLOR (Sterling Federal Systems, Inc., Palo Alto, CA.), JOHN GOEBEL, KEVIN VOLK, and HELEN WALKER Mar. 1989 595 p

(NASA-RP-1217; NAS 1.61:1217) Avail: NTIS HC A25/MF A04 CSCL 03A

A new classification of Infrared spectra collected by the Infrared Astronomical Satellite (IRAS) is presented. The spectral classes were discovered automatically by a program called Auto Class 2. This program is a method for discovering (inducing) classes from a data base, utilizing a Bayesian probability approach. These classes can be used to give insight into the patterns that occur in the particular domain, in this case, infrared astronomical spectroscopy. The classified spectra are the entire Low Resolution Spectra (LRS) Atlas of 5,425 sources. There are seventy-seven classes in this classification and these in turn were meta-classified to produce nine meta-classes. The classification is presented as spectral plots, IRAS color-color plots, galactic distribution plots and class commentaries. Cross-reference tables, listing the sources by IRAS name and by Auto Class class, are also given. These classes show some of the well known classes, such as the black-body class, and silicate emission classes, but many other classes were unsuspected, while others show important subtle differences within the well known classes. Author

**N90-18342\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FIFTY YEAR CANON OF LUNAR ECLIPSES: 1986-2035

FRED ESPENAK Mar. 1989 221 p

(NASA-RP-1216; REPT-89B00056; NAS 1.61:1216) Avail: NTIS HC A10/MF A02 CSCL 03A

A complete catalog is presented, listing the general circumstances of every lunar eclipse from 1901 through 2100. To compliment this catalog, a set of figures illustrate the basic Moon-shadow geometry and global visibility for every lunar eclipse over the 200 year interval. Focusing in on the next fifty years, 114 detailed diagrams show the Moon's path through Earth's shadow during every eclipse, including contact times at each phase. The accompanying cylindrical projection maps of Earth show regions of hemispheric visibility for all phases. The appendices discuss eclipse geometry, eclipse frequency and recurrence, enlargement of Earth's shadow, crater timings, eclipse brightness and time determination. Finally, a simple FORTRAN program is provided which can be used to predict the occurrence and general characteristics of lunar eclipses. This work is a companion volume to NASA Reference Publication 1178: Fifty Year Canon of Solar Eclipses: 1986-2035. Author

**N90-28470\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

SPATIAL INTERFEROMETRY IN OPTICAL ASTRONOMY DANIEL Y. GEZARI, FRANCOIS RODDIER, and CLAUDE RODDIER (Hawaii Univ., Honolulu.) Washington Sep. 1990 249 p

(NASA-RP-1245; REPT-90-069; NAS 1.61:1245) Avail: NTIS HC A11/MF A02 CSCL 03A

A bibliographic guide is presented to publications of spatial interferometry techniques applied to optical astronomy. Listings appear in alphabetical order, by first author, as well as in specific subject categories listed in chronological order, including imaging theory and speckle interferometry, experimental techniques, and observational results of astronomical studies of stars, the Sun, and the solar system. Author

## 90

### ASTROPHYSICS

Includes cosmology; celestial mechanics; space plasmas; and interstellar and interplanetary gases and dust.

**N87-30235\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

ATLAS OF COMET HALLEY 1910 II

BERTRAM DONN, JUERGEN RAHE, and JOHN C. BRANDT 1986 597 p

(NASA-SP-488; NAS 1.21:488; LC-86-16341) Avail: SOD HC \$48.00 as 033-000-00991-7; NTIS MF A01 CSCL 03B

With the impending return of Halley's Comet. in 1986, a major effort began to collect the material obtained at its last appearance in 1910. This material displays the evolving coma and tail phenomena, and is useful for comparison with the present quantitative studies of spectroscopic and structural phenomena. Images in the atlas are arranged in chronological order by day. Days that have multiple images with varying scale are arranged in two sequences. Photographs showing tail phenomena are first, followed by photographs obtained with longer focus instruments showing the head or near-nuclear region. Drawings of Comet Halley, made from visual observations in 1835 and 1910, also are included. B.G.

N88-11592\*# National Aeronautics and Space Administration, Washington, DC. THE M-TYPE STARS

HOLLIS RALPH JOHNSON, FRANCOIS R. QUERCI, STUART JORDAN, ed., RICHARD THOMAS, ed., LEO GOLDBERG (Kitt Peak National Observatory, Tucson, Ariz.), and JEAN-CLAUDE PECKER 1987 576 p Prepared in cooperation with CNRS, Paris, France Its Monograph Series on Nonthermal Phenomena in Stellar Atmospheres, Volume 5

(NASA-SP-492; NAS 1.21:492; LC-87-11340) Avail: SOD HC \$26.00 as 033-000-01007-9; NTIS MF A01 CSCL 03B

The papers in this volume cover the following topics: (1) basic properties and photometric variability of M and related stars; (2) spectroscopy and nonthermal processes; (3) circumstellar radio molecular lines; (4) circumstellar shells, the formation of grains, and radiation transfer; (5) mass loss; (6) circumstellar chemistry; (7) thermal atmospheric models; (8) quasi-thermal models; (9) observations on the atmospheres of M dwarfs; and (1) theoretical work on M dwarfs. For individual titles, see N88-11593 through N88-11602.

**N88-20235\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

WORKSHOP ON TECHNOLOGY DEVELOPMENT ISSUES FOR THE LARGE DEPLOYABLE REFLECTOR (LDR)

KENJI NISHIOKA, ed. Feb. 1986 118 p Workshop held in Asilomar, Calif., 17-22 Mar. 1985

(NASA-CP-2407; A-85394; NAS 1.55:2407) Avail: NTIS HC A06/MF A01 CSCL 03B

CRYOGENIC COOLING, DEPLOYMENT, INFRARED ASTRONOMY, INFRARED TELESCOPES, LARGE DEPLOYABLE

## 90 ASTROPHYSICS

REFLECTOR, LARGE SPACE STRUCTURES, REFLECTORS, TECHNOLOGY ASSESSMENT

N88-28843\* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

#### INTERNATIONAL ULTRAVIOLET EXPLORER SPECTRAL ATLAS OF PLANETARY NEBULAE, CENTRAL STARS, AND **RELATED OBJECTS**

WALTER A. FEIBELMAN, NANCY A. OLIVERSEN, JOY NICHOLSBOHLIN, and MATTHEW P. GARHART (Computer Sciences Corp., Beltsville, Md.) Jun. 1988 380 p (NAS5-28749)

(NASA-RP-1203; NAS 1.61:1203) Avail: NTIS HC A17 CSCL 03B

The International Ultraviolet Explorer (IUE) archives contain a wealth of information on high quality ultraviolet spectra of approximately 180 planetary nebulae, their central stars, and related objects. Selected are representative low-dispersion IUE spectra in the range 1200 to 3200 A for 177 objects arranged by Right Ascension (RA) for this atlas. For most entries, the combined short wavelength (SWP) (1200to 1900) and long wavelength (LWR) (or LWP, 1900 to 3200 A) regions are shown on 30 cm by 10 cm Calcomp plots on a uniform scale to facilitate intercomparison of the spectra. Each calibrated spectrum is also shown on an expanded vertical scale to bring out some of the weaker features. Author

N88-29652\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. CATALOG OF OPEN CLUSTERS AND ASSOCIATED **INTERSTELLAR MATTER** 

DAVID LEISAWITZ Jun. 1988 294 p (NASA-RP-1202; REPT-88B0152; NAS 1.61:1202) Avail: NTIS HC A13/MF A02 CSCL 03B

The Catalog of Open Clusters and Associated Interstellar Matter summarizes observations of 128 open clusters and their associated ionized, atomic, and molecular iinterstellar matter. Cluster sizes, distances, radial velocities, ages, and masses, and the radial velocities and masses of associated interstellar medium components, are given. The database contains information from approximately 400 references published in the scientific literature before 1988. Author

N89-14194\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

## **INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS** AND ATLASES. VOLUME 1: EXPLANATORY SUPPLEMENT

C. A. BEICHMAN, ed., G. NEUGEBAUER, ed., H. J. HABING, ed., P. E. CLEGG, ed., and THOMAS J. CHESTER, ed. (California Inst. of Tech., Pasadena.) Washington, D.C. 1988 455 p Washington, D.C. Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-1; NAS 1.61:1190-VOL-1) Avail: NTIS HC A20/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched on January 26, 1983. During its 300-day mission. IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. Volume 1 describes the instrument, the mission, and data reduction. Author

N89-14195\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

#### **INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS** AND ATLASES. VOLUME 5: THE POINT SOURCE CATALOG **DECLINATION RANGE -30 DEG GREATER THAN DELTA GREATER THAN -50 DEG**

Washington, D.C. 1988 410 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-5; NAS 1.61:1190-VOL-5) Avail: NTIS HC A18/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 5, The Point Source Catalog Declination Range -30 deg greater than delta greater than -50 deg. Author

N89-14196\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena

**INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS** AND ATLASES. VOLUME 4: THE POINT SOURCE CATALOG **DECLINATION RANGE 0 DEG GREATER THAN DELTA GREATER THAN -30 DEG** 

Washington, D.C. 1988 596 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delit, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-4; NAS 1.61:1190-VOL-4) Avail: NTIS HC A25/MF A04; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched 26 January 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 4, The Point Source Catalog Declination Range 0 deg greater than delta greater than -30 deg. Author

N89-14197\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

#### INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 2: THE POINT SOURCE CATALOG DECLINATION RANGE 90 DEG GREATER THAN DELTA **GREATER THAN 30 DEG**

Washington, D.C. 1988 555 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-2; NAS 1.61:1190-VOL-2) Avail: NTIS HC A24/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983, During its 300-day mission, IRAS surveyed 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 2, The Point Source Catalog Declination Range 90 deg greater than delta greater than 30 deg. Author

N89-14198\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

#### **INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS** AND ATLASES. VOLUME 6: THE POINT SOURCE CATALOG **DECLINATION RANGE -50 DEG GREATER THAN DELTA GREATER THAN -90 DEG**

Washington, D.C. 1988 473 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-6; NAS 1.61:1190-VOL-6) Avail: NTIS HC A20/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 6, The Point Source Catalog Declination Range -50 deg greater than delta greater than -90 deg. Author

N89-14199\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

#### **INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS** AND ATLASES. VOLUME 7: THE SMALL SCALE STRUCTURE CATALOG

GEORGE HELOU, ed. and D. W. WALKER, ed. Washington, D.C. 1988 348 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA,

## 91 LUNAR AND PLANETARY EXPLORATION

Washington

(NASA-ŘP-1190-VOL-7; NAS 1.61:1190-VOL-7) Avail: NTIS HC A15/MF A02; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. Volume 1 describes the instrument, the mission, and the data reduction process. Volumes 2 through 6 present the observations of the approximately 245,000 individual point sources detected by IRAS; each volume 7 gives the observations of the approximately 16,000 sources spatially resolved by IRAS and smaller than 8'. This is Volume 7, The Small Scale Structure Catalog.

N89-14201\*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

#### INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 3: THE POINT SOURCE CATALOG DECLINATION RANGE 30 DEG GREATER THAN DELTA GREATER THAN 0 DEG

Washington, D.C. 1988 493 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington

(NASA-RP-1190-VOL-3; NAS 1.61:1190-VOL-3) Avail: NTIS HC A21/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 3, The Point Source Catalog Declination Range 30 deg greater than delta greater than 0 deg. Author

**N89-27612\*#** National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

# COMMENTARY ON INTERSTELLAR MATTER ASSOCIATED WITH 18 OPEN CLUSTERS

DAVID LEISAWITZ Washington Sep. 1989 20 p Sponsored by National Research Council

(R033-87; NSF AST-81-6403; NSF AST-83-12332)

(NASA-RP-1229; REPT-89B00238; NAS 1.61:1229) Avail: NTIS HC A03/MF A01 CSCL 03B

Information supplementary to that contained in Section 4 of an article entitled, A CO Survey of Regions Around 34 Open Clusters, (Leisawitz, Bash, and Thaddeus) published in the Astrophysical Journal Supplement Series, Volume 70, Number 4, August 1989 is summarized. The information presented here, which describes the interstellar environments of young clusters and some cluster physical characteristics, comes from observations published in the astronomical literature and the author's carbon monoxide (CO) emission line survey, and may help clarify our understanding of the interaction of massive stars with the interstellar medium.

Author

**N90-18344\*#** National Aeronautics and Space Administration, Washington, DC.

#### FGK STARS AND T TAURI STARS: MONOGRAPH SERIES ON NONTHERMAL PHENOMENA IN STELLAR ATMOSPHERES

LAWRENCE E. CRAM, ed. and LEONARD V. KUHI, ed. (California Univ., Berkeley.) 1989 353 p Prepared in cooperation with Centre National de la Recherche Scientifique, Paris, France

(NASA-SP-502; NAS 1.21:502; LC-89-600317) Avail: NTIS HC A16/MF A02; also available SOD HC \$18.00 as 033-000-01073-7 CSCL 03B

The purpose of this book, FGK Stars and T Tauri Stars, like all other volumes of this series, is to exhibit and describe the best space data and ground based data currently available, and also to describe and critically evaluate the status of current theoretical models and physical mechanisms that have been proposed to interpret these data. The method for obtaining this book was to collect manuscripts from competent volunteer authors, and then to collate and edit these contributions to form a well structured book, which will be distributed to an international community of research astronomers by NASA and by the French CNRS. Author

N90-19940\*# National Aeronautics and Space Administration, Washington, DC.

RELATIVISTIC GRAVITATIONAL EXPERIMENTS IN SPACE

RONALD W. HELLINGS, ed. Aug. 1989 242 p Workshop held in Annapolis, MD, 28-30 Jun. 1988

(NASA-CP-3046; NAS 1.55:3046) Avail: NTIS HC A11/MF A02 CSCL 03B

BLACK HOLES (ASTRONOMY), GRAVITATIONAL WAVES, RELATIVITY, SPACEBORNE EXPERIMENTS

N90-23294\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. THE ENERGETIC GAMMA-RAY EXPERIMENT TELESCOPE (EGRET) SCIENCE SYMPOSIUM

CARL E. FICHTEL, ed., STANLEY D. HUNTER, ed., PARAMESWARAN SREEKUMAR, ed., and FLOYD W. STECKER, ed. May 1990 327 p Symposium held in Greenbelt, MD, 15-16 Nov. 1989 Original contains color illustrations (NASA-CP-3071; NAS 1.55:3071) Avail: NTIS HC A15/MF A02;

1 functional color page CSCL 03B

CONFERENCES, GALACTIC COSMIC RAYS, GALACTIC RADIATION, GALACTIC STRUCTURE, GAMMA RAY ASTRONOMY, GAMMA RAY OBSERVATORY, GAMMA RAY TELESCOPES

## 91

### LUNAR AND PLANETARY EXPLORATION

Includes planetology; and manned and unmanned flights.

N87-17598\*# National Aeronautics and Space Administration. Goddard Inst. for Space Studies, New York, NY. THE JOVIAN ATMOSPHERES

MICHAEL ALLISON, ed. and LARRY D. TRAVIS, ed. Oct. 1986 129 p Conference held in New York, N.Y., 6-8 May 1985 Submitted for publication

(NASA-CP-2441; NAS 1.55:2441) Copyright Avail: NTIS HC A07/MF A01 CSCL 84B

ATMOSPHERIC CHEMISTRY, CLOUDS (METEOROLOGY), GAS DYNAMICS, GAS GIANT PLANETS, HYDROGEN, JUPITER ATMOSPHERE, NEPTUNE ATMOSPHERE, SATURN ATMOSPHERE, SPACE EXPLORATION, SYNOPTIC METEOROLOGY, THERMODYNAMICS, URANUS ATMOSPHERE

**N87-19322\*#** National Aeronautics and Space Administration, Washington, DC.

#### STATUŠ AND FUTURE OF LUNAR GEOSCIENCE 1986 63 p

(NASA-SP-484; NAS 1.21:484) Avail: SOD HC \$4.25 as 033-000-00997-6; NTIS MF A01 CSCL 03B

The Moon is of special interest among the many and diverse bodies of the solar system because it serves as a scientific baseline for understanding the terrestrial planets, its origin is closely tied to the early history of the Earth, and its proximity permits a variety of space applications such as mining and establishment of bases and colonies. Data acquisition and analysis have enabled advances to be made and the remaining questions in many fields of lunar geoscience to be identified. The status and unresolved problems of lunar science are discussed. Immediate needs, new unmanned missions, and a return to the Moon (a lunar base) are examined. B.G.

## 91 LUNAR AND PLANETARY EXPLORATION

**N88-24564\***# National Aeronautics and Space Administration, Washington, DC.

#### REFLECTANCE SPECTROSCOPY IN PLANETARY SCIENCE: REVIEW AND STRATEGY FOR THE FUTURE

THOMAS B. MCCORD, ed. (Hawaii Univ., Honolulu.) Jun. 1987 43 p

(NASA-SP-493; NAS 1.21:493; LC-87-28154) Avail: NTIS HC A03/MF A01 CSCL 03B

Reflectance spectroscopy is a remote sensing technique used to study the surfaces and atmospheres of solar system bodies. It provides first-order information on the presence and amounts of certain ions, molecules, and minerals on a surface or in an atmosphere. Reflectance spectroscopy has become one of the most important investigations conducted on most current and planned NASA Solar System Exploration Program space missions. This book reviews the field of reflectance spectroscopy, including information on the scientific technique, contributions, present conditions, and future directions and needs.

N88-26279\*# National Aeronautics and Space Administration, Washington, DC.

#### PLANETARY GEOLOGY: GOALS, FUTURE DIRECTIONS, AND RECOMMENDATIONS Final Report

Aug. 1988 23 p Workshop held in Tempe, Ariz., Jan. 1987 (NASA-CP-3005; NAS 1.55:3005) Avail: NTIS HC A03/MF A01 CSCL 03B

PLANETARY GEOLOGY, PLANETOLOGY, SPACE EXPLORATION

N89-16709\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. THE CASSINI MISSION: INFRARED AND MICROWAVE

SPECTROSCOPIC MEASUREMENTS V. G. KUNDE Jan. 1989 127 p

(NASA-RP-1213; NAS 1.61:1213; REPT-89B0006) Avail: NTIS HC A07/MF A01 CSCL 03B

The Cassini Orbiter and Titan Probe model payloads include a number of infrared and microwave instruments. This document describes: (1) the fundamental scientific objectives for Saturn and Titan which can be addressed by infrared and microwave instrumentation, (2) the instrument requirements and the accompanying instruments, and (3) the synergism resulting from the comprehensive coverage of the total infrared and microwave spectrum by the complement of individual instruments. The baseline consists of four instruments on the orbiter and two on the Titan probe. The orbiter infrared instruments are: (1) a microwave spectrometer and radiometer; (2) a far to mid-infrared spectrometer; (3) a pressure modulation gas correlation spectrometer, and (4) a near-infrared grating spectrometer. The two Titan probe infrared instruments are: (1) a number of instruments are: (1) a number of instruments are: (1) a number of instruments are infrared instruments are: (1) a number of a pressure modulation gas correlation spectrometer, and (2) a tunable diode laser infrared absorption spectrometer and nephelometer.

Author

**N89-18373\*#** National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

#### PROCEEDINGS OF THE POLAR PROCESSES ON MARS WORKSHOP

ROBERT M. HABERLE Dec. 1988 59 p Workshop held in Sunnyvale, CA, 12-13 May 1988

(NASA-CP-10021; A-89001; NAS 1.55:10021) Avail: NTIS HC A04/MF A01 CSCL 03B

CONFERENCES, MARS (PLANET), MARS ATMOSPHERE, POLAR REGIONS

**N89-28474\***# National Aeronautics and Space Administration, Washington, DC.

TIME-VARIABLE PHENOMENA IN THE JOVIAN SYSTEM

MICHAEL J. S. BELTON, ed., ROBERT A. WEST, ed. (Jet Propulsion Lab., California Inst. of Tech., Pasadena.), JURGEN RAHE, ed., and MARGARITA PEREYDA 1989 406 p Workshop held in Flagstaff, AZ, 25-27 Aug. 1987 Original contains color illustrations (NASA-SP-494; NAS 1.21:494; LC-88-25450) Avail: NTIS HC A18/MF A03 CSCL 03B

The current state of knowledge of dynamic processes in the Jovian system is assessed and summaries are provided of both theoretical and observational foundations upon which future research might be based. There are three sections: satellite phenomena and rings; magnetospheric phenomena, lo's torus, and aurorae; and atmospheric phenomena. Each chapter discusses time dependent theoretical framework for understanding and interpreting what is observed; others describe the evidence and nature of observed changes or their absence. A few chapters provide historical perspective and attempt to present a comprehensive synthesis of the current state of knowledge.

Author

**N90-10814\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

CONCEPTUAL DESIGN OF A SYNCHRONOUS MARS TELECOMMUNICATIONS SATELLITE

DEBORAH M. BADI, JEFFREY T. FARMER, PAUL A. GARN, and GARY L. MARTIN (George Washington Univ., Hampton, VA.) Washington Nov. 1989 18 p

(NASA-TP-2942; L-16580; NAS 1.60:2942) Avail: NTIS HC A03/MF A01 CSCL 03B

COMMAND AND CONTROL, COMMUNICATION SATELLITES, STRUCTURAL DESIGN

N90-25030\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX. GEOSCIENCE AND A LUNAR BASE: A COMPREHENSIVE

PLAN FOR LUNAR EXPLORATION

G. JEFFREY TAYLOR, ed. and PAUL D. SPUDIS, ed. (Geological Survey, Flagstaff, AZ.) Washington Apr. 1990 76 p Workshop held in Houston, TX, 25-26 Aug. 1988

(NASA-CP-3070; S-603; NAS 1.55:3070) Avail: NTIS HC A05/MF A01 CSCL 03B

CONFERENCES, GEOLOGY, GEOPHYSICS, LUNAR BASES, LUNAR EXPLORATION, RESOURCES MANAGEMENT

**N90-26744\***# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

FIRST INTERNATIONAL CONFERENCE ON LABORATORY RESEARCH FOR PLANETARY ATMOSPHERES

KENNETH FOX, ed., JOHN E. ALLEN, JR., ed., LOUIS J. STIEF, ed., and DIANA T. QUILLEN, ed. (Bowie State Univ., MD.) May 1990 481 p Conference held in Bowie, MD, 25-27 Oct. 1989 (NASA-CP-3077; REPT-90B00106; NAS 1.55:3077) Avail: NTIS HC A21/MF A03 CSCL 03B

CHARGED PARTICLES, CONFERENCES, PARTICLE INTERACTIONS, PHOTONS, PLANETARY ATMOSPHERES, REACTION KINETICS, SPECTROSCOPY, THERMODYNAMICS

N90-27607\*# Arizona State Univ., Tempe. Dept. of Geology. MARS LANDING SITE CATALOG

RONALD GREELEY, ed. Washington NASA Aug. 1990 202 p

(NAGW-1306)

(NASA-RP-1238; NAS 1.61:1238) Avail: NTIS HC A10/MF A02 CSCL 03B

The catalog was compiled from material provided by the planetary community for areas on Mars that are of potential interest for future exploration. The catalog has been edited for consistency insofar as practical; however, the proposed scientific objectives and characteristics have not been reviewed. This is a working catalog that is being revised, updated, and expanded continually. Author

## SOLAR PHYSICS

Includes solar activity, solar flares, solar radiation and sunspots.

N87-19328\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

ENERGETIC PHENOMENA ON THE SUN: THE SOLAR MAXIMUM MISSION FLARE WORKSHOP. PROCEEDINGS MUKUL KUNDU, ed. (Maryland Univ., College Park) and BRUCE WOODGATE, ed. Dec. 1986 423 p Workshop held in Greenbelt, Md., 24-28 Jan. 1983, 9-14 Jun. 1983, and 13-17 Feb. 1984 (NASA-CP-2439; NAS 1.55:2439) Avail: NTIS HC A18/MF A03 CSCL 03B

CONFERENCES, MAGNETOHYDRODYNAMIC STABILITY, SOLAR CORONA, SOLAR FLARES, SOLAR MAGNETIC FIELD, SOLAR MAXIMUM MISSION, SOLAR PHYSICS, SOLAR PROMINENCES, SUN, SUNSPOTS

N87-20871\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

CORONAL AND PROMINENCE PLASMAS

ARTHUR I. POLAND, ed. Dec. 1986 435 p Workshop held in Greenbelt, Md., 9-11 Apr. 1985 and 8-10 Apr. 1986 (NASA-CP-2442; REPT-86BO536; NAS 1.55:2442; AD-A188629) Avail: NTIS HC A19/MF A03 CSCL 03/2

AVAIL: NTIS HE ATAYME AUS USEL 03/2 CONFERENCES, MAGNETIC FIELD CONFIGURATIONS, MAGNETOHYDRODYNAMIC STABILITY, MAGNETOSTATICS, PLASMAS (PHYSICS), RADIO ASTRONOMY, SOLAR PLASMAS (PHYSICS), RADIO ASTRONOMY, SOLAR ATMOSPHERE, SOLAR CORONA, SOLAR MAGNETIC FIELD, SOLAR PHYSICS, SOLAR PROMINENCES, SUN

N87-20947\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.

STATISTICAL ASPECTS OF SOLAR FLARES

ROBERT M. WILSON Apr. 1987 41 p (NASA-TP-2714; NAS 1.60:2714) Avail: NTIS HC A03/MF A01 CSCL 03B

SOLAR FLARES, SOLAR PROMINENCES, STATISTICAL ANALYSIS

N87-21785\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

RAPID FLUCTUATIONS IN SOLAR FLARES

BRIAN R. DENNIS, ed., LARRY E. ORWIG, ed., and ALAN L. KIPLINGER, ed. (Systems Applied Sciences Corp.-Technologies, Landover, Md.) 1986 491 p Workshop held in Lanham, Md., 30 Sep. - 4 Oct. 1985

(NASA-CP-2449; NAS 1.55:2449) Avail: NTIS HC A21/MF A03 CSCL 03B

CONFERENCES, MICROWAVES, OSCILLATIONS, PLASMA PHYSICS, RADIO WAVES, SOLAR FLARES, X RAYS

National Aeronautics and Space Administration. N88-11609\*# Goddard Space Flight Center, Greenbelt, MD.

THEORETICAL PROBLEMS IN HIGH RESOLUTION SOLAR PHYSICS, 2

G. ATHAY, ed. (National Center for Atmospheric Research, Boulder, Colo.) and D. S. SPICER, ed. Sep. 1987 141 p Workshop held in Boulder, Colo., 15-17 Sep. 1986

(NASA-CP-2483; REPT-87B0401; NAS 1.55:2483) Avail: NTIS HC A07/MF A01 CSCL 03B

HIGH RESOLUTION, MAGNETIC FLUX, SOLAR MAGNETIC FIELD, SOLAR OBSERVATORIES, SOLAR PHYSICS

N89-30151\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

## NIMBUS-7 ERB SOLAR ANALYSIS TAPE (ESAT) USER'S GUIDE

EUGENE MAJOR, JOHN R. HICKEY, H. LEE KYLE, BRADLEY M. ALTON, and BRENDA J. VALLETTE (Research and Data Systems, Inc., Lanham, MD.) Nov. 1988 92 p

(NASA-RP-1211; REPT-88-204; NAS 1.61:1211) Avail: NTIS HC A05/MF A01 CSCL 03B

Seven years and five months of Nimbus-7 Earth Radiation Budget (ERB) solar data are available on a single ERB Solar Analysis Tape (ESAT). The period covered is November 16, 1978 through March 31, 1986. The Nimbus-7 satellite performs approximately 14 orbits per day and the ERB solar telescope observes the sun once per orbit as the satellite crosses the southern terminator. The solar data were carefully calibrated and screened. Orbital and daily mean values are given for the total solar irradiance plus other spectral intervals (10 solar channels in all). In addition, selected solar activity indicators are included on the ESAT. The ESAT User's Guide is an update of the previous ESAT User's Guide (NASA TM 86143) and includes more detailed information on the solar data calibration, screening procedures, updated solar data plots, and applications to solar variability. Details of the tape format, including source code to access ESAT, are included. Author

N90-12456\*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL

ON THE STATISTICS OF EL NINO OCCURRENCES AND THE RELATIONSHIP OF EL NINO TO VOLCANIC AND SOLAR/GEOMAGNETIC ACTIVITY

ROBERT M. WILSON Washington Sep. 1989 62 p (NASA-TP-2948; NAS 1.60:2948) Avail: NTIS HC A04/MF A01 CSCL 03B

AIR WATER INTERACTIONS. EL NINO. GEOMAGNETISM. SOLAR TERRESTRIAL INTERACTIONS, VOLCANOES

## 93

## SPACE RADIATION

Includes cosmic radiation; and inner and outer earth's radiation belts

N87-25984\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD. COSMIC RAY HEAVY ION LET MAPPING FOR ALUMINUM.

SILICON, AND TISSUE TARGETS E. G. STASSINOPOULOS, J. M. BARTH, and T. M. JORDAN (EMP Consultants, Northridge, Calif.) Apr. 1987 264 p (NASA-RP-1180; REPT-8780034; NAS 1.61:1180) Avail: NTIS HC A12/MF A02 CSCL 03B

Linear energy transfer (LET) values in aluminum, silicon, and tissue targets have been calculated for 31 galactic cosmic ray ion species in eight different units. The values are described for single event upset (SEU) effect assessments or radiobiological evaluations. The data are presented in graphical and tabular form Author

N89-14210\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

SOLAR-FLARE SHIELDING WITH REGOLITH AT A LUNAR-BASE SITE

JOHN E. NEALY, JOHN W. WILSON, and LAWRENCE W. TOWNSEND Dec. 1988 21 p

(NASA-TP-2869; L-16488; NAS 1.60:2869) Avail: NTIS HC A03/MF A01 CSCL 03B

LUNAR BASES, LUNAR SURFACE, RADIATION DOSAGE, RADIATION SHIELDING, SOLAR FLARES

N89-16714\*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

BENCHMARK SOLUTIONS FOR THE GALACTIC ION TRANSPORT EQUATIONS: ENERGY AND SPATIALLY DEPENDENT PROBLEMS

BARRY D. GANAPOL (Arizona Univ., Tucson.), LAWRENCE W.

## 93 SPACE RADIATION

TOWNSEND, and JOHN W. WILSON Washington, DC Mar. 1989 31 p

(NASA-TP-2878; L-16519; NAS 1.60:2878) Avail: NTIS HC A03/MF A01 CSCL 03B

EQUATIONS OF MOTION, GALACTIC RADIATION, HEAVY IONS, ION BEAMS, IONIC MOBILITY, RADIATION HAZARDS, TRANSPORT THEORY

**N89-17562\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

BRYNTRN: A BARYON TRANSPORT MODEL

JOHN W. WILSON, LAWRENCE W. TOWNSEND, JOHN E. NEALY, SANG Y. CHUN, B. S. HONG, WARREN W. BUCK, S. L. LAMKIN, BARRY D. GANAPOL, FERDOUS KHAN, and FRANCIS A. CUCINOTTA (Old Dominion Univ., Norfolk, VA.) Washington, DC Mar. 1989 84 p

(NASA-TP-2887; L-16512; NAS 1.60:2887) Avail: NTIS HC A05/MF A01 CSCL 03B

BARYONS, COMPUTER PROGRAMS, DATA BASES, ENERGY TRANSFER, TRANSPORT PROPERTIES

**N89-25103\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

KAON-NUCLEUS SCATTERING

BYUNGSIK HONG, KHIN MAUNG MAUNG, JOHN W. WILSON, and WARREN W. BUCK (Hampton Inst., VA.) 1989 30 p (NASA-TP-2920; L-16583; NAS 1.60:2920) Avail: NTIS HC A03/MF A01 CSCL 03A

ABSORPTION CROSS SECTIONS, EIKONAL EQUATION, KAONS, MESON-NUCLEON INTERACTIONS, NUCLEAR SCATTERING, NUCLEONS, PARTICLE COLLISIONS, PARTICLE INTERACTIONS, PROTON SCATTERING, SCATTERING CROSS SECTIONS, SCHROEDINGER EQUATION

**N90-18357\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

# RADIATION EXPOSURE FOR MANNED MARS SURFACE MISSIONS

LISA C. SIMONSEN, JOHN E. NEALY, LAWRENCE W. TOWNSEND, and JOHN W. WILSON Washington Mar. 1990 25 p

(NASA-TP-2979; L-16708; NAS 1.60:2979) Avail: NTIS HC A03/MF A01 CSCL 03B

GALACTIC COSMIC RAYS, MANNED MARS MISSIONS, MARS ATMOSPHERE, MARS SURFACE, RADIATION DOSAGE, SOLAR FLARES

**N90-25031\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA. **IMPROVED MODEL FOR SOLAR COSMIC RAY EXPOSURE IN** 

IMPROVED MODEL FOR SOLAR COSMIC RAY EXPOSURE IN MANNED EARTH ORBITAL FLIGHTS

JOHN W. WILSON, JOHN E. NEALY, WILLIAM ATWELL, FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.), JUDY L. SHINN, and LAWRENCE W. TOWNSEND Washington Jun. 1990 14 p

(NASA-TP-2987; L-16759; NAS 1.60:2987) Avail: NTIS HC A03/MF A01 CSCL 03B

ASTRONAUTS, EXPOSURE, FLUENCE, MATHEMATICAL MODELS, ORGANS, RADIATION DOSAGE, RADIATION SHIELDING, SOLAR COSMIC RAYS

**N90-29290\***# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

COMPARISON OF DOSE ESTIMATES USING THE BUILDUP-FACTOR METHOD AND A BARYON TRANSPORT CODE (BRYNTRN) WITH MONTE CARLO RESULTS

JUDY L. SHINN, JOHN W. WILSON, JOHN E. NEALY, and FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.) Washington Oct. 1990 29 p

(NASA-TP-3021; L-16806; NAS 1.60:3021) Avail: NTIS HC A03/MF A01 CSCL 03B

COMPUTER PROGRAMS, EXTRATERRESTRIAL RADIATION,

MONTE CARLO METHOD, RADIATION DOSAGE, RADIATION SHIELDING, RADIATION TRANSPORT

## 99

## GENERAL

**N87-24390\*#** National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

ENGINEER IN CHARGE: A HISTORY OF THE LANGLEY AERONAUTICAL LABORATORY, 1917-1958

JAMES R. HANSEN (Maine Univ., Orono.) Washington, D.C. 1986 643 p NASA History Series

(NASW-3502)

(NASA-SP-4305; NAS 1.21:4305) Avail: SOD HC \$30.00 as 033-000-00999-2; NTIS MF A01 CSCL 05B

A history is presented by using the most technologically significant research programs associated with the Langley Aeronautical Laboratory from 1917 to 1958 and those programs that, after preliminary research, seemed best to illustrate how the laboratory was organized, how it works, and how it cooperated with industry and the military. B.G.

**N88-14062\*#** National Aeronautics and Space Administration, Washington, DC.

ASTRONAUTICS AND AERONAUTICS, 1978: A CHRONOLOGY BETTE R. JANSON (Creative Resources and Planning, Fairfax, Va.) 1986 394 p //s NASA History Series

(NASA ORDER W-73289) (NASA-SP-4023; NAS 1.21:4023) Avail: SOD HC \$13.00 as 033-000-01010-9; NTIS MF A01 CSCL 05D

This is the 18th in a series of annual chronologies of significant events in the fields of astronautics and aeronautics. Events covered are international as well as national and political as well as scientific and technical. This series is a reference work for historians, NASA personnel, government agencies, congressional staffs, and the media. Author

**N88-25428\*#** National Aeronautics and Space Administration, Washington, DC.

NASA ĤISTORICAL DATA BOOK. VOLUME 1: NASA RESOURCE 1958-1968

JANE VANNIMMEN, LEONARD C. BRUNO, and ROBERT L. ROSHOLT 1988 639 p

(NASW-3597)

(NASA-SP-4012-VOL-1; NAS 1.21:4012-VOL-1; LC-74-600126) Avail: NTIS MF A04; SOD HC \$57.00 in set of 3 as 033-000-01017-6 CSCL 05D

This is Volume 1, NASA Resources 1958-1968, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

**N88-25429\***# National Aeronautics and Space Administration, Washington, DC.

#### NASA HISTORICAL DATA BOOK. VOLUME 2: PROGRAMS AND PROJECTS 1958-1968

LINDA NEUMAN EZELL 1988 652 p

(NASW-3597)

(NASA-SP-4012-VOL-2; NAS 1.21:4012-VOL-2; LC-74-600126) Avail: NTIS MF A04; SOD HC \$57.00 in set of 3 as 033-000-01017-6 CSCL 05D

This is Volume 2, Programs and Projects 1958-1968, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in

aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

N88-25430\*# National Aeronautics and Space Administration, Washington, DC.

#### NASA HISTORICAL DATA BOOK. VOLUME 3: PROGRAMS AND PROJECTS 1969-1978 LINDA NEUMAN EZELL 1988 492 p

(NASW-3597)

(NASA-SP-4012-VOL-3; NAS 1.21:4012-VOL-3; LC-74-600126) Avail: NTIS MF A03; SOD HC \$57.00 in set of 3 as 033-000-01017-6 CSCL 05D

This is Volume 3, Programs and Projects 1969-1978, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

**N89-25946\*#** National Aeronautics and Space Administration, Washington, DC.

WHERE NO MAN HAS GONE BEFORE: A HISTORY OF APOLLO LUNAR EXPLORATION MISSIONS

WILLIAM DAVID COMPTON 1988 420 p Original contains color illustrations

(NASA-SP-4214; NAS 1.21:4214) Avail: NTIS HC A18/MF A03 CSCL 05D

This book is a narrative account of the development of the science program for the Apollo lunar landing missions. It focuses on the interaction between scientific interests and operational considerations in such matters as landing site selection and training of crews, quarantine and back contamination control, and presentation of results from scientific investigations. Scientific exploration of the moon on later flights, Apollo 12 through Apollo 17 is emphasized.

**N89-26803\*#** National Aeronautics and Space Administration, Washington, DC.

ASTRONAUTICS AND AERONAUTICS, 1985: A CHRONOLOGY BETTE R. JANSON Mar. 1988 545 p

(NASA-SP-4025; NAS 1.21:4025; LC-65-60308) Avail: NTIS HC A23/MF A03; also available SOD HC \$22.00 as 033-000-01022-2 CSCL 05B

This book is part of a series of annual chronologies of significant events in the fields of astronautics and aeronautics. Events covered are international as well as national, in political as well as scientific and technical areas. This series is an important reference work used by historians, NASA personnel, government agencies, and congressional staffs, as well as the media. Author

**N89-26805\*#** National Aeronautics and Space Administration, Washington, DC.

# ORDERS OF MAGNITUDE: A HISTORY OF THE NACA AND NASA, 1915-1990

ROGER E. BILSTEIN Jul. 1989 171 p ERRATUM: Coauthored by Frank W. Anderson, Jr.

(NASA-SP-4406; NAS 1.21:4406) Avail: NTIS HC A08/MF A01 CSCL 05D

This edition brings up to date the history of U.S. agencies for space exploration, the NACA and NASA, from 1915 through 1990. Early aviation and aeronautics research are described, with particular emphasis on the impact of the two world wars on aeronautics development and the postwar exploitation of those technologies. The reorganization and expansion of the NACA into NASA is described in detail as well as NASA's relationship with industry, the university system, and international space agencies such as the ESA. The dramatic space race of the 1950 and 1960s is recounted through a detailed histroy of the Gemini and Apollo programs and followed by a discussion of the many valuable social/scientific application of aeronautics technologies, many of which were realized through the launching of successful satellite projects. The further solar system explorations of the Voyager missions are described, as it the Challenger tragedy and the 1988 return to space of the Shuttle program. Future plans are outlined for a cooperatively funded international space station to foster the ongoing study of space science. Author

**N90-25928\*#** National Aeronautics and Space Administration, Washington, DC.

## ASTRONAUTICS AND AERONAUTICS, 1979-1984: A CHRONOLOGY

BETTE R. JANSON and ELEANOR H. RITCHIE Nov. 1989 736 p

(NASA-SP-4024; NAS 1.21:4024) Avail: NTIS HC A99/MF A04; also available SOD HC \$24.00 as 033-000-01080-0 CSCL 05D

This volume of the Astronautics and Aeronautics series covers 1979 through 1984. The series provides a chronological presentation of all significant events and developments in space exploration and the administration of the space program during the period covered. Author NASA Scientific and Technical Publications 1987-1990

#### **Typical Subject Index Listing**



The subject heading is a key to the subject content of the document. The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of document content, a title extension is added, separated from the title by three hyphens. The (NASA or AIAA) accession number and the page number are included in each entry to assist the user in locating the abstract in the abstract section. If applicable, a report number is also included as an aid in identifying the document. Under any one subject heading, the accession numbers are arranged in sequence with the AIAA accession numbers appearing first.

# Α

ASIANS					
O stars and Wolf-Rayet stars					
[NASA-SP-497]	р	74	N89	-116	57
ABORTED MISSIONS					
Simulator evaluation of a displa	У	for	a	Fake	off
Performance Monitoring System					
[NASA-TP-2908]	р	20	N89	-234	69
ABSORPTION CROSS SECTIONS					
Atlas of absorption lines from 0 to	17	'900	cm	(sup	)-1
(NASA-RP-1188)	р	49	N87	-289	55
Kaon-nucleus scattering					
[NASA-TP-2920]	р	80	N89	-251	03
ABSORPTION SPECTRA					
Atlas of absorption lines from 0 to	17	<sup>7</sup> 900	сm	(sup	)-1
[NASA-RP-1188]	р	49	N87	-289	955
ACCELEROMETERS					
Further developments in modeling	ıg	digi	tal	cont	irol
systems with MA-prefiltered measurem	en	ts			
[NASA-TP-2909]	р	33	N89	-245	07
ACCESS CONTROL					
Proceedings of the 5th Annual Users	s' (	Confe	eren	ce	
[NASA-CP-2399]	ρ	62	N87	-107	20
ACCUMULATORS					
Performance of textured carbon on	C	oppe	r ele	ectro	de
multistage depressed collectors wit	hι	med	ium	pow	/er
traveling wave tubes					
[NASA-TP-2665]	ρ	34	N87	-179	90

Calculation of secondary electron trajectories in multistage depressed collectors for microwave amplifiers p 34 N87-17991 (NASA-TP-2664) Design, fabrication and performance of small, graphite

electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes p 35 N87-20474 [NASA-TP-2693]

Analytical and experimental performance of a dual-mode traveling wave tube and multistage depressed collector [NASA-TP-2752] p 35 N87-25532

Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube

[NASA-TP-2788] p 35 N88-15146 Performance of a multistage depressed collector with machined titanium electrodes

[NASA-TP-2891] p 35 N89-15337 Spent-beam refocusing analysis and multistage depressed collector design for a 75-W. 59- to 64-GHz coupled-cavity traveling-wave tube

NASA-TP-30391 o 35 N90-27965 ACCURACY

Foundations of measurement and instrumentation [NASA-RP-1222] p 40 N90-21351 ACEE PROGRAM

The ACEE program and basic composites research at Langley Research Center (1975 to 1986): Summary and bibliography o 28 N87-29612

[NASA-RP-1177] ACOUSTIC ATTENUATION

Measured and calculated acoustic attenuation rates of tuned resonator arrays for two surface impedance distribution models with flow INASA-TP-27661

p 67 N88-17440 Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed wind tunnel acoustic treatment

[NASA-TP-2996] p 22 N90-19242 ACOUSTIC EMISSION

Research in materials, 1989 structures, structural dynamics and

[NASA-CP-10024] p 46 N89-24626 ACOUSTIC IMPEDANCE

Experimental validation of a two-dimensional shear-flow model for determining acoustic impedance

[NASA-TP-2679] p 66 N87-20798 Measured and calculated acoustic attenuation rates of turned resonator arrays for two surface impedance distribution models with flow

[NASA-TP-2766] p 67 N88-17440 ACOUSTIC MEASUREMENT

Power cepstrum technique with application to model nelicopter acoustic data INASA-TP-25861 p 66 N87-17479

Tip aerodynamics and acoustics test: A report and data survey

[NASA-RP-1179] p 9 N89-17579 Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed wind tunnel acoustic treatment

[NASA-TP-2996] p 22 N90-19242 ACOUSTICS

Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results [NASA-TP-2658] p 4 N87-18537 Evaluation of a scale-model experiment to investigate

long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 ACTIVE CONTROL

Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application

INASA-TP-24821 p 19 N88-14987 Control surface spanwise placement in active flutter

suppression systems p 45 N89-16196 (NASA-TP-2873)

Effect of control surface mass unbalance on the stability of a closed-loop active control system [NASA-TP-2952] p 47 N90-12042

ACTUATORS

The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REVI p 43 N87-16321 The 21st Aerospace Mechanisms Symposium

[NASA-CP-2470] p 43 N87-29858 The 22nd Aerospace Mechanisms Symposium

p 44 N88-21468 [NASA-CP-2506] Integrated tools for control-system analysis

[NASA-TP-2885] p 20 N89-19309 The 24th Aerospace Mechanisms Symposium

p 47 N90-22079 [NASA-CP-3062]

#### AEROACOUSTICS

NASA/Army Rotorcraft Technolog	y. Volume	2: Materials
and Structures, Propulsion and D	Drive Sys	terns, Flight
Dynamics and Control, and Acoustic	s	-
[NASA-CP-2495-VOL-2]	р 1	N88-16632
Airfoil self-noise and prediction		
[NASA-RP-1218]	p 67	N89-25673
AEROASSIST		

Technology for Future NASA Missions: Civil Space Technology Initiative (CSTI) and Pathfinder INASA-CP-30161

p 22 N89-11760 Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration

INASA-TP-29561 p 11 N90-14185 AFRO8RAKING

The effect of interplanetary trajectory options on a manned Mars aerobrake configuration

[NASA-TP-3019] AERODYNAMIC BALANCE p 24 N90-26036

Piloted simulation study of the effects of an automated trim system on flight characteristics of a light twin-engine airplane with one engine inoperative

(NASA-TP-2633) p.3 N87-10843 Drag measurements on a laminar-flow body of revolution in the 13-inch magnetic suspension and balance system

[NASA-TP-2895] p 9 N89-19232 A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effectors [NASA-TP-2907] p 20 N89-23468

AERODYNAMIC CHARACTERISTICS

Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles

INASA-TP-23921 p 14 N87-17693 Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted busher propellers

[NASA-TP-2763] p 6 N87-29462 Planform effects on the supersonic aerodynamics of

multibody configurations p 6 N88-12454 INASA-TP-27621 Aerodynamic characteristics of wings designed with a

combined-theory method to cruise at a Mach number of 4.5 [NASA-TP-2799] p 7 N88-19420

Influence of wind shear on the aerodynamic characteristics of airplanes

[NASA-TP-2827] p 12 N88-26344 Steady-state and transitional aerodynamic characteristics of a wing in simulated heavy rain

p 10 N89-25951 INASA-TP-29321 A procedure for computing surface wave trajectories on an inhomogeneous surface

p 10 N89-26811 [NASA-TP-2929] Low-speed, high-lift aerodynamic characteristics of

slender, hypersonic accelerator-type configurations [NASA-TP-2945] p 10 N90-10830

Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration

[NASA-TP-2956] p 11 N90-14185 NASA supercritical airfoils: A matrix of family-related airfoils

[NASA-TP-2969] p 11 N90-16710 CAST-10-2/DOA 2 Airfoil Studies Workshop Results

[NASA-CP-3052] p 22 N90-17647 Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration

[NASA-TP-2982] p 20 N90-19239 aerodynamic Experimental and theoretical characteristics of a high-lift semispan wing model

p 11 N90-20046 [NASA-TP-2990] Dynamic ground-effect measurements on the F-15 STOL and Maneuver Technology Demonstrator (S/MTD)

configuration INASA-TP-30001 p 11 N90-22531 Aerodynamic characteristics of two rotorcraft airfoils

designed for application to the inboard region of a main rotor blade INASA-TP-30091

p 11 N90-24239

#### **AERODYNAMIC COEFFICIENTS**

[NASA-TP-3036]

[NASA-TP-2222]

implementation

[NASA-TP-2418]

[NASA-SP-501]

[NASA-TP-2956]

[NASA-TP-3009]

[NASA-TP-2628]

[NASA-TP-2627]

NASA-TP-26441

[NASA-TP-2223]

[NASA-TP-2706]

[NASA-TP-2728]

[NASA-TP-2727]

[NASA-CP-2397]

[NASA-TP-2805]

(NASA-TP-2796)

[NASA-TP-2940]

configuration

[NASA-TP-2956]

Experimental

[NASA-TP-2990]

[NASA-TP-2352]

[NASA-TP-2392]

[NASA-TP-2742]

[NASA-TP-2762]

[NASA-TP-2811]

[NASA-RP-1235]

[NASA-TP-2736]

AERODYNAMIC FORCES

nonaxisymmetric nozzles

multibody configurations

micro-computer applications

on supersonic cruise aircraft

AERODYNAMIC DRAG

14- x 22-foot subsonic tunnel

Subsonic

design-by-analysis codes

general aviation research airplane

longitudinal

and

configuration

rotor blade

method

aircraft

emulating

AERODYNAMIC COEFFICIENTS

oblique-wing research airplane

Powered-lift aircraft technology

SUBJECT INDEX

Effect of tail size reductions on longitudinal aerodynamic AERODYNAMIC HEATING characteristics of a three surface F-15 model with nonaxisymmetric nozzles Finite-element reentry heat-transfer analysis of space shuttle Orbiter p 11 N90-25938 [NASA-TP-2657] p 37 N87-29795 Trajectory characteristics and heating of hypervelocity Flight-determined aerodynamic derivatives of the AD-1 ojectiles having large ballistic coefficients p 7 N88-19412 [NASA-TP-2614] p 19 N87-10871 Aerodynamic pressures and heating rates on surfaces Combined aerodynamic and structural dynamic problem between split elevons at Mach 6.6 routines (CASPER): [NASA-TP-2855] Theory p 37 N89-12822 and A review of high-speed, convective, heat-transfer p 4 N87-17669 computation methods NASA-TP-29141 p 38 N89-27116 p 15 N90-12589 AERODYNAMIC INTERFERENCE Measured and predicted aerodynamic coefficients and Interference effects of thrust reversing on horizontal tail shock shapes for Aeroassist Flight Experiment (AFE) effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90 p 11 N90-14185 [NASA-TP-2350] p 19 N87-10870 Aerodynamic characteristics of two rotorcraft airfoils CAST-10-2/DOA 2 Airfoil Studies Workshop Results designed for application to the inboard region of a main (NASA-CP-30521 p 22 N90-17647 AERODYNAMIC LOADS p 11 N90-24239 Cornering characteristics of the main-gear tire of the AERODYNAMIC CONFIGURATIONS snace shuttle orbiter Forward-swept wing configuration designed for high p 14 N88-18583 [NASA-TP-2790] maneuverability by use of a transonic computational Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at p 3 N87-11702 a Mach number of 6.6 Effects of winglet on transonic flutter characteristics of INASA-TP-29881 p 38 N90-23670 a cantilevered twin-engine-transport wing model AERODYNAMIC NOISE p 43 N87-13789 Airfoil self-noise and prediction Flight investigation of the effect of tail configuration on [NASA-RP-1218] p 67 N89-25673 stall, spin, and recovery characteristics of a low-wing AERODYNAMIC STABILITY Transonic flow analysis for rotors. Part 2: Three-dimensional, unsteady, full-potential calculation p 13 N87-16815 Flight characteristics of the AD-1 oblique-wing research [NASA-TP-2375-PT-2] p 3 N87-10841 Effects of the installation and operation of iet-exhaust p 19 N87-18570 vaw vanes on the longitudinal and lateral-directional On minimizing the number of calculations in characteristics of the F-14 airplane [NASA-TP-2769] p.6 N88-12455 Integrated Technology Rotor Methodology Assessment p 5 N87-23586 Effect of Reynolds number variation on aerodynamics Workshop of a hydrogen-fueled transport concept at Mach 6 [NASA-CP-10007] p 2 N88-27148 p 5 N87-26031 Analysis of flight data from a High-Incidence Research Model by system identification methods lateral-directional and characteristics of a forward-swept-wing configuration at angles of attack up to 47 deg p 20 N90-10074 fighter INASA-TP-29401 Effect of control surface mass unbalance on the stability p 6 N87-26874 of a closed-loop active control system p 47 N90-12042 (NASA-TP-2952) Langley Symposium on Aerodynamics, volume 1 AERODYNAMIC STALLING p 1 N88-14926 Flight investigation of the effect of tail configuration on A performance index approach to aerodynamic design stall, spin, and recovery characteristics of a low-wing with the use of analysis codes only general aviation research airplane p 7 N88-18552 [NASA-TP-2644] p 13 N87-16815 A review of technologies applicable to low-speed flight Flight investigation of the effects of an outboard of high-performance aircraft investigated in the Langley wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light p 7 N88-20264 airplane Analysis of flight data from a High-Incidence Research [NASA-TP-2691] p 14 N87-23614 al aerodynamic Model by system identification methods and transitional Steady-state p 20 N90-10074 characteristics of a wing in simulated heavy rain Measured and predicted aerodynamic coefficients and [NASA-TP-2932] p 10 N89-25951 shock shapes for Aeroassist Flight Experiment (AFE) AERODYNAMICS An experimental investigation of an advanced turboprop p 11 N90-14185 installation on a swept wing at subsonic and transonic theoretical aerodynamic sneeds characteristics of a high-lift semispan wing model [NASA-TP-2729] p 6 N87-26883 p 11 N90-20046 Aeronautical engineering: A continuing bibliography with indexes (supplement 217) [NASA-SP-7037(217)] p 1 N87-27613 Effects of tail span and empennage arrangement on VASA-SP-7037(217)) Supersonic aerodynamics of delta wings VASA-TP-27711 p 7 N88-17615 drag of a typical single-engine fighter aft end p 3 N87-10838 [NASA-TP-2771] Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with Aeronautical engineering: A cumulative index to a continuing bibliography [NASA-SP-7037(222)] p 7 N88-19416 Joint University Program for Air Transportation p 14 N87-17693 Research, 1986 Drag measurements of blunt stores tangentially mounted p 2 N88-23715 on a flat plate at supersonic speeds (NASA-CP-2502) Nonlinear programming extensions to rational function p 6 N87-27626 approximation methods for unsteady aerodynamic forces Planform effects on the supersonic aerodynamics of p 15 N88-24623 INASA-TP-27761 Aeronautical engineering: A continuing bibliography with p.6 N88-12454 indexes An economical semi-analytical orbit theory for [NASA-SP-7037(229)] p 2 N88-27163 Validation of a pair of computer codes for estimation p 66 N89-14052 and optimization of subsonic aerodynamic performance Exhaust nozzles for propulsion systems with emphasis of simple hinged-flap systems for thin swept wings [NASA-TP-2828] p 8 N89-10024 p 18 N90-21037 Aeronautical engineering: A continuing bibliography with indexes (supplement 242) Steady and unsteady aerodynamic forces from the [NASA-SP-7037(242)] p 2 N89-29304 SOUSSA surface-panel method for a fighter wing with tip Effect of control surface mass unbalance on the stability missile and comparison with experiment and PANAIR of a closed-loop active control system p 5 N87-26032 p 47 N90-12042 [NASA-TP-2952] Aeronautical engineering: A continuing bibliography with indexes (supplement 255) [NASA-SP-7037(255)]

Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces p 15 N88-24623 [NASA-TP-2776]

p 2 N90-27648

AEROELASTIC RESEARCH WINGS In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane p 19 N87-10103 NASA-TP-2224 AEROFLASTICITY NASA/Army Rotorcraft Technology. Volume 1: Aerodynamics, and Dynamics and Aeroelasticity p 1 N88-16625 [NASA-CP-2495-VOL-1] An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter rotor in hover [NASA-TP-2546] p 7 N88-20257 Shape sensitivity analysis of wing static aeroelastic characteristics [NASA-TP-2808] p 15 N88-22031 Lewis Structures Technology, 1988. Volume 1: Structural Dynamics [NASA-CP-3003-VOL-1] p 44 N88-23226 Integrated Technology Rotor Methodology Assessment Workshop NASA-CP-100071 p 2 N88-27148 Transonic Unsteady Aerodynamics and Aeroelasticity 1987. part 1 [NASA-CP-3022-PT-1] p 9 N89-19234 Transonic Unsteady Aerodynamics and Aeroelasticity 1987. part 2 [NASA-CP-3022-PT-2] p 9 N89-19247 Method for experimental determination of flutter speed by parameter identification [NASA-TP-2923] p 15 N89-26844 AERONAUTICAL ENGINEERING Engineer in charge: A history of the Langley Aeronautical Laboratory, 1917-1958 p 80 N87-24390 [NASA-SP-4305] Aeronautical engineering: A continuing bibliography with indexes (supplement 217) [NASA-SP-7037(217)] p 1 N87-27613 Astronautics and aeronautics, 1978: A chronology p 80 N88-14062 [NASA-SP-4023] Aeronautical engineering: A cumulative index to a continuing bibliography (NASA-SP-7037(222)) p 7 N88-19416 NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 Aeronautical engineering: A continuing bibliography with indexes [NASA-SP-7037(229)] p 2 N88-27163 Aeronautical engineering: A continuing bibliography with indexes (supplement 242) [NASA-SP-7037(242)] p 2 N89-29304 1979-1984: A Astronautics and Aeronautics. chronology [NASA-SP-4024] p 81 N90-25928 Aeronautical engineering: A continuing bibliography with indexes (supplement 255) [NASA-SP-7037(255)] p 2 N90-27648 AERONAUTICS NASA historical data book. Volume 2: Programs and projects 1958-1968 INASA-SP-4012-VOL-21 p 80 N88-25429 NASA historical data book. Volume 3: Programs and projects 1969-1978 [NASA-SP-4012-VOL-3] p 81 N88-25430 Astronautics and aeronautics, 1985: A chronology [NASA-SP-4025] p 81 N89-26803 AEROSOLS Airborne lidar measurements of El Chichon stratospheric erosols, May 1983 INASA-RP-11721 p 51 N87-11358 SAGE aerosol measurements. Volume 3; January 1, 1981 to November 18, 1981 p 51 N87-17417 (NASA-RP-1173) Space Opportunities for Tropospheric Chemistry Research INASA-CP-24501 p 51 N87-18248 Airborne lidar measurements of El Chichon stratospheric aerosols, January 1984 p 51 N87-20663 [NASA-RP-1175] Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts p 49 N87-28162 [NASA-TP-2756] Airborne particulate matter in spacecraft [NASA-CP-2499] p 59 N88-14623 SAM 2 data user's guide p 52 N88-25094 [NASA-RP-1200] Forty-eight-inch lidar aerosol measurements taken at the Langley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234 Gas-Grain Simulation Facility. Fundamental studies of

particle formation and interactions. Volume 1: Executive

p 59 N89-24022

summary and overview [NASA-CP-10026-VOL-1]

#### SUBJECT INDEX

Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts. candidate experiments and feasibility study INASA-CP-10026-VOL-21 p 59 N89-24023 AEROSPACE ENGINEERING Astronautics and aeronautics, 1978: A chronology [NASA-SP-4023] p 80 N88-14062 The 1988 Goddard Conference on Space Applications of Artificial Intelligence p 64 N88-30330 (NASA-CP-3009) NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 35) [NASA-SP-7039(35)-SECT-1] p 71 N89-25775 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 35) p 71 N89-29264 [NASA-SP-7039(35)-SECT-2] The 24th Aerospace Mechanisms Symposium (NASA-CP-3062) p 47 N90-22079 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 37) [NASA-SP-7039(37)-SECT-1] p 71 N90-25698 Astronautics and Aeronautics. 1979-1984: A chronology [NASA-SP-4024] n 81 N90-25928 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 37) p 71 N90-26700 [NASA-SP-7039(37)-SECT-2] **AEROSPACE ENVIRONMENTS** Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations [NASA-CP-2460] p 52 N87-20665 Microgravity Fluid Management Symposium p 32 N87-21141 [NASA-CP-2465] Spacelab 3 Mission Science Review INASA-CP-24291 p 36 N87-22103 Airborne particulate matter in spacecraft [NASA-CP-2499] p 59 N88-14623 Space Station Induced Monitoring INASA-CP-30211 p 73 N89-15790 Workshop on Two-Phase Fluid Behavior in a Space Environment p 38 N89-26184 INASA-CP-30431 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) INASA-CP-30591 p 62 N90-25503 AFROSPACE INDUSTRY Material characterization of superplastically formed titanium (Ti-6Al-2Sn-4Zr-2Mo) sheet [NASA-TP-2674] n 30 N87-20407 Wind shear detection. Forward-looking sensor technology [NASA-CP-10004] p 12 N88-14970 Issues in NASA program and project management p 69 N90-13277 [NASA-SP-6101(02)] AEROSPACE MEDICINE Aerospace medicine and biology: A cumulative index to the 1986 issues (supplement 293) p 59 N87-18976 [NASA-SP-7011(293)] Aerospace medicine and biology: A continuing bibliography with indexes (supplement 302) p 59 N87-30041 [NASA-SP-7011(302)] Aerospace medicine and biology: A cumulative index to a continuing bibliography (supplement 306) [NASA-SP-7011(306)] N88-18180 p 60 Aerospace medicine and biology: A continuing bibliography with indexes (supplement 315) p 60 N88-30281 [NASA-SP-7011(315)] Aerospace medicine and biology: Α continuing bibliography with indexes (supplement 327) [NASA-SP-7011(327)] p 60 N89-29951 Aerospace medicine and biology: A continuing bibliography with indexes (supplement 340) [NASA-SP-7011(340)] p 60 N90-28963 AEROSPACE PLANES Low-speed, high-lift aerodynamic characteristics of slender, hypersonic accelerator-type configurations [NASA-TP-2945] p 10 N90-10830 AFROSPACE SCIENCES NASA scientific and technical publications: A catalog Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1977-1986 [NASA-SP-7063(01)] p 70 N87-30218 NASA scientific and technical publications: A catalog Special Publications, Reference Publications, of Conference Publications, and Technical Papers, 1987 p 70 N88-22830 [NASA-SP-7063(02)] Fourth Conference on Artificial Intelligence for Space Applications

[NASA-CP-3013] p 63 N89-15549 NASA scientific and technical publications: A catalog of special publications, reference publications, conference publications, and technical papers, 1988

[NASA-SP-7063(03)] p 71 N90-10782

[NASA-CP-3023]

#### Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 The 23rd Aerospace Mechanisms Symposium [NASA-CP-3032] p 46 N89-23892 AEROTHERMODYNAMICS Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5 [NASA-TP-2631] p 35 N87-13664 Structural Integrity and Durability of Reusable Space Propulsion Systems [NASA-CP-2471] p 26 N87-22766 Aerothermal tests of quilted dome models on a flat plate exchange at a Mach number of 6.5 (NASA-TP-2804) o 37 N88-22325 AFTERBODIES Effects of empenhage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles p 14 N87-17693 [NASA-TP-2392] Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p 4 N87-21873 INASA-TP-27041 Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds [NASA-TP-2588] p 6 N88-10765 Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds INASA-TP-2753 p 6 N88-10771 AGING (METALLURGY) Stress corrosion study of PH13-8Mo stainless steel using the Slow Strain Rate Technique [NASA-TP-2934] n 30 N89-26976 Heat treatment study of the SiC/Ti-15-3 composite system INASA-TP-2970] p 29 N90-19302 AGRICULTURE Earth resources: A continuing bibliography with indexes (issue 57) [NASA-SP-7041(57)] p 49 N88-23314 AIR Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309 A rapid method for the computation of equilibrium chemical composition of air to 15000 K INASA-TP-2792 p 30 N88-16830 A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 p 38 N90-27064 (NASA-BP-1232) AIR DATA SYSTEMS Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack [NASA-TP-2716] p 14 N87-29497 AIR FLOW Conservation equations and physical models for hypersonic air flows in thermal chemical and nonequilibrium NASA-TP-2867 p 38 N89-16115 Conference AIR NAVIGATION Joint University Program for Air Transportation Research, 1983 p 1 N87-18520 INASA-CP-24511 document Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921 AIR POLLUTION SAGE aerosol measurements. Volume 3: January 1, 1981 to November 18, 1981 [NASA-RP-1173] p 51 N87-17417 Space Opportunities for Tropospheric Chemistry Research INASA-CP-24501 p 51 N87-18248 Airborne lidar measurements of El Chichon stratospheric aerosols, January 1984 [NASA-RP-1175] p 51 N87-20663 Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 AIR PURIFICATION 1987, part 1 Airborne particulate matter in spacecraft [NASA-CP-2499] p 55 p 59 N88-14623 AIR QUALITY Airborne particulate matter in spacecraft [NASA-CP-2499] p 59 N88-14623 An assessment model for atmospheric composition distribution

p 57 N89-20588

NASA Thesaurus supplement: A four part cumulative

p 71 N90-22438

supplement to the 1988 edition of the NASA Thesaurus

(supplement 3)

AEROSPACE SYSTEMS

NASA-SP-7064-SUPPL-3

#### **AIRCRAFT CONFIGURATIONS**

AIR SEA ICE INTERACTIONS Arctic Sea ice, 1973-1976: Satellite passive-microwave observations [NASA-SP-489] o 58 N87-24870 AIR TRAFFIC CONTROL Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study [NASA-TP-2616] p 16 N87-10864 Joint University Program for Air Transportation Research, 1985 [NASA-CP-2453] p 1 N87-27596 Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation [NASA-TP-2567] p 12 N87-29469 A piloted simulation study of data link ATC message p 13 N89-15900 INASA-TP-28591 Simulation evaluation of TIMER, a time-based, terminal air traffic, flow-management concept p 13 N89-15901 [NASA-TP-2870] Flight deck automation: Promises and realities [NASA-CP-10036] p 17 N90-13384 Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation NASA-TP-29781 p 13 N90-18378 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921 AIR TRAFFIC CONTROLLERS (PERSONNEL) Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation (NASA-TP-2978) p 13 N90-18378 AIR TRANSPORTATION Joint University Program for Air Transportation Research 1983 [NASA-CP-2451] N87-18520 p 1 Joint University Program for Air Transportation Research 1984 [NASA-CP-2452] p 1 N87-22604 Joint University Program for Air Transportation Research 1985 p1 N87-27596 [NASA-CP-2453] Flight deck automation: Promises and realities [NASA-CP-10036] p 17 N90-13384 Program for Air Transportation Joint University Research, 1988-1989 p 2 N90-20921 INASA-CP-30631 AIR WATER INTERACTIONS Nimbus-7 data product summary p 48 N89-22152 INASA-RP-12151 On the statistics of El Nino occurrences and the relationship of El Nino to volcanic and solar/geomagnetic activity [NASA-TP-2948] p 79 N90-12456 AIRBORNE EQUIPMENT Airborne lidar measurements of El Chichon stratospheric aerosols May 1983 INASA-BP-11721 p 51 N87-11358 Airborne lidar measurements of El Chichon stratospheric aerosols, January 1984 INASA-RP-11751 p 51 N87-20663 Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' p 12 N88-17616 [NASA-CP-10006] MARA (Multimode Airborne Radar Altimeter) system documentation. Volume 1: MARA system requirements INASA-RP-12261 p 39 N89-26209 AIRCRAFT COMPARTMENTS Annoyance response to simulated advanced turboprop aircraft interior noise containing tonal beats p 66 N87-24161 [NASA-TP-2689] Evaluation of the ride quality of a light twin engine airplane using a ride quality meter [NASA-TP-2913] p 2 N89-22568 AIRCRAFT CONFIGURATIONS Effects of tail span and empennage arrangement on drag of a typical single-engine fighter aft end p 3 N87-10838 [NASA-TP-2352] Planform effects on the supersonic aerodynamics of multibody configurations [NASA-TP-2762] p 6 N88-12454 Transonic Unsteady Aerodynamics and Aeroelasticity [NASA-CP-3022-PT-1] p 9 N89-19234 Evaluation of a strain-gage load calibration on a low-aspect-ratio wing structure at elevated temperature INASA-TP-29211 p 46 N89-28034 Fuselage design for a specified Mach-sliced area

distribution INASA-TP-2975 | p 16 N90-18385

A-3

#### **AIRCRAFT CONSTRUCTION MATERIALS**

configuration

[NASA-TP-3000]

[NASA-TP-2951]

Research, 1984

[NASA-CP-2452]

[NASA-RP-1168]

[NASA-TP-2769]

[NASA-CP-2432]

[NASA-CP-10006]

[NASA-TP-2815]

Research, 1986

[NASA-CP-2502]

[NASA-TP-2827]

[NASA-CP-3063]

AIRCRAFT DESIGN

INASA-TP-22241

Optimization, part 1

Optimization, part 2

[NASA-SP-4305]

[NASA-CP-2327-PT-1]

INASA-CP-2327-PT-21

Laboratory, 1917-1958

INASA-CP-2495-VOL-21

INASA-CP-2495-VOL-31

[NASA-TP-2799]

[NASA-CP-2413]

[NASA-TP-2835]

[NASA-TP-2907]

[NASA-CP-3034-PT-2]

[NASA-CP-3031-PT-1]

[NASA-CP-3031-PT-2]

[NASA-CP-3031-PT-3]

[NASA-CP-2487-PT-2]

[NASA-CP-2487-PT-3]

Optimization, part 1

Optimization, part 2

Optimization, part 3

[NASA-TP-2945]

Control, part 2

Control, part 3

**Dynamics** 

45

Research, 1988-1989

eclectic design concept

Conference

1986

AIRCRAFT CONTROL

p 14 N87-29499

p 9 N89-19247

p 28 N87-29612

p 46 N89-28034

p 29 N90-27788

p 14 N87-24458

aerodynamic

p 4 N87-20238

p 6 N87-27622

aerodynamic

Dynamic ground-effect measurements on the F-15 STOL NASA supercritical airfoils: A matrix of family-related and Maneuver Technology Demonstrator (S/MTD) airfoils [NASA-TP-2969] p 11 N90-22531 Fuselage design for a specified Mach-sliced area AIRCRAFT CONSTRUCTION MATERIALS distribution Evaluation of energy absorption of new concepts of [NASA-TP-2975] aircraft composite subfloor intersections AIRCRAFT ENGINES p 16 N90-26823 Turbine Engine Hot Section Technology, 1984 [NASA-CP-2339] p 43 N8 Joint University Program for Air Transportation Investigation of the misfueling of reciprocating piston aircraft engines p 1 N87-22604 [NASA-TP-2803] Application of parameter estimation to aircraft stability Lewis Structures Technology, 1988. Volume 2: Structural and control: The output-error approach Mechanics p 14 N87-29499 [NASA-CP-3003-VOL-2] Effects of the installation and operation of iet-exhaust Turbine Engine Hot Section Technology, 1987 vaw vanes on the longitudinal and lateral-directional [NASA-CP-2493] characteristics of the F-14 airplane AIRCRAFT FUELS p.6 N88-12455 Proceedings of the Circulation-Control Workshop, Low-energy gamma ray attenuation characteristics of aviation fuels [NASA-TP-2974] p 7 N88-17586 Airborne Wind Shear Detection and Warning Systems: AIRCRAFT GUIDANCE First Combined Manufacturers' and Technologists' Joint University Program for Air Research, 1983 p 12 N88-17616 [NASA-CP-2451] Rotorcraft flight-propulsion control integration: An Joint University Program for Air Research, 1984 p 19 N88-19475 [NASA-CP-2452] Joint University Program for Air Transportation Joint University Program for Air Research, 1986 p 2 N88-23715 [NASA-CP-2502] Influence of wind shear on the aerodynamic AIRCRAFT HAZARDS characteristics of airplanes p 12 N88-26344 [NASA-CP-2435] Joint University Program for Air Transportation AIRCRAFT INSTRUMENTS p 2 N90-20921 [NASA-TP-2960] In-flight total forces, moments and static aeroelastic AIRCRAFT LANDING characteristics of an oblique-wing research airplane p 19 N87-10103 (NASA-RP-11891 Recent Experiences in Multidisciplinary Analysis and o 13 N87-11717 and configuration Recent Experiences in Multidisciplinary Analysis and [NASA-TP-3000] AIRCRAFT MANEUVERS p 13 N87-11750 Engineer in charge: A history of the Langley Aeronautical [NASA-CP-2397] p 80 N87-24390 AIRCRAFT MODELS Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-1 p 1 N88-14926 derive linear aircraft models NASA/Army Rotorcraft Technology, Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight [NASA-TP-2768] Dynamics and Control, and Acoustics [NASA-RP-1207] p 1 N88-16632 NASA/Army Rotorcraft Technology. Volume 3: Systems Integration, Research Aircraft, and Industry attitudes p 1 N88-16650 (NASA-TP-2939) Aerodynamic characteristics of wings designed with a AIRCRAFT NOISE combined-theory method to cruise at a Mach number of p 7 N88-19420 [NASA-TP-2689] Laminar Flow Aircraft Certification p.8 N88-23737 User's manual for interactive LINEAR: A FORTRAN [NASA-TP-2825] program to derive linear aircraft models p 65 N89-16437 Transonic Symposium: Theory, Application, and irplane using a ride quality meter Experiment, Volume 1, Part 1 [NASA-TP-2913] INASA-CP-3020-VOL-1-PT-1] p 9 N89-20925 A closed-form trim solution vielding minimum trim drag for airplanes with multiple longitudinal-control effectors wind tunnel acoustic treatment p 20 N89-23468 [NASA-TP-2996] Computational Methods for Structural Mechanics and (NASA-CP-30671 p 46 N89-24654 AIRCRAFT PERFORMANCE Recent Advances in Multidisciplinary Analysis and Systems Certification p 15 N89-25146 [NASA-CP-2474] Recent Advances in Multidisciplinary Analysis and flight-crucial digital control system p 15 N89-25173 (NASA-TP-28571 Recent Advances in Multidisciplinary Analysis and p 15 N89-25201 [NASA-TP-2965] Low-speed, high-lift aerodynamic characteristics of AIRCRAFT SAFETY slender, hypersonic accelerator-type configurations p 10 N90-10830 and Space Programs [NASA-CP-2468] Research in Natural Laminar Flow and Laminar-Flow AIRCRAFT SPIN p 10 N90-12519 Research in Natural Laminar Flow and Laminar-Flow

p 20 N90-17639 Atmospheric Turbulence Relative to Aviation, Missile, p 55 N87-22341 Flight investigation of the effect of tail configuration on stall, spin, and recovery characteristics of a low-wing general aviation research airplane p 13 N87-16815

Transportation 8 aircraft tires of bias-ply and radial-belted design p 15 N88-21157 [NASA-TP-2810] n 1 N87-18520 Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various Transportation runway surface types and conditions. A summary of test p 1 N87-22604 results from joint FAA/NASA Runway Friction Program [NASA-TP-2917] p 16 N90-15902 Transportation Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements p 2 N88-23715 [NASA-TP-2977] p 42 N90-19595 AIRFOIL PROFILES Effect of advanced rotorcraft airfoil sections on the hover p 12 N87-10054 performance of a small-scale rotor model p 10 N89-24264 NASA-TP-28321 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 p 17 N90-18393 CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-CP-3052] p 22 N90-17647 and theoretical Experimental p 21 N87-29544 characteristics of a high-lift semispan wing model [NASA-TP-2990] p 11 N90-20046 AIRFOILS Turbine Engine Hot Section Technology, 1984 p 11 N90-22531 [NASA-CP-2339] p 43 N87-11180 Lewis inverse design code (LINDES): Users manual [NASA-TP-2676] p 1 N88-14926 Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] Measurement of velocity and vorticity fields in the wake p 65 N88-21740 of an airfoil in periodic pitching motion [NASA-TP-2780] p 66 N88-13002 Airfoil self-noise and prediction p 19 N89-15123 [NASA-RP-1218] p 67 N89-25673 Steady-state and transitional characteristics of a wing in simulated heavy rain INASA-TP-29321 p 10 N89-25951 p 10 N90-10829 CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-CP-3052] p 22 N90-17647 AIRPORTS Low-energy gamma ray attenuation characteristics of p 66 N87-24161 aviation fuels INASA-TP-29741

AIRCRAFT STABILITY

[NASA-RP-1168]

AIRCRAFT STRUCTURES

1987. part 2 [NASA-CP-3022-PT-2]

bibliography

tolerance

[NASA-RP-1177]

[NASA-TP-2921]

[NASA-TP-3011]

[NASA-TP-2718]

tire-generated water spray

AIRCRAFT TIRES

p 11 N90-16710

p 16 N90-18385

p 43 N87-11180

p 12 N88-21144

p 44 N88-22382

p 45 N89-17298

p 63 N90-18882

p 2 N89-22568

p 1 N87-25267

Application of parameter estimation to aircraft stability and control: The output-error approach

Transonic Unsteady Aerodynamics and Aeroelasticity

The ACEE program and basic composites research at

Evaluation of a strain-gage load calibration on a

A Protection And Detection Surface (PADS) for damage

Measurements of flow rate and trajectory of aircraft

Static mechanical properties of 30 x 11.5 - 14.5, type

low-aspect-ratio wing structure at elevated temperature

Langley Research Center (1975 to 1986): Summary and

p 63 N90-18882 FAA/NASA En Route Noise Symposium p 67 N90-24853 [NASA-CP-3067] ALABAMA

The MSFC/UAH Data Management Symposium [NASA-CP-2040] p 62 N78-74659 ALBEDO Surface bidirectional reflectance properties of two

outhwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers p 48 N87-22281 (NASA-TP-2643)

Atlas of albedo and absorbed solar radiation derive from Nimbus 6 earth radiation budget data set, July 1975 to May 1978

[NASA-RP-1230] p 57 N90-14741 ALGAE

Ecological Life Support System: Controlled Regenerative Life Support Systems in Space p 60 N88-12251 [NASA-CP-2480]

ALGORITHMS An algorithm for surface smoothing with rational solines

- [NASA-TP-2708] p 65 N87-22447 Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite
- p 55 N87-26491 [NASA-TP-2723] Frontiers of Massively Parallel Scientific Computation
- [NASA-CP-2478] p 62 N87-26531 Advances in contact algorithms and their application to tires
- [NASA-TP-2781] p 44 N88-21456
- Doppler Radar Detection of Wind Shear A simulation evaluation of the engine monitoring and control system display Langley Aircraft Landing Dynamics Facility Dynamic ground-effect measurements on the F-15 STOL Maneuver Technology Demonstrator (S/MTD) Langley Symposium on Aerodynamics, volume 1 User's manual for LINEAR, a FORTRAN program to Derivation and definition of a linear aircraft model Measurements of pressures on the tail and aft fuselage of an airplane model during rotary motions at spin Annoyance response to simulated advanced turboprop aircraft interior noise containing tonal beats Helicopter main-rotor noise: Determination of source contributions using scaled model data p 67 N88-26907 Evaluation of the ride quality of a light twin engine Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed p 22 N90-19242 FAA/NASA En Route Noise Symposium p 67 N90-24853 Wind Shear/Turbulence Inputs to Flight Simulation and Development and flight test experiences with a p 20 N89-24327 Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (OSRA) NASA-TP-26441

A-4

p 10 N90-12539

Universal test fixture for monolithic mm-wave integrated circuits calibrated with an augmented TRD algorithm (NASA-TP-2875) p 34 N89-17767 Nimbus-7 ERB Solar Analysis Tape (ESAT) user's avide

[NASA-RP-1211] p 79 N89-30151 Advanced detection, isolation, and accommodation of sensor failures in turbofan engines: Real-time microcomputer implementation

p 20 N90-15112 [NASA-TP-2925] An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows

[NASA-TP-2953] p 38 N90-17042 ALIGNMENT Development and evaluation of an airplane electronic

display format aligned with the inertial velocity vector [NASA-TP-2648] p 16 N87-13438 ALKYL COMPOUNDS

Surface catalytic degradation study of two linear perfluoropolyalkylethers at 345 C [NASA-TP-2774] p 27 N88-12543

Reaction of perfluoroalkylpolyethers (PFPE) with 440C steel in vacuum under sliding conditions at room temperature [NASA-TP-2883] p 31 N89-26091

ALL SKY PHOTOGRAPHY

Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 N89-14194

Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 5: The point source catalog declination range -30 deg greater than delta greater than -50 deg p 76 N89-14195 [NASA-RP-1190-VOL-5]

Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 4: The point source catalog declination range 0 deg greater than delta greater than -30 deg INASA-RP-1190-VOL-41 p 76 N89-1 p 76 N89-14196

Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 2: The point source catalog declination range 90 deg greater than delta greater than 30 deg

p 76 N89-14197 [NASA-RP-1190-VOL-2] Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 6: The point source catalog declination range -50 deg greater than delta greater than -90 deg p 76 N89-14198 [NASA-RP-1190-VOL-6] Infrared astronomical satellite (IRAS) catalogs and

atlases. Volume 7: The small scale structure catalog [NASA-RP-1190-VOL-7] p 76 N89-14199 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 3: The point source catalog declination range 30 deg greater than delta greater than 0 deg p 77 N89-14201 (NASA-BP-1190-VOL-31

ALTERNATING CURRENT

An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods

[NASA-TP-2820] p 30 N89-19406 ALTITUDE Effect of ephemeris errors on the accuracy of the

computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments

[NASA-TP-2866] p 65 N89-16415 ALTITUDE SIMULATION

Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel p 21 N87-20295 [NASA-TP-2680]

Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel

[NASA-TP-2681] p 21 N88-17686 ALUMINUM

- Shot peening for Ti-6AI-4V alloy compressor blades [NASA-TP-2711] p 43 N87-20566 Cosmic ray heavy ion LET mapping for aluminum, silicon, and tissue targets
- [NASA-RP-1180] p 79 N87-25984 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels

[NASA-TP-3042] p 29 N90-27876 Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites p 28 N88-70029 [NASA-TP-1063]

ALUMINUM ALLOYS Ester oxidation on an aluminum surface using chemiluminescence

p 31 N87-18666 [NASA-TP-2611] The corrosion mechanisms for primer coated 2219-T87

aluminum [NASA-TP-2715] p 30 N87-21076 Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb

p 31 N90-10248 [NASA-TP-2955]

ALUMINUM GRAPHITE COMPOSITES Effects of thermal cycling on graphie-fiber-reinforced

6061 aluminum p 28 N87-10184 INASA-TP-2612 ALUMINUM OXIDES Oxidation characteristics of Ti-14AI-21Nb ingot alloy [NASA-TP-3012] p 31 N90-25206

ANALOG DATA Analog signal conditioning flight-test for instrumentation p 17 N87-29533

INASA-RP-11591 ANGLE OF ATTACK

Mach 6 experimental and theoretical stability and performance of a cruciform missile at angles of attack up to 65 degrees

[NASA-TP-2733] p 5 N87-23592 Subsonic longitudinal and lateral-di characteristics of a forward-swept-wing lateral-directional fighter configuration at angles of attack up to 47 deg

[NASA-TP-2727] p6 N87-26874 Qualitative evaluation of a flush air data system at

transonic speeds and high angles of attack [NASA-TP-2716] p 14 N87-29497 Analysis of flight data from a High-Incidence Research

Model by system identification methods [NASA-TP-2940] p 20 N90-10074

ANGULAR DISTRIBUTION Angular radiation models for Earth-atmosphere system.

Volume 1: Shortwave radiation INASA-RP-11841 p 56 N88-27677

ANISOTROPIC SHELLS Modeling and analysis of the space shuttle nose-gear

tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595

ANNIHILATION REACTIONS

Annihilation in Gases and Galaxies [NASA-CP-3058] p 66 N90-18957

ANNUAL VARIATIONS Arctic Sea ice, 1973-1976: Satellite passive-microwave

observations (NASA-SP-489)

p 58 N87-24870 Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -November 1978 to October 1985

[NASA-RP-1186] p 55 N88-10451 ANNULAR FLOW

Three component laser anemometer measurements in an annular cascade of core turbine vanes with contoured end wall

[NASA-TP-2846] p 8 N89-10844 ANTARCTIC REGIONS

The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas

p 49 N88-20714 (NASA-RP-1201)

Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas

[NASA-RP-1225]

p 57 N89-28983 Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland

p 54 N90-20562 INASA-RP-1233-VOL-1 Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat

p 54 N90-20564 [NASA-RP-1233-VOL-4] SeaRISE: A Multidisciplinary Research Initiative to

Predict Rapid Changes in Global Sea Level Caused by Collapse of Marine Ice Sheets [NASA-CP-3075] p 48 N90-22824

Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989

INASA-RP-12371 p 58 N90-23837 ANTENNA DESIGN

A simplified approach to axisymmetric dual-reflector antenna design

[NASA-TP-2797] p 7 N88-16662 Measured and predicted root-mean-square errors in square and triangular antenna mesh facets

p 45 N89-17892 [NASA-TP-2896] Earth Science Geostationary Platform Technology

INASA-CP-30401 p 24 N90-19249 Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications

[NASA-TP-3016] p 26 N90-27738 ANTENNA RADIATION PATTERNS

A simplified approach to axisymmetric dual-reflector antenna design p 7 N88-16662 (NASA-TP-2797)

Measured and predicted root-mean-square errors in

square and triangular antenna mesh facets [NASA-TP-2896] p 45 N89-17892 ANTENNAS

NASA/DOD Control/Structures Interaction Technology, 1986

[NASA-CP-2447-PT-1] p 24 N87-16014

## **ARCHITECTURE (COMPUTERS)**

Technology for large space systems: A bibliography with indexes (supplement 17) [NASA-SP-7046(17)] p 22 N87-29576 ANTIMATTER Possible complementary cosmic-ray systems: Nuclei and antinuclei [NASA-TP-2741] p 68 N87-24977 Annihilation in Gases and Galaxies [NASA-CP-3058] p 66 N90-18957 ANTIPARTICLES Possible complementary cosmic-ray systems: Nuclei and antinuclei [NASA-TP-2741] p 68 N87-24977 APOLLO FLIGHTS Where no man has gone before: A history of Apollo lunar exploration missions [NASA-SP-4214] p 81 N89-25946 APOLLO PROJECT Where no man has gone before: A history of Apollo lunar exploration missions INASA-SP-42141 p 81 N89-25946 APOLLO SPACECRAFT Where no man has gone before: A history of Apollo lunar exploration missions [NASA-SP-4214] p 81 N89-25946 APPLICATIONS PROGRAMS (COMPUTERS) Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears p 41 N87-18095 [NASA-TP-2610] Sixth Annual Users' Conference --- Transportable Applications Executive (TAE) [NASA-CP-2463] p 62 N87-23156 SURE reliability analysis: Program and mathematics [NASA-TP-2764] p 65 N88-17380 Numerical simulation of scramjet inlet flow fields p 8 N88-23735 INASA-TP-2517] Applications of the hybrid automated reliability predictor: **Revised** edition [NASA-TP-2760-REV] p 63 N90-11454 Fifty year canon of lunar eclipses: 1986-2035 [NASA-RP-1216] p 75 N90-18342 Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat [NASA-RP-1233-VOL-2] p 54 N90-20563 APPROACH Effect of motion cues during complex curved approach and landing tasks: A piloted simulation study [NASA-TP-2773] p 14 p 14 N88-12480 APPROACH CONTROL A simulation evaluation of a pilot interface with an automatic terminal approach system p 16 N87-19393 [NASA-TP-2669] APPROXIMATION On minimizing the number of calculations in design-by-analysis codes [NASA-TP-2706] p 5 N87-23586 Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces p 15 N88-24623 [NASA-TP-2776] Three-dimensional multigrid algorithms for the flux-split Euler equations [NASA-TP-2829] p 65 N89-12316 Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments [NASA-TP-28661 p 65 N89-16415 approximate method for calculating An three-dimensional inviscid hypersonic flow fields INASA-TP-3018) p 39 N90-27066 ARC WELDING A generalized method for automatic downhand and wirefeed control of a welding robot and positioner p 32 N88-17869 (NASA-TP-2807) ARCHITECTURE Space Station Human Factors Research Review. Volume 3: Space Station Habitability and Function: Architectural Research [NASA-CP-2426-VOL-3] p 59 N88-19883 ARCHITECTURE (COMPUTERS) Computer Sciences and Data Systems, volume 1 [NASA-CP-2459-VOL-1] p 62 N87-19931 First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206 NASA Workshop on Computational Structural Mechanics 1987, part 1 p 46 N89-29773 [NASA-CP-10012-PT-1] NASA Workshop on Computational Structural Mechanics 1987, part 2 [NASA-CP-10012-PT-2] p 46 N89-29789 The 1990 Goddard Conference on Space Applications

of Artificial Intelligence

[NASA-CP-3068]

p 64 N90-22294

#### **ARCTIC REGIONS**

ARCTIC REGIONS Arctic Sea ice, 1973-1976: Satellite passive-microwave observations [NASA-SP-489] p 58 N87-24870 The 1989 Airborne Arctic Stratospheric Expedition

- Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302 AREA
- Experimental thrust performance of a high-area-ratio rocket nozzle
- [NASA-TP-2720] p 26 N87-20381 ARRAYS
- A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805
- ARTIFICIAL INTELLIGENCE The 1988 Goddard Conference on Space Applications of Artificial Intelligence
- NASA-CP-3009] p 64 N88-30330 Fourth Conference on Artificial Intelligence for Space
- Applications [NASA-CP-3013] p 63 N89-15549
- Recent Advances in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-3031-PT-2] p 15 N89-25173
- The 1989 Goddard Conference on Space Applications of Artificial Intelligence [NASA-CP-3033] p 64 N89-26578
- The 1990 Goddard Conference on Space Applications of Artificial Intelligence
- [NASA-CP-3068] p 64 N90-22294 Fith Conference on Artificial Intelligence for Space Applications
- [NASA-CP-3073] p 63 N90-27275 ARTIFICIAL SATELLITES
- Compilation of methods in orbital mechanics and solar geometry [NASA-RP-1204] p 52 N89-10420
- ASCENT TRAJECTORIES A study to evaluate STS heads-up ascent trajectory performance employing a minimum-Hamiltonian
- optimization strategy [NASA-TP-2793] p 23 N88-15820 ASPHALT
- Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program [NASA-TP-2917] p 16 N90-15902
- ASTROMETRY Atlas of galaxies useful for measuring the cosmological
- distance scale [NASA-SP-496] p 74 N89-12513 ASTRONAUTICS
- Astronautics and aeronautics, 1985: A chronology [NASA-SP-4025] p 81 N89-26803 ASTRONAUTS
- Improved model for solar cosmic ray exposure in manned Earth orbital flights [NASA-TP-2987] p 80 N90-25031
- [NASA-TP-2987] p 80 N90-25031 ASTRONOMICAL CATALOGS Infrared source cross-index, first edition
- [NASA-RP-1182]
   p 73
   N87-22573

   Fifty year canon of solar eclipses:
   1986 2035

   [NASA-RP-1178-REV]
   p 73
   N87-25906
- Catalog of infrared observations. Part 1: Data [NASA-RP-1196-PT-1-ED-2] p 73 N88-15738 Catalog of infrared observations. Part 2: Appendixes [NASA-RP-1196-PT-2-ED-2] p 74 N88-16615
- Far
   infrared
   supplement:
   Catalog
   of
   infrared

   observations, second edition
   [NASA-RP-1205]
   p
   74
   N88-30545
- Fifty year canon of lunar eclipses: 1986-2035 [NASA-RP-1216] p 75 N90-18342 ASTRONOMICAL OBSERVATORIES
- Future Astronomical Observatories on the Moon [NASA-CP-2489] p 74 N89-15810
- ASTRONOMICAL PHOTOGRAPHY Atlas of galaxies useful for measuring the cosmological
- distance scale [NASA-SP-496] p 74 N89-12513
- ASTRONOMICAL PHOTOMETRY Second Workshop on Improvements to Photometry [NASA-CP-10015] 0.74 N89-13310
- [NASA-CP-10015] p 74 N89-13310 ASTRONOMY Alloc of Compt Holloy 1910 //
- Atlas of Comet Halley 1910 II

   [NASA-SP-488]
   p 75

   NASA thesaurus: Astronomy vocabulary

   [NASA-SP-7069]
   p 74

   NASA thesaurus: Astronomy sociated interstellar

   matter
   [NASA-RP-1202]

   [NASA-RP-1202]
   p 76

   N88-29652

   Spatial interferometry in optical astronomy
- Spatial interferometry in optical astronomy [NASA-RP-1245] p 75 N90-28470 ASTROPHYSICS Essays in Space Science [NASA-CP-2464] p 72 N87-24247
- Space Station [NASA-CP-2494] p 72 N89-14998 ASYMPTOTIC METHODS Asymptotic analysis of corona discharge from thin electrodes INASA-TP-26451 p 68 N87-14998 ATMOSPHERIC CHEMISTRY The Jovian Atmospheres p 77 N87-17598 [NASA-CP-2441] Space Opportunities for Tropospheric Chemistry Research p 51 N87-18248 INASA-CP-24501 Scientific and Operational Requirements for TOMS Data p 47 N88-13774 [NASA-CP-2497] Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503 Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 ATMOSPHERIC CIRCULATION Comparison of satellite-derived dynamical quantities for the stratosphere of the Southern Hemisphere INASA-CP-30441 p 53 N89-25540 ATMOSPHERIC COMPOSITION Future directions for H sub x O sub y detection p 51 N87-15528 [NASA-CP-2448] SAGE aerosol measurements. Volume 3: January 1, 1981 to November 18, 1981 [NASA-RP-1173] p 51 N87-17417 Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 System study of the carbon dioxide observational platform system (CO-OPS): Project overview p 23 N87-18588 [NASA-TP-2696] Spacecraft Fire Safety INASA-CP-2476) p 24 N88-12520 Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide p 56 N88-14572 INASA-TP-27611 A rapid method for the computation of equilibrium chemical composition of air to 15000 K p 30 N88-16830 [NASA-TP-2792] Forty-eight-inch lidar aerosol measurements taken at the Langley Research Center, May 1974 to December 1987 p 52 N88-29234 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503 An assessment model for atmospheric composition [NASA-CP-3023] p 57 N89-20588 Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152 A high-resolution atlas of the infrared spectrum of the sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] p 53 N89-28969 A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun p 53 N90-13893 [NASA-RP-1224-VOL-1] Present state of knowledge of the upper atmosphere 1990: An assessment report [NASA-RP-1242] p 54 N90-28929 ATMOSPHERIC DENSITY Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations p 52 N87-20665 INASA-CP-24601 ATMOSPHERIC ELECTRICITY NASA/MSFC FY-85 Atmospheric Processes Research Review [NASA-CP-2402] p 55 N87-13043 ATMOSPHERIC ENTRY SIMULATION The effect of interplanetary trajectory options on a manned Mars aerobrake configuration [NASA-TP-3019] p 24 N90-26036 ATMOSPHERIC MODELS Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations p 52 N87-20665 [NASA-CP-2460] Atmospheric Turbulence Relative to Aviation, Missile, and Space Programs [NASA-CP-2468] p 55 N87-22341 Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 Present state of knowledge of the upper atmosphere 1990; An assessment report p 54 N90-28929 [NASA-RP-1242]

Experiments in Planetary and Related Sciences and the

#### SUBJECT INDEX

ATMOSPHERIC SOUNDING		
NASA/MSFC FY-85 Atmospheric P	rocess	es Research
Review	n 55	N87.13043
Nimbus-7 data product summary	μ 55	1407-10043
[NASA-RP-1215] ATMOSPHERIC TEMPERATURE	p 48	N89-22152
SeaRISE: A Multidisciplinary Re	search	Initiative to
Predict Rapid Changes in Global Sea Collanse of Marine Ice Sheets	a Level	Caused by
[NASA-CP-3075]	p 48	N90-22824
ATMOSPHERIC TURBULENCE Atmospheric Turbulence Relative t	o Aviat	ion, Missile,
and Space Programs [NASA-CP-2468]	o 55	N87-22341
ATOMIC BEAMS		
silver		skygen nom
[NASA-TP-2668] ATOMIC STRUCTURE	p 29	N87-18629
Nuclear techniques in studies of [NASA-RP-1195]	conde p 68	nsed matter N88-13015
ATTENUATION	•	
design. A summary of propagation im	satelli oairmei	te systems
100 GHz satellite links with tech	niques	for system
(NASA-RP-1082(04))	p 34	N89-17060
Auger electron intensity variations	in oxyg	en-exposed
large grain polycrystalline silver	o 67	NR0 20022
An Auger electron spectros	сору	study of
Surface-preparation contaminants	n 33	NOD-16968
AUTOCORRELATION		
atmospheric turbulence		
AUTOMATIC CONTROL	р 58	N90-19718
A simulation evaluation of a pilot automatic terminal approach system	interfa	ce with an
NASA-TP-2669   First Annual Workshop on Space Ope	p 16 trations	N87-19393 Automation
and Robotics (SOAR 87)	0.61	N88-17206
Development and flight test of	P 01	1400-17200
Development and might test of	an e	xperimental
maneuver autopilot for a highly ma	an e neuver	able aircraft
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte	an e neuver p 15	able aircraft N88-21153
[NASA-TP-2618] Second Conference on Artificial Inte Applications	an e neuver p 15 elligence	e for Space
INASA-TP-2618) Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation production of TIMER of the	an e neuver p 15 elligenco p 63	xperimental able aircraft N88-21153 e for Space N88-29351
[NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a til air traffic, flow-management concept	an e neuver p 15 elligence p 63 me-bas	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal
[NASA-TP-2870] Simulation evaluation of TIMER, a til air traffic, flow-management concept [NASA-TP-2870]	an e neuver p 15 elligenc p 63 me-bas p 13	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901
INASA-TP-2618) Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IBAS)	an e neuver p 15 illigenci p 63 me-bas p 13 from t	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared
Instruction of the second control of the second conference on Artificial Inter Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217]	an e neuven p 15 illigenci p 63 me-bas p 13 from t p 75	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807
INASA-TP-2618) Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar INASA-CP 100261	an e neuver p 15 Illigenco p 63 me-bas from 1 p 75 nd realit	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies
INASA-TP-2618) Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-CP-3007] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S	an e neuver p 15 Illigence p 63 me-bas p 13 from 1 p 75 id realit p 17 pace	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations
Maneuver autopilot for a highly test of maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-CP-3007] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1985)	an e neuver p 15 Illigenci p 63 me-bas p 13 from f p 75 id realif p 17 pace	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ties N90-13384 Operations
INASA-TP-2870 INASA-TP-2618) Second Conference on Artificial Inter Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli	an e neuver p 15 elligence p 63 me-bas p 13 from f p 75 id realit p 17 pace )) p 62 nence	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ties N90-13384 Operations N90-25503 for Space
maneuver autopilot for a highly test of maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [INASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-CP-3070] Automatic classification of spectra Astronomical Satellite (IRAS) [INASA-RP-1217] Flight deck automation: Promises ar [INASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications	an e neuver p 15 elligence p 63 me-bas p 13 from f p 75 id realit p 17 pace )) p 62 gence	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ties N90-13384 Operations N90-25503 for Space
INASA-CP-10050 Third Annual Workshop on S Automation and Robotics (SOAR 1985) Fight Carbon S MASA-CP-3007] Simulation evaluation of TIMER, a til air traffic, flow-management concept [NASA-CP-3007] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1985 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] Automatic E LIGHT CONTROL	an e neuver, p 15 illigenci p 63 me-bas p 13 from p 75 id realit p 75 id realit p 75 gence p 62 gence p 63	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ties N90-13384 Operations N90-25503 for Space N90-27275
INASA-TP-2618) Second Conference on Artificial Inter Applications [NASA-TP-2618] Second Conference on Artificial Inter Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] AUTOMATIC FLIGHT CONTROL Piloted simulation study of the effec	an e neuver p 15 illigenci p 63 me-bas p 13 from i p 75 id realin p 75 id realin p 75 gence p 62 gence p 63 as of an	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated
INASA-TP-2618) Second Conference on Artificial Inter Applications [NASA-TP-2618] Second Conference on Artificial Inter Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effect trim system on flight characteristics of	an e neuver neuver p 15 Illigenco p 63 me-bas p 13 from 1 p 75 id realin p 77 id realin p 75 id realin p 62 gence p 63 so f ar a light	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-10807 jes N90-13384 Operations N90-25503 for Space N90-27275 automated twin-engine
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] AUTOMATIC FLIGHT CONTROL Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633]	an e neuver p 15 Illigenci p 63 me-bas p 13 from p 75 id realifi p 77 id realifi p 77 pace p 63 gence p 63 so f ar a light p 3	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 automated twin-engine N87-10843
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] AUTOMATIC FLIGHT CONTROL Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-CP-2633] AUTOMATIC PLIOTS	an e neuver neuver p 15 Illigenci p 63 me-bas p 13 from p 75 id realiti p 77 od realiti p 17 pace p 63 gence p 63 ts of an a light p 3	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 automated twin-engine N87-10843
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PILOTS</b> A simulation evaluation of a pilot automatic terminal approach system	an e e neuver p 15 Illigenci p 63 me-bas p 13 from f p 75 d realif p 75 d realif p 62 gence p 63 ts of ar a light p 3 i interfa	xperimental able aircraft able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PILOTS</b> A simulation evaluation of a pilot automatic terminal approach system [NASA-TP-2669]	an e eneuver neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realifit p 75 d realifit p 62 g ence p 63 ts of ar a light p 3 i interfa p 16	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] AUTOMATIC FLIGHT CONTROL Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] AUTOMATIC PLIOTS A simulation evaluation of a pilof automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a bioly ma	an e e neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realint p 75 d realint p 77 pace p 63 ts of ar p 63 ts of ar a light p 3 t interfa a n e euver	xperimental able aircraft able aircraft bable aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PILOTS</b> A simulation evaluation of a pilof . automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a highly ma [NASA-TP-2618]	an e e neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realint p 75 d realint p 77 pace p 63 ts of ara p 63 ts of ara gence p 63 ts of ara p 16 t interfa a n e e neuver: p 15	xperimental able aircraft able aircraft bable aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft N88-21153
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-30036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PILOTS</b> A simulation evaluation of a pilot automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a highly ma [NASA-TP-2618]	an e en neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realift d realift d realift d realift p 62 gence p 63 is of ara a light p 3 i interfa a neuver: p 15	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft able aircraft
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1985 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PLIOTS</b> A simulation evaluation of a pilot- automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a highly ma [NASA-CP-2618] <b>AVIATION METECROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2435]	an e energy for the second se	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-10393 xperimental able aircraft N88-21153
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3073] Automation and Robotics (SOAR 1986 [NASA-CP-3073] AUTOMATIC FLIGHT CONTROL Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] AUTOMATIC FLIGTS A simulation evaluation of a pilot - automatic terminal approach system [NASA-TP-2689] Development and flight test of maneuver autopilot for a highly ma [NASA-TP-2618] AVIATION METEOROLOGY Doppler Radar Detection of Wind Sh [NASA-CP-2435] Meteorological and Environmental I Systems	an e e neuver p 15 Illigenci p 63 me-bas p 13 from 1 p 75 dd realili p 75 dd realili p 77 pace p 63 is of ar a light p 3 i interfa an e neuver p 15 i sof ar a light p 15 i sof ar a light p 16 i sof ar a light p 15 i sof ar a light p 16 i sof ar a light p 15 i sof ar a light p 16 i sof ar a light p 15 i sof ar a light p 15 i sof ar a light p 16 i sof	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ties N90-10807 ties N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-10843 ace with an N87-19393 xperimental able aircraft N88-21153 N87-10054 to Aviation
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation evaluation of a piloj automatic terminal approach system [NASA-TP-2618] <b>AVIATION METEOROLOGY</b> Doppler Radar Detection of Wind Sh [NASA-CP-2495] Meteorological and Environmental 1 Systems [NASA-CP-2498] <b>AVIONICS</b>	an e e neuver neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realiti p 17 pace p 63 Is of ara a light p 3 Interfa a n e e neuver; p 15 ear p 17 p 5 ear p 16 a n e e p 15 p 15 p 15 p 17 p 5 ear p 16 a n e e p 15 p 55 p 55 p 55 p 15 p 55 p 15 p 15	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-10393 xperimental able aircraft N88-21153
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effec trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation evaluation of a piloj automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a highly ma [NASA-TP-2618] <b>AVIATION METEOROLOGY</b> Doppler Radar Detection of Wind SF [NASA-CP-2495] <b>AVIONICS</b> Joint University Program for A <i>Research</i> 1983	an e e neuver neuver p 15 Illigenc: p 63 me-bas p 13 from 1 p 75 d realiti p 17 pace p 63 Is of ara a light p 3 Interfa an e e p 15 ear p 15 ear p 15 ear p 15 interfa p 56 an e e p 57 j 62 gence p 63 Interfa a n e e p 15 ear p 15 j 75 j 63 j 75 j 7	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 iss N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft N88-21153 N87-10054 to Aviation N88-25105 insportation
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-CP-1217] Flight deck automation: Promises ar [NASA-CP-1036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2663] <b>AUTOMATIC PILOTS</b> A simulation evaluation of a piloi - automatic terminal approach system [NASA-TP-2669] Development and flight test of maneuver autopilot for a highly ma [NASA-CP-2498] <b>AVIATION METEOROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2498] <b>AVIANICS</b> Joint University Program for A <i>Research</i> , 1983 [NASA-CP-2451]	an e neuver neuver p 15 liligenci p 63 me-bas p 13 from 1 p 75 id realif p 17 pace p 62 gence p 63 is of ar a light p 3 i interfa p 16 an e to p 63 is of ar a light p 17 p 62 gence p 63 is of ar a light p 16 p 75 is of ar n u to p 75 is of ar n u to n u to	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 a automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft N88-21153 N87-10054 to Aviation N88-25105 Insportation
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-10036] Third Annual Workshop on S Automation and Robotics (SOAR 1986 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PLIOTS</b> A simulation evaluation of a pilot - automatic terminal approach system [NASA-TP-2618] <b>AVIATION METEOROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2498] <b>AVIATION METEOROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2498] <b>AVIATION METEOROLOGY</b> Joint University Program for A <i>Research</i> , 1983 [NASA-CP-2451] Joint University Program for A Research, 1984	an e neuver neuver p 15 liligenci p 63 me-bas p 13 from 1 p 75 id realif p 17 pace p 62 gence p 62 gence p 63 is of ar a light p 3 i interfa p 16 an e e neuver p 15 i interfa p 15 i i interfa p 15 i i interfa p 12 p 56 i i Tra p 1 p 1 p 15 i i i Tra p 1 p 1 p 1 p 1 p 1 p 1 p 6 p 6 p 6 p 6 p 6 p 6 p 6 p 6	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 automated twin-engine N87-10843 ace with an N87-19393 xperimental able aircraft N88-21153 N87-10054 to Aviation N88-25105 insportation
maneuver autopilot for a highly ma [NASA-TP-2618] Second Conference on Artificial Inte Applications [NASA-CP-3007] Simulation evaluation of TIMER, a ti air traffic, flow-management concept [NASA-TP-2870] Automatic classification of spectra Astronomical Satellite (IRAS) [NASA-RP-1217] Flight deck automation: Promises ar [NASA-CP-1036] Third Annual Workshop on S Automation and Robotics (SOAR 1985 [NASA-CP-1036] Third Annual Workshop on S Automation and Robotics (SOAR 1985 [NASA-CP-3059] Fifth Conference on Artificial Intelli Applications [NASA-CP-3073] <b>AUTOMATIC FLIGHT CONTROL</b> Piloted simulation study of the effect trim system on flight characteristics of airplane with one engine inoperative [NASA-TP-2633] <b>AUTOMATIC PLIOTS</b> A simulation evaluation of a pilot - automatic terminal approach system [NASA-TP-2618] <b>AVIATION METECROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2498] <b>AVIATION METECROLOGY</b> Doppler Radar Detection of Wind Sf [NASA-CP-2498] <b>AVIATION HETECROLOGY</b> Joint University Program for A <i>Research</i> , 1983 [NASA-CP-2452] Wind [Data-CP-2452] Wind Detection for A light [NASA-CP-2452]	an e n neuver p 15 p 15 p 15 p 15 p 15 p 13 p 75 d realif p 75 d realif p 75 d realif p 75 d realif p 17 p 62 g gence p 63 s of ar n p 75 d realif p 17 p 62 g gence p 63 s of ar a light p 16 a n e en p 17 p 62 g gence p 63 s of ar a light p 16 a n e en p 15 t interfa p 12 p 15 t interfa p 15 t interfa p 12 p 15 t interfa p 12 p 12 p 12 p 12 p 12 p 12 p 12 p 12 p 12 p 15 t interfa p 12 p 12	xperimental able aircraft N88-21153 e for Space N88-29351 ed, terminal N89-15901 the Infrared N90-10807 ies N90-13384 Operations N90-25503 for Space N90-27275 automated twin-engine N87-10843 ace with an N87-10843 ace with an N87-10054 to Aviation N88-25105 Insportation N87-18520 Insportation N87-28604

[NASA-CP-2474]

p 1 N87-25267

#### SUBJECT INDEX

Joint	University	Program	for	Air	Transportation
Researc	:h, 1986				
[NASA-	CP-2502]			P	2 N88-23715
Joint	University	Program	for	Air	Transportation
Researc	:h, 1987				
[NASA-	CP-3028]			P	2 N89-19230
Joint	University	Program	for	Air	Transportation
Researc	h, 1988-198	9			
[NASA-	CP-3063 J			P	2 N90-20921
Space	e shuttle avio	nics syste	m		
NASA-	SP-504]			p.	24 N90-25160
Space	e Transportat	tion Avionic	s Teo	chnolo	ogy Symposium.
Volume	1: Executive	summary			
[NASA-	CP-3081-VO	L-1]		р	17 N90-25980
AXIAL FL	.ow				
Laser	anemomet	er measu	reme	nts i	n a transonic
axial-flo	w fan rotor				
[NASA-	TP-2879]			P	38 N90-11245
AXISYMM	IETRIC BOD	IES			
Static	c internal pe	rformance	of s	ingle-	expansion-ramp
nozzles	with thrust-v	ectoring ca	apabi	lity up	to 60 deg
[NASA-	TP-2364 J			F	3 N87-10839

Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles p 14 N87-17693 [NASA-TP-2392]

Revised NASA axially symmetric ring model for coupled-cavity traveling-wave tubes

- p 35 N87-22923 [NASA-TP-2675] Effect of a trade between boattail angle and wedge size on the performance of a nonaxisymmetric wedge nozzle [NASA-TP-2717] p 5 N87-23593
- Static performance of an axisymmetric nozzle with post-exit vanes for multiaxis thrust vectoring [NASA-TP-2800] p 8 N88-20280 AXISYMMETRIC FLOW

Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p 4 N87-21873 [NASA-TP-2704]

Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds (NASA-TP-2753) p 6 N88-10771

В

#### BACKGROUND NOISE

- Effects of background noise on total noise annoyance [NASA-TP-2630] p 66 N87-14120 BACKSCATTERING
- Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide
- [NASA-RP-1234] p 53 N90-17227 BALANCE
- Effect of control surface mass unbalance on the stability of a closed-loop active control system [NASA-TP-2952] p 47 N90-12042
- BALLISTIC TRAJECTORIES Trajectory characteristics and heating of hypervelocity
- projectiles having large ballistic coefficients NASA-TP-2614 p 7 N88-19412 BALLOON-BORNE INSTRUMENTS
- A general-purpose balloon-borne pointing system for solar scientific instruments
- p 33 N90-21219 [NASA-TP-3013] BARRIER LAYERS
- Thermal Barrier Coatings. Abstracts and figures p 31 N89-13642 INASA-CP-10019] BARYONS
- BRYNTRN: A baryon transport model p 80 N89-17562 (NASA-TP-2887)
- BASE FLOW Influence of base modifications on in-flight base drag in the presence of jet exhaust for Mach numbers from 0.7 to 1.5
- [NASA-TP-2802] p 37 N88-18881 BASE PRESSURE
- Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers
- [NASA-TP-2638] p 37 N88-14299 BEACON EXPLORER A
- Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat p 54 N90-20564
- [NASA-RP-1233-VOL-4] BEAMS Derivation of a tappered p-version beam finite element
- [NASA-TP-2931] p 46 N89-26255 BEAMS (SUPPORTS)
- Dynamic characteristics of a vibrating beam with periodic variation in bending stiffness p 44 N88-23988
- [NASA-TP-2697]

Mixed finite element models for free vibrations of thin-walled beams

- INASA-TP-28681 p 45 N89-19579 Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments
- [NASA-TP-3028] p 47 N90-25366 BEARINGS
- Computer-aided design analysis of angular-contact, cryogenic turbopump bearings of 57 mm, [NASA-TP-2816] p 41 N88-18933
- The 22nd Aerospace Mechanisms Symposium [NASA-CP-2506] 0.44 N88-21468
- Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626
- Rotordynamic Instability Problems in High-Performance Turbomachinery, 1988 [NASA-CP-3026] p 41 N89-22891
- BED REST Joint US/USSR study: Comparison of effects of
- horizontal and head-down bed rest [NASA-TP-3037] n 60 N90-28965
- BENDING Dynamic characteristics of a vibrating beam with periodic
- variation in bending stiffness [NASA-TP-2697] p 44 N88-23988
- Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments
- [NASA-TP-3028] p 47 N90-25366 Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular cutouts
- (NASA-TP-3007) p 29 N90-26077 BENDING VIBRATION
- Dynamic characteristics of a vibrating beam with periodic variation in bending stiffness [NASA-TP-2697]
- p 44 N88-23988 BIBLIOGRAPHIES
- Aerospace medicine and biology: A cumulative index to the 1986 issues (supplement 293) [NASA-SP-7011(293)] p 59 N87-18976
- Management: A bibliography for NASA managers (supplement 21)
- [NASA-SP-7500(21)] p 69 N87-20833 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 31) [NASA-SP-7039(31)-Sect-1] p 70 N87-: p 70 N87-25023
- Space station systems: A bibliography with indexes (supplement 4) [NASA-SP-7056(04)] p 25 N87-26073
- NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 31) [NASA-SP-7039(31)-SECT-2] p 70 N8
- n 70 N87-26689 Earth resources: A continuing bibliography with indexes
- (issue 54) [NASA-SP-7041(54)] n 49 N87-27315 Aeronautical engineering: A continuing bibliography with
- indexes (supplement 217) [NASA-SP-7037(217)] p 1 N87-27613
- Technology for large space systems: A bibliography with indexes (supplement 17)
- p 22 N87-29576 [NASA-SP-7046(17)] Aerospace medicine and biology: A continuing bibliography with indexes (supplement 302) p 59 N87-30041 [NASA-SP-7011(302)]
- NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 32)
- p 70 N88-15732 [NASA-SP-7039(32)-SECT-1] Catalog of infrared observations. Part 1: Data
- [NASA-RP-1196-PT-1-ED-2] p 73 N88-15738 Aerospace medicine and biology: A cumulative index to a continuing bibliography (supplement 306)
- [NASA-SP-7011(306)] p 60 N88-18180 NASA Patent Abstracts Bibliography: A continuing
- bibliography. Section 2: Indexes (supplement 32) [NASA-SP-7039(32)-SECT-2] p 70 N88-18511
- Aeronautical engineering: A cumulative index to a continuing bibliography [NASA-SP-7037(222)] p7 N88-19416
- Management: A bibliography for NASA managers [NASA-SP-7500(22)] p 69 N88-2
- p 69 N88-21867 Earth resources. A continuing bibliography with indexes (issue 57) [NASA-SP-7041(57)]
- p 49 N88-23314 Aeronautical engineering: A continuing bibliography with
- [NASA-SP-7037(229)] p 2 N88-27163 Technology for large space systems: A bibliography with ndexes (supplement 18)
- [NASA-SP-7046(18)] p 22 N88-27214
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 315) [NASA-SP-7011(315)] p 60 N88-30281
- Space station systems: A bibliography with indexes (supplement 7) [NASA-SP-7056(07)] p 25 N89-18522

- BIOINSTRUMENTATION
- NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 35) [NASA-SP-7039(35)-SECT-1] p 71 N89p 71 N89-25775
- Technology for large space systems: A bibliography with indexes (supplement 20)
- [NASA-SP-7046(20)] p 26 N89-26037 Management: A bibliography for NASA managers
- p 69 N89-26766 [NASA-SP-7500(23)] NASA Patent Abstracts Bibliography: A continuing
- bibliography. Section 2: Indexes (supplement 35) p 71 N89-29264 [NASA-SP-7039(35)-SECT-2]
- Aeronautical engineering: A continuing bibliography with
- indexes (supplement 242) [NASA-SP-7037(242)] p 2 N89-29304 Earth resources: A continuing bibliography with indexes
- (issue 62)
- p 50 N89-29825 [NASA-SP-7041(62)]
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 327) [NASA-SP-7011(327)] p 60 N89-29951
- NASA scientific and technical publications: A catalog of special publications, reference publications, conference
- publications, and technical papers, 1988 [NASA-SP-7063(03)] p p 71 N90-10782 Earth resources: A continuing bibliography with indexes
- (issue 63) [NASA-SP-7041(63)] p 50 N90-12091
- Working with people to improve productivity and quality:
- A bibliography with indexes, 1984-1988 [NASA-SP-7078] p 69 N90-12385 Management: A bibliography for NASA managers
- [NASA-SP-7500(24)] p 69 N90-24174 Space station systems: A bibliography with indexes
- (supplement 10) [NASA-SP-7056(10)] p 26 N90-25171
- NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 37)
- [NASA-SP-7039(37)-SECT-1] D 71 N90-25698 Technology for large space systems: A bibliography with
- indexes (supplement 22) [NASA-SP-7046(22)] p 26 N90-26056 NASA Patent Abstracts Bibliography: A continuing
- bibliography. Section 2: Indexes (supplement 37) [NASA-SP-7039(37)-SECT-2] p 71 N9 p 71 N90-26700
- Information resources management, 1984-1989: A bibliography with indexes [NASA-SP-7079]
- p 71 N90-27548 Aeronautical engineering: A continuing bibliography with
- indexes (supplement 255) (NASA-SP-7037(255)) p 2 N90-27648
- Spatial interferometry in optical astronomy p 75 N90-28470 [NASA-RP-1245]
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 340) INASA-SP-7011(340)1 p 60
- p 60 N90-28963 BIDIRECTIONAL REFLECTANCE
- Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers
  - p 48 N87-22281 [NASA-TP-2643]
- Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts p 49 N87-28162 INASA-TP-27561
- Summary of along-track data from the Earth radiation budget satellite for several major desert regions [NASA-RP-1197] p 56 N88-20772

Volume 1: Shortwave radiation

[NASA-RP-1184]

[NASA-RP-1206]

I NASA-TP-29571

BIOASTRONAUTICS

Experimentation

INASA-CP-100201

(NASA-SP-7011(327))

[NASA-SP-7011(340)]

BIOINSTRUMENTATION

Bioinstrumentation

[NASA-CP-10022]

BIOCHEMISTRY

BINARY DATA

Angular radiation models for Earth-atmosphere system.

Summary of along-track data from the earth radiation

budget satellite for several representative ocean regions

FORTRAN program for x ray photoelectron spectroscopy data reformatting

Report of the 1st Planning Workshop for CELSS Flight

Joint US/USSR study: Comparison of effects of

Proceedings of a conference on Cardiovascular

Aerospace medicine and biology:

bibliography with indexes (supplement 327)

Aerospace medicine and biology:

bibliography with indexes (supplement 340)

horizontal and head-down bed rest (NASA-TP-3037)

p 56 N88-27677

p 56 N89-14634

p 69 N90-12348

p 60 N89-13898

p 60 N89-29951

p 60 N90-28963

p 60 N90-28965

p 59 N89-17997

A-7

continuing

Α

Α continuing

#### **BIOLOGICAL EFFECTS**

#### **BIOLOGICAL EFFECTS**

- Aerospace medicine and biology: A cumulative index to the 1986 issues (supplement 293) [NASA-SP-7011(293)] p 59 N87-18976 Aerospace medicine and biology: A continuing bibliography with indexes (supplement 302) [NASA-SP-7011(302)] p 59 N87-30041
- Aerospace medicine and biology: A cumulative index to a continuing bibliography (supplement 306)
- p 60 N88-18180 [NASA-SP-7011(306)] Aerospace medicine and biology: A continuing bibliography with indexes (supplement 315) [NASA-SP-7011(315)] p 60 N88-30281
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 327) p 60 N89-29951 [NASA-SP-7011(327)]
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 340) [NASA-SP-7011(340)] p 60 p 60 N90-28963
- BIOLOGICAL EVOLUTION Exobiology and Future Mars Missions [NASA-CP-10027] p
- p 59 N89-26334 BIOMETRICS Mental-State Estimation, 1987
- [NASA-CP-2504] p 60 N88-23370
- BIOPROCESSING
- Space Bioreactor Science Workshop [NASA-CP-2485] p 58 N88-17168
- BIOREACTORS
- Space Bioreactor Science Workshop INASA-CP-2485] p 58 N88-17168
- BIOTECHNOLOGY Space Bioreactor Science Workshop
- [NASA-CP-2485] p 58 N88-17168 **BIT ERROR RATE**
- Bit-error-rate testing of high-power 30-GHz traveling vave tubes for ground-terminal applications p 33 N87-17971 [NASA-TP-2635]
- Unique bit-error-rate measurement system for satellite communication systems
- p 33 N87-20448 [NASA-TP-2699] Digitally modulated bit error rate measurement system for microwave component evaluation
- p 23 N89-28545 [NASA-TP-2912] BLACK HOLES (ASTRONOMY)
- Relativistic Gravitational Experiments in Space
- [NASA-CP-3046] N90-19940 p 77 BLADE SLAP NOISE
- Correlation of helicopter impulsive noise from blade-vortex interaction with rotor mean inflow p 66 N87-18399 [NASA-TP-2650]
- Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N88-26907
- BLADE TIPS Low-cost FM oscillator for capacitance type of blade
- tip clearance measurement system [NASA-TP-2746] p 17 N87-24481
- Tip aerodynamics and acoustics test: A report and data survey [NASA-RP-1179] p 9 N89-17579
- Rotor induced-inflow-ratio measurements and CAMRAD calculations [NASA-TP-2946] p 11 N90-15882
- BLADE-VORTEX INTERACTION
- Correlation of helicopter impulsive noise from blade-vortex interaction with rotor mean inflow [NASA-TP-2650] p 66 N87-18399
- Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results [NASA-TP-2658]
- p 4 N87-18537 Advancing-side directivity and retreating-side interactions of model rotor blade-vortex interaction noise
- [NASA-TP-2784] p 67 N88-22710 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673
- Rotor induced-inflow-ratio measurements and CAMRAD calculations
- [NASA-TP-2946] p 11 N90-15882 BLADES Preliminary structural design of composite main rotor
- blades for minimum weight [NASA-TP-2730] p 28 N87-25435
- BLUNT BODIES Drag measurements of blunt stores tangentially mounted
- on a flat plate at supersonic speeds [NASA-TP-2742] p 6 N87-27626 Measured and predicted aerodynamic coefficients and
- shock shapes for Aeroassist Flight Experiment (AFE) configuration (NASA-TP-2956) p 11 N90-14185
- **BO-105 HELICOPTER** Helicopter main-rotor noise: Determination of source
- contributions using scaled model data [NASA-TP-2825] o 67 N88-26907

A-8

#### BOATTAILS

- Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p4 N87-21873 [NASA-TP-2704] Effect of a trade between boattail angle and wedge size
- on the performance of a nonaxisymmetric wedge nozzle [NASA-TP-2717] p 5 N87-23593 BODIES OF REVOLUTION
- Theory for computing the field scattered from a smooth inflected surface
- (NASA-TP-2632) p 68 N87-13264 Drag measurements on a laminar-flow body of revolution in the 13-inch magnetic suspension and balance system [NASA-TP-2895] p 9 N89-19232
- BODY-WING CONFIGURATIONS
- Low-speed, high-lift aerodynamic characteristics of slender, hypersonic accelerator-type configurations [NASA-TP-2945] p 10 N90-1 p 10 N90-10830
- BOLTED JOINTS Lightweight structural design of a bolted case joint for
- the space shuttle solid rocket motor
- A second-order and the second-A second-order accurate kinetic-theory-based method
- for inviscid compressible flows [NASA-TP-2613] p 36 N87-18783
- BONDING
- Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials [NASA-TP-2677] p 30 N87-18644
- BOOSTER ROCKET ENGINES Advanced Earth-to-Orbit Propulsion Technology 1986,
- volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626
- BORON
- Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites [NASA-TP-1063] p 28 N88-70029 BORSIC (TRADENAME)
- Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites [NASA-TP-1063] p 28 N88-70029 BOUNDARY LAYER CONTROL
- The NASA Langley Laminar-Flow-Control (LFC) experiment on a swept, supercritical airfoil: Design
- [NASA-TP-2809]
- Research in Natural Laminar Flow and Laminar-Flow Control, part 1 [NASA-CP-2487-PT-1] p 10 N90-12503

p.8 N88-21117

- Research in Natural Laminar Flow and Laminar-Flow Control, part 2
- [NASA-CP-2487-PT-2] p 10 N90-12519 Research in Natural Laminar Flow and Laminar-Flow Control, part 3
- [NASA-CP-2487-PT-3] p 10 N90-12539 Simulated-airline-service flight tests of laminar-flow
- control with perforated-surface suction system p 16 N90-17627 and theoretical aerodynamic [NASA-TP-2966] Experimental
- characteristics of a high-lift semispan wing model (NASA.TP.2990) p 11 N90-20046
- BOUNDARY LAYER FLOW
  - In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data
  - p 4 N87-20966 [NASA-TP-2395] A spectral collocation solution to the compressible stability eigenvalue problem [NASA-TP-2858]
- p 9 N89-12543 BOUNDARY LAYER SEPARATION
- Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673
- BOUNDARY LAYER STABILITY Numerical simulation of channel flow transition,
- resolution requirements and structure of the hairpin vortex [NASA-TP-2667] p 4 N87-19351
- Research in Natural Laminar Flow and Laminar-Flow Control, part 3 p 10 N90-12539
- [NASA-CP-2487-PT-3] BOUNDARY LAYER TRANSITION Numerical simulation of channel flow transition,
- resolution requirements and structure of the hairpin vortex
- [NASA-TP-2667] p.4 N87-19351 Research in Natural Laminar Flow and Laminar-Flow Control, part 1
- [NASA-CP-2487-PT-1] p 10 N90-12503 Research in Natural Laminar Flow and Laminar-Flow Control, part 2

p 10 N90-12519

- [NASA-CP-2487-PT-2]
- Research in Natural Laminar Flow and Laminar-Flow Control, part 3
- [NASA-CP-2487-PT-3] p 10 N90-12539

#### BOUNDARY LAYERS

Aerothermal evaluation of a spherically blunted body with a trapezoidal cross section in the Langley 8-foot high-temperature tunnel [NASA-TP-2641]

SUBJECT INDEX

- p 36 N87-18782 NASA SC(2)-0714 airfoil data corrected for sidewall boundary-layer effects in the Langley 0.3-meter transonic cryogenic tunnel
- [NASA-TP-2890] p 9 N89-17568 Airfoil self-noise and prediction
- [NASA-RP-1218] p 67 N89-25673 BOUNDARY LUBRICATION
  - Liquid lubrication in space [NASA-RP-1240] p 42 N90-28063
- BOUNDARY VALUE PROBLEMS
- Numerical simulation of channel flow transition. resolution requirements and structure of the hairpin vortex
- [NASA-TP-2667] p.4 N87-19351 BRAKING
  - Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system
- INASA-TP-24011 p 4 N87-17668 BRAZING
- Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-TP-2904] p 35 N89-21171
- BRIGHTNESS

materials, 1989

[NASA-CP-10024]

[NASA-TP-2941]

[NASA-TP-3007]

[NASA-TP-2943]

[NASA-TP-3024]

[NASA-TP-2556]

C-140 AIRCRAFT

CALIBRATING

[NASA-TP-2966]

[NASA-TP-2723]

[NASA-TP-2384]

[NASA-TP-2875]

[NASA-TP-2921]

NASA-RP-12111

in vacuum systems

Astronomical Satellite (IRAS)

[NASA-RP-1219]

(NASA-RP-1217)

an F404 engine

INASA-TP-30011

auide

occurs for a real gas

dynamics Explorer 1 satellite

BURST TESTS

Buckling and

cutouts

rings under pressure loadings

- Atlas of galaxies useful for measuring the cosmological distance scale
- [NASA-SP-496] p 74 N89-12513 BRIGHTNESS TEMPERATURE
- Polar microwave brightness temperatures from Nimbus-7 SMMR: Time series of daily and monthly maps from 1978 to 1987
- [NASA-RP-1223] p 48 N89-26275 BUCKLING
  - Three-dimensional analysis of a postbuckled embedded delamination [NASA-TP-2823] p 44 N88-26684 Research in structures, structural dynamics and

Application of Newton's method to the postbuckling of

Buckling and postbuckling behavior of square

postbuckling

Hydroburst test of a carbon-carbon involute exit cone

Simulated-airline-service flight tests of laminar-flow

Calibration of the spin-scan ozone imager aboard the

Description and calibration of the Langley Hypersonic

Universal test fixture for monolithic mm-wave integrated

Evaluation of a strain-gage load calibration on a

ow-aspect-ratio wing structure at elevated temperature

Nimbus-7 ERB Solar Analysis Tape (ESAT) user's

Introduction to total- and partial-pressure measurements

Automatic classification of spectra from the Infrared

Evaluation of various thrust calculation techniques on

circuits calibrated with an augmented TRD algorithm

CF4 tunnel: A facility for simulating low gamma flow as

С

control with perforated-surface suction system

compression-loaded graphite-epoxy plates with circular

Modal interaction in postbuckled plates. Theory

compression-loaded isotropic plates with cutouts

p 46 N89-24626

p 46 N89-29811

p 29 N90-26077

p 47 N90-27121

p 47 N90-28859

p 24 N88-14112

p 16 N90-17627

p 55 N87-26491

p 37 N87-29778

p 34 N89-17767

p 46 N89-28034

p 79 N89-30151

p 40 N90-10412

p 75 N90-10807

p 16 N90-25134

of

behavior

#### SUBJECT INDEX

#### CALORIMETERS

High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979

CAMBER

Pressure measurements on a thick cambered and twisted 58 deg delta wing at high subsonic speeds p 6 N87-27643 [NASA-TP-2713]

CAMBERED WINGS Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation

p 3 N87-10042 [NASA-TP-2336] Aerodynamic characteristics of wings designed with a combined-theory method to cruise at a Mach number of 4.5

[NASA-TP-2799] p 7 N88-19420 CAMERAS

Remote Sensing in Polarized Light [NASA-CP-3014] p 72 N89-14189 CANARD CONFIGURATIONS

Wind-tunnel investigation of the flight characteristics of a canard general-aviation airplane configuration

p 3 N87-10039 [NASA-TP-2623] Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system p 4 N87-17668

[NASA-TP-2401] Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization

p 11 N90-14187 [NASA-TP-2961] Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles p 11 N90-25938

[NASA-TP-3036] CARBON Traveling-wave-tube efficiency improvement by a

low-cost technique for deposition of carbon on multistage depressed collector p 35 N87-21239 [NASA-TP-2719]

Carbon in the Galaxy: Studies from Earth and Space [NASA-CP-3061] p 73 N90-27562 **CARBON DIOXIDE** 

System study of the carbon dioxide observational platform system (CO-OPS): Project overview p 23 N87-18588 [NASA-TP-2696]

Commentary on interstellar matter associated with 18 open clusters [NASA-RP-1229] p 77 N89-27612

CARBON DIOXIDE LASERS Closed-Cycle, Frequency-Stable CO2 Laser Technology p 40 N87-20522 [NASA-CP-2456]

Low-Temperature CO-Oxidation Catalysts for Long-Life CO2 Lasers [NASA-CP-3076] p 40 N90-24586

Mode-medium instability and its correction with a Gaussian reflectivity mirror

[NASA-TP-3023] p 68 N90-25673 CARBON FIBERS

Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum p 28 N87-10184

[NASA-TP-2612] Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens

[NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems

[NASA-TP-3029] p 29 N90-25198

CARBON TETRAFLUORIDE Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating tow gamma flow as occurs for a real gas [NASA-TP-2384] p 37 N87-29778

CARBON-CARBON COMPOSITES Hydroburst test of a carbon-carbon involute exit cone p 24 N88-14112 [NASA-TP-2556] CARDIOVASCULAR SYSTEM Proceedings of a conference on Cardiovascular Bioinstrumentation [NASA-CP-10022] p 59 N89-17997 CARGO AIRCRAFT

General equilibrium characteristics of a dual-lift helicopter system p 2 N88-19407 [NASA-TP-2615]

CASCADE FLOW Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with a

econdary-nozzle thrust reverser p 8 N88-29752 (NASA-TP-2834) Three component laser anemometer measurements in

an annular cascade of core turbine vanes with contoured end wall p 8 N89-10844 [NASA-TP-2846]

#### CATALOGS

Catalog of open clusters and associated interstellar matter

[NASA-RP-1202] p 76 N88-29652 Infrared astronomical satellite (IRAS) catalogs and

atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 p 76 N89-14194 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 5: The point source catalog declination range -30 deg greater than delta greater than -50 deg [NASA-RP-1190-VOL-5] p 76 N89-14195

ASA-RP-1190-VOL-5] p 76 N89-14195 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 4: The point source catalog declination range 0 deg greater than delta greater than -30 deg [NASA-RP-1190-VOL-4] p 76 N89-1

p 76 N89-14196 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 2: The point source catalog declination range 90 deg greater than delta greater than 30 deg

[NASA-RP-1190-VOL-2] p 76 N89-14197 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 6: The point source catalog declination range -50 deg greater than delta greater than -90 deg [NASA-RP-1190-VOL-6] p 76 N89-14198

NASA-RP-1190-VOL-6 p 76 N89-14198 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 7: The small scale structure catalog

p 76 N89-14199 [NASA-RP-1190-VOL-7] Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 3: The point source catalog declination range 30 deg greater than delta greater than 0 deg [NASA-RP-1190-VOL-3] p 77 N89-1 p 77 N89-14201 CATALOGS (PUBLICATIONS)

NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1977-1986

p 70 N87-30218 [NASA-SP-7063(01)] NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1987 [NASA-SP-7063(02)] p 70 N88-22830 NASA scientific and technical publications: A catalog of special publications, reference publications, conference publications, and technical papers, 1988

[NASA-SP-7063(03)] p 71 N90-10782 Mars landing site catalog

[NASA-RP-1238] p 78 N90-27607 CATALYSIS Surface catalytic degradation study of two linear perfluoropolyalkylethers at 345 C

p 27 N88-12543 [NASA-TP-2774] Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb

[NASA-TP-2955] p 31 N90-10248 CATALYSTS

Low-Temperature CO-Oxidation Catalysts for Long-Life CO2 Lasers

[NASA-CP-3076] p 40 N90-24586 CATALYTIC ACTIVITY Low-Temperature CO-Oxidation Catalysts for Long-Life

CO2 Lasers [NASA-CP-3076] p 40 N90-24586

CAVITIES Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis

p 36 N87-17000 [NASA-TP-2685] Experimental cavity pressure distributions at supersonic

speeds [NASA-TP-2683] p 5 N87-22626 Revised NASA axially symmetric ring model for

coupled-cavity traveling-wave tubes [NASA-TP-2675] p 35 N87-22923 CAVITY RESONATORS

Measured and calculated acoustic attenuation rates of tuned resonator arrays for two surface impedance distribution models with flow

[NASA-TP-2766] p 67 N88-17440 CELESTIAL MECHANICS Fifty year canon of solar eclipses: 1986 - 2035 [NASA-RP-1178-REV] p 73 N87 p 73 N87-25906

CELLS (BIOLOGY) Space Bioreactor Science Workshop [NASA-CP-2485] p 58 N88-17168 Cells in Space

[NASA-CP-10034] p 61 N90-13939 CEPSTRAL ANALYSIS Power cepstrum technique with application to model helicopter acoustic data [NASA-TP-2586] p 66 N87-17479

CERAMICS

Aeropropulsion '87. Session 1: Aeropropulsion Materials Research

[NASA-CP-10003-SESS-1]	p 18	N88-16697
Structural Ceramics		
[NASA-CP-2427]	p 31	N88-23872

Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 CERTIFICATION Laminar Flow Aircraft Certification [NASA-CP-2413] p 8 N88-23737 CHANNEL FLOW Numerical simulation of channel flow transition, resolution requirements and structure of the hairpin vortex [NASA-TP-2667] p 4 N87-19351 Interactions of Tollmien-Schlichting waves and Dean vortices. Comparison of direct numerical simulation and a weakly nonlinear theory [NASA-TP-2919] p 10 N89-25118 CHARGED PARTICLES First International Conference on Laboratory Research for Planetary Atmospheres [NASA-CP-3077] p 78 N90-26744 CHEMICAL COMPOSITION Nuclear techniques in studies of condensed matter [NASA-RP-1195] p 68 N88-13015 A rapid method for the computation of equilibrium chemical composition of air to 15000 K [NASA-TP-2792] p 30 N88-16830 CHEMICAL EQUILIBRIUM A rapid method for the computation of equilibrium chemical composition of air to 15000 K p 30 N88-16830 [NASA-TP-2792]

Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium INASA-TP-28671 p 38 N89-16115 CHEMICAL EVOLUTION Exobiology and Future Mars Missions [NASA-CP-10027] p 59 NB9-26334

CHEMICAL REACTIONS Aeropropulsion '87. Session 3: Internal Fluid Mechanics Research

[NASA-CP-10003-SESS-3] p 18 N88-15790 An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion

p 30 N88-15846 [NASA-TP-2791] CHEMILUMINESCENCE Ester oxidation on an aluminum surface using

chemiluminescence [NASA-TP-2611]

p 31 N87-18666 CHRONOLOGY

Astronautics and aeronautics, 1978: A chronology p 80 N88-14062 [NASA-SP-4023]

Astronautics and aeronautics, 1985: A chronology p 81 N89-26803 [NASA-SP-4025]

CINEMATOGRAPHY

diffuse-illumination holographic Evaluation of cinematography in a flutter cascade

INASA-TP-25931 p 39 N87-13731 CIRCULAR CYLINDERS

Application of turbulence modeling to predict surface heat transfer in stagnation flow region of circular cylinder [NASA-TP-2758] p 37 N87-27161 p 37 N87-27161

CIRCULATION CONTROL AIRFOILS

Large-scale static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684] p 13 N87-15959 Proceedings of the Circulation-Control Workshop, 1986 NASA-CP-2432] p 7 N88-17586

CIRCULATION CONTROL ROTORS Proceedings of the Circulation-Control Workshop, 1986

[NASA-CP-2432] p 7 N88-17586 **CIRRUS CLOUDS** FIRE Science Results 1989 [NASA-CP-3079] p 58 N90-28224 CLASSIFICATIONS

Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS) p 75 N90-10807

[NASA-RP-1217] CLEANING Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space

[NASA-CP-2446] p 25 N88-1 An Auger electron spectroscopy study surface-preparation contaminants p 25 N88-10829

[NASA-TP-2972] p 33 N90-16968 CLIMATE

Five year global dataset: NMC operational analyses (1978 to 1982)

NASA-RP-1194 p 55 N87-29996 Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -

November 1978 to October 1985 [NASA-RP-1186] p 55 N88-10451

## **CLIMATE CHANGE**

CLIMATE CHANGE COMBUSTIBLE FLOW SeaRISE: A Multidisciplinary Research Initiative to Predict Rapid Changes in Global Sea Level Caused by Collapse of Marine Ice Sheets [NASA-CP-3075] p 48 N90-22824 CLIMATOLOGY FIRE Science Results 1989 (NASA-CP-3079) p 58 N90-28224 CLOSED CYCLES Closed-Cycle, Frequency-Stable CO2 Laser Technology [NASA-CP-2456] p 40 N87-20522 CLOSED ECOLOGICAL SYSTEMS Controlled Ecological Life Support System: Regenerative Life Support Systems in Space p 60 N88-12251 [NASA-CP-2480] Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module Report of the 1st Planning Workshop for CELSS Flight Experimentation [NASA-CP-10020] p 60 N89-13898 CLOUDS SAM 2 data user's guide [NASA-RP-1200] p 52 N88-25094 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 55 p 59 N89-24023 CLOUDS (METEOROLOGY) The Jovian Atmospheres [NASA-CP-2441] FIRE Science Results 1989 p 77 N87-17598 [NASA-CP-3079] p 58 N90-28224 COALESCING Development testing of large volume water sprays for warm fog dispersal [NASA-TP-2607] p 24 N87-12585 COANDA EFFECT Proceedings of the Circulation-Control Workshop, 1986 [NASA-CP-2432] p 7 N88-17586 COBALT Investigation of the effects of cobalt ions on epoxy properties [NASA TP 2639] p 31 N87-12680 COCKPIT SIMULATORS Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation p 12 N87-29469 [NASA-TP-2567] COCKPITS Effects of combining vertical and horizontal information into a primary flight display [NASA-TP-2783] p 17 N88-12487 Flight deck automation: Promises and realities p 17 N90-13384 [NASA-CP-10036] CODING Pulse Code Modulation (PCM) encoder handbook for Aydin Vector MMP-600 series system p 33 N87-11916 [NASA-RP-1171] Lewis inverse design code (LINDES): Users manual [NASA-TP-2676] p 4 N87-20238 Experiments in encoding multilevel images as auadtrees [NASA-TP-2722] p 65 N87-28367 transonic-small-disturbance wing Α design methodology [NASA-TP-2806] p 7 N88-17614 A performance index approach to aerodynamic design with the use of analysis codes only [NASA-TP-2805] p 7 N88-18552 Visual Information Processing for Television and Telerobotics [NASA-CP-3053] p 40 N90-16204 COEFFICIENTS Cornering characteristics of the main-gear tire of the space shuttle orbiter [NASA-TP-2790] p 14 N88-18583 COHERENT ELECTROMAGNETIC RADIATION LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal [NASA-TP-2595-REV] p 49 p 49 N89-12114 COLLISION PARAMETERS Doubly differential cross sections for galactic heavy-ion fragmentation [NASA-TP-2659] p 68 N87-17487 COLORADO Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491]

p 49 N89-10401

Automated Reduction of Data from Images and Holograms [NASA-CP-2477] p 6 N87-29432 COMBUSTION NASA-Chinese Aeronautical Establishment (CAE) Symposium [NASA-CP 2433] p 17 N87-20267 An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion [NASA-TP-2791] p 30 N88-15846 Turbine Engine Hot Section Technology, 1987 [NASA-CP-2493] p 45 N8 p 45 N89-17298 COMBUSTION CHAMBERS Conventionally cast and forged copper alloy for high-heat-flux thrust chambers p 30 N87-16902 [NASA-TP-2694] Turbine Engine Hot Section Technology, 1985 p 43 N88-11140 [NASA-CP-2405] High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 **COMBUSTION PHYSICS** Spacecraft Fire Safety [NASA-CP-2476] p 24 N88-12520 Mixing and Demixing Processes in Multiphase Flows With Application to Propulsion Systems p 37 N89-11153 [NASA-CP-3006] Microgravity Combustion Diagnostics Workshop [NASA-CP-10017] p 32 N89 p 32 N89-17682 COMBUSTION PRODUCTS Finite-rate water condensation in combustion-heated wind tunnels p 22 N88-28075 [NASA-TP-28331 COMBUSTION TEMPERATURE Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flam p 38 N89-25409 [NASA-TP-2900] COMBUSTION WIND TUNNELS Finite-rate water condensation in combustion-heated wind tunnels [NASA-TP-2833] p 22 N88-28075 COMET HEADS Atlas of Comet Halley 1910 II [NASA-SP-488] p 75 N87-30235 COMET NUCLEI Atlas of Comet Halley 1910 II p 75 N87-30235 [NASA-SP-488] COMET TAILS Atlas of Comet Halley 1910 II [NASA-SP-488] p 75 N87-30235 COMETARY ATMOSPHERES Infrared Observations of Comets Halley and Wilson and Properties of the Grains p 74 N89-13330 [NASA-CP-3004] COMETS Carbon in the Galaxy: Studies from Earth and Space p 73 N90-27562 [NASA-CP-3061] COMMAND AND CONTROL Conceptual design of a synchronous Mars telecommunications satellite [NASA-TP-2942] p 78 N90-10814 COMMUNICATION NETWORKS Unique bit-error-rate measurement system for satellite communication systems [NASA-TP-2699] p 33 N87-20448 Satellite-matrix-switched, time-division-multiple-access network simulator p 34 N90-11915 [NASA-TP-2944] COMMUNICATION SATELLITES Propagation effects on satellite systems at frequencies below 10 GHz: A handbook for satellite systems design p 34 N88-14226 [NASA-RP-1108/2] Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582 Digitally modulated bit error rate measurement system for microwave component evaluation p 23 N89-28545 [NASA-TP-2912] Conceptual design of a synchronous Mars telecommunications satellite [NASA-TP-2942] p 78 N90-10814 Satellite-matrix-switched, time-division-multiple-access network simulator [NASA-TP-2944] p 34 N90-11915 COMMUTER AIRCRAFT Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration [NASA-TP-2982] p3 p 20 N90-19239 COMPARISON

Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] p 6 N87-27622

Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 COMPATIBILITY Compatability of dispersion-strengthened platinum with resistojet propellants [NASA-TP-2765] p 27 N88-12538 COMPONENT RELIABILITY Electronics reliability and measurement technology [NASA-CP-2472] p 42 N87-27204 Effects of variables upon pyrotechnically induced shock response spectra, part 2 [NASA-TP-2872] p 45 N89-13814 COMPOSITE MATERIALS Preliminary structural design of composite main rotor blades for minimum weight [NASA-TP-2730] p 28 N87-25435 The effects of simulated space environmental parameters on six commercially available composite materials p 29 N89-19385 [NASA-TP-29061 Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites [NASA-TP-1063] p 28 N88-70029 COMPOSITE STRUCTURES The ACEE program and basic composites research at Langley Research Center (1975 to 1986): Summary and hibliography [NASA-RP-1177] p 28 N87-29612 Research in structures, structural dynamics and materials, 1989 [NASA-CP-10024] p 46 N89-24626 A Protection And Detection Surface (PADS) for damage tolerance [NASA-TP-3011] p 29 N90-27788 COMPRESSIBLE FLOW A spectral collocation solution to the compressible stability eigenvalue problem [NASA-TP-2858] p 9 N89-12543 An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows [NASA-TP-2953] p 38 N90-17042 COMPRESSION LOADS Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular cutouts [NASA-TP-3007] p 29 N90-26077 COMPRESSIVE STRENGTH Properties of two composite materials made of toughened epoxy resin and high-strain graphite fiber [NASA-TP-2826] p 28 N88-25480 COMPRESSOR BLADES Shot peening for Ti-6AI-4V alloy compressor blades [NASA-TP-2711] p 43 N87-20566 COMPRESSORS Design of 9.271-pressure-ratio 5-stage core compressor and overall performance for first 3 stages p 17 N87-17699 [NASA-TP-25971 Rotordynamic Instability Problems in High-Performance Turbomachinery, 1988 [NASA-CP-3026] p 41 N89-22891 COMPUTATION Calculation and accuracy of ERBE scanner measurement locations [NASA-TP-2670] p 72 N87-28471 A rapid method for the computation of equilibrium chemical composition of air to 15000 K p 30 N88-16830 [NASA-TP-2792] A closed-form trim solution vielding minimum trim drag for airplanes with multiple longitudinal-control effectors p 20 N89-23468 [NASA-TP-2907] Computational Methods for Structural Mechanics and Dynamics, part 1 [NASA-CP-3034-PT-1] p 46 N89-24638 A review of high-speed, convective, heat-transfer computation methods [NASA-TP-2914] p 38 N89-27116 COMPUTATIONAL ASTROPHYSICS Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998 COMPUTATIONAL CHEMISTRY Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998 COMPUTATIONAL FLUID DYNAMICS Combined aerodynamic and structural dynamic problem emulating routines (CASPER): Theory and implementation p 4 N87-17669 INASA-TP-24181 Numerical simulation of channel flow transition, resolution requirements and structure of the hairpin vortex [NASA-TP-2667] p 4 N87-19351

Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998

#### SUBJECT INDEX

of equilibrium air
[NASA-RP-1181] p 36 N87-26309
Langley Symposium on Aerodynamics, volume 1
[NASA-CP-2397] p 1 N88-14926
NASA/Army Rotorcraft Technology. Volume 1:
Aerodynamics, and Dynamics and Aeroelasticity
[NASA-CP-2495-VOL-1] p 1 N88-16625
Numerical simulation of scramjet inlet flow fields
[NASA-TP-2517] p 8 N88-23735
Three-dimensional multigrid algorithms for the flux-split
Euler equations
[NASA-IP-2829] p 65 N89-12316
1987 part 1
[NASA-CP-3022-PT-1] p 9 N89-19234
Transonic Symposium: Theory, Application, and
Experiment, Volume 1, Part 1
(NASA-CP-3020-VOL-1-PT-1) p 9 N89-20925
Transonic Symposium: Theory, Application, and
Experiment, volume 1, part 2
[NASA-CP-3020-VOL-1-PT-2] p 9 N89-20942
Recent Advances in Multidisciplinary Analysis and
Uptimization, part 1
A procedure for computing surface were trajectories on
an inhomogeneous surface
[NASA-TP-2929] p 10 N89-26811
Besearch in Natural Laminar Flow and Laminar-Flow
Control, part 2
[NASA-CP-2487-PT-2] p 10 N90-12519
COMPUTATIONAL GRIDS
Supercomputing in Aerospace
[NASA-CP-2454] p 5 N87-25998
A spectral collocation solution to the compressible
stability eigenvalue problem
[NASA-TP-2858] p 9 N89-12543
Satellite radar altimetry over ice. Volume 4: Users' guide
INASA RR 1222 VOL-41 p 54 NO0-20564
A time accurate adaptive and method and the numerical
simulation of a shock-vortex interaction
[NASA-TP-2998] p 61 N90-21524
COMPLITER AIDED DESIGN
Recent Experiences in Multidisciplinary Analysis and
Optimization, part 1
[NASA-CP-2327-PT-1] p 13 N87-11717
Recent Experiences in Multidisciplinary Analysis and
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-2327-PT-2] p 13 N87-11750 Eithoreth NASTEAN (R) Lleare' Collection
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-2327-FT-2] p 13 N87-11750 Fifteenth NASTRAN (R) Users' Colloquium [NASA-CP-2481] p 43 N87-27231
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-2327-PT-2] p 13 N87-11750 Fifteenth NASTRAN (R) Users' Colloquium [NASA-CP-2481] p 43 N87-27231 First Annual Workshop on Space Operations Automation
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]         p 43         N87-27231           First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         SOAR 87)         Soard 87
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]         p 43         N87-27231           First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         [NASA-CP-2491]         p 61         N88-17206
Recent Experiences in Multidisciplinary Analysis and         Optimization, part 2         [NASA-CP-2327-PT-2]       p 13         N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43         N87-27231         First Annual Workshop on Space Operations Automation         and Robotics (SOAR 87)         [NASA-CP-2491]       p 61         N88-17206         A generalized method for automatic downhand and
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         p 43         N87-27231           First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         p 61         N88-17206           A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         Desitioner         17000
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]         p 43         N87-27231           First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         p 61         N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner           [NASA-TP-2807]         p 32         N88-17266
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)           [NASA-CP-2491]         p 61         N88-17206           A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         p 32         N88-17869           Computer-aided design analysis of 57-mm, angular-contact croveneric turbourn bearings.         S7-mm,         Angular-contact coveneric turbourn bearings.
Recent Experiences in Multidisciplinary Analysis and         Optimization, part 2         [NASA-CP-2327-PT-2]       p 13         N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43         N87-27231         First Annual Workshop on Space Operations Automation         and Robotics (SOAR 87)         [NASA-CP-2491]       p 61         A generalized method for automatic downhand and         wirefeed control of a welding robot and positioner         [NASA-TP-2807]       p 32         N88-17669         Computer-aided design analysis of 57-mm,         angular-contact, cryogenic turbopump bearings         [NASA-TP-2816]       p 41
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2           [NASA-CP-2327-PT-2]         p 13         N87-11750           Fifteenth NASTRAN (R) Users' Colloquium         p 43         N87-27231           First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         p 61         N88-17206           A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         p 32         N88-17806           Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings (NASA-TP-2816)         p 41         N88-18933           Second Conference on Artificial Intelligence for Space         p 41         N88-18933
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       P 41
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space (NASA-CP-3007]       p 63       N88-29351
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13         [INASA-CP-2327-PT-2]       p 13         N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43         N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         [NASA-CP-2491]       p 61         N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         [NASA-TP-2807]       p 32         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings         [NASA-TP-2816]       p 41         N88-18933       Second Conference on Artificial Intelligence for Space         Applications       p 63         [NASA-CP-3007]       p 63
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13         [internth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43         N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)         [NASA-CP-2491]       p 61         N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         [NASA-TP-2807]       p 32         N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings         [NASA-TP-2816]       p 41         N88-18933         Second Conference on Artificial Intelligence for Space         Applications         [NASA-CP-3007]       p 63         N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351       Computer programs at NASA Lewis Research Center         [NASA-TP-291]       p 61       N85-21243
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium         [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided       design       analysis       of 57-mm, angular-contact, cryogenic turbopump bearings         [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for mutilievel decomposition of a complex design problem       p 41       N89-21243
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       g 98-2351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 43       N89-23181
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       p 1NASA-CP-3007]       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243       A knowledge-based tool for multilevel decomposition of a complex design problem         [NASA-TP-2903]       p 63       N89-23181       Recent Advances in Multidisciplinary Analysis and
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Firtheenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351       Comparison study of gear dynamic computer programs at NASA Lewis Research Center         [NASA-TP-2901]       p 41       N89-21243       A knowledge-based tool for multilevel decomposition of a complex design problem         [NASA-TP-2903]       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2321-PT-2]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]         [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]         [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       [NASA-CP-3007]       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       [NASA-TP-2901]       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization       p 15       N89-25146
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       y 43       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       n 15       N89-25173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Firtheenth NASTRAN (R) Users' Colloquium       P43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17806         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       IN88-29351       Computer bearings         [NASA-CP-3007]       p 63       N88-29351       Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and       Nasca-CP-3031-PT-1]       p 15       N89-25173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351       Computer programs at NASA-Lewis Research Center         [NASA-TP-2803]       p 61       N89-21243       A knowledge-based tool for multilevel decomposition of a complex design problem         [NASA-TP-2903]       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-25173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-25173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner         [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       57-mm, angular-contact, oryogenic turbopump bearings         [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-25173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Firtheenth NASTRAN (R) Users' Colloquium       P43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17806         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       t N88-29351       Computer bearings         [NASA-CP-3007]       p 63       N88-29351       Computer beased tool for multilevel decomposition of a complex design problem       p 43       N89-2143         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-252173         Recent Advances in
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-2327-PT-2]p 13N87-11750Fifteenth NASTRAN (R) Users' Colloquium[NASA-CP-2481]p 43N87-27231First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)[NASA-CP-2491]p 61N88-17206A generalized method for automatic downhand and wirefeed control of a welding robot and positioner[NASA-TP-2807]p 32N88-17808Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings[NASA-TP-2816]p 41N8SA-CP-3007]p 63N88-19833Second Conference on Artificial Intelligence for Space Applications[NASA-CP-3007]p 63NASA-CP-3007]p 63N88-29351Comparison study of gear dynamic computer programs at NASA Lewis Research Center[NASA-TP-2803]p 63N89-2181Recent Advances in Multidisciplinary Analysis and Optimization, part 1[NASA-CP-3031-PT-1]p 15N89-25146Recent Advances in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-3031-PT-2]p 15[NASA-CP-3031-PT-3]p 15N89-25173Recent Advances in Multidisciplinary Analysis and Optimization, part 3[NASA-CP-3031-PT-3]p 15N89-25173Recent Advances in Multidisciplinary Analysis and Optimization, part 3[NASA-CP-1012-PT-2]p 46N89-25179Recent Advances in Multidisciplinary An
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-3232-PT-2]p 13[NASA-CP-3232-PT-2]p 13N87-11750Fifteenth NASTRAN (R) Users' Colloquium[NASA-CP-2481]p 43N87-27231First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)[NASA-CP-2491]p 61N88-17206A generalized method for automatic downhand and wirefeed control of a welding robot and positioner[NASA-TP-2807]p 32N88-17869Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings[NASA-TP-2816]p 41N8SA-TP-2816]p 41N8SA-CP-3007]p 63N88-29351Comparison study of gear dynamic computer programs at NASA Lewis Research Center[NASA-TP-2903]p 63[NASA-TP-2903]p 63Recent Advances in Multidisciplinary Analysis and Optimization, part 1[NASA-CP-3031-PT-1]p 15[NASA-CP-3031-PT-2]p 15N8SA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3]p
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]         [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41         [NASA-TP-2816]       p 41       N88-18933       Second Conference on Artificial Intelligence for Space         Applications       [NASA-CP-3007]       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       [NASA-TP-2901]       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-252173         Recent Advances in Multidisciplinary Analysis
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-2327-PT-2]p 13N87-11750Firtheenth NASTRAN (R) Users' Colloquium[NASA-CP-2481]p 43N87-27231First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)[NASA-CP-2491]p 61N88-17206A generalized method for automatic downhand and wirefeed control of a welding robot and positioner[NASA-TP-2807]p 32N88-17808Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings[NASA-TP-2816]p 41N8S-18933Second Conference on Artificial Intelligence for SpaceApplications[NASA-TP-2901]p 63N88-29351Computer aided design problem[NASA-TP-2903]p 63N89-23181Recent Advances in Multidisciplinary Analysis and Optimization, part 1[NASA-CP-30031-PT-1]P 15N89-25146Recent Advances in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-3031-PT-1]P 15N89-25146Recent Advances in Multidisciplinary Analysis and Optimization, part 3[NASA-CP-3031-PT-1]P 15N89-25173Recent Advances in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-3031-PT-2]P 15N89-25201NASA-Workshop on Computational Structural Mechanics 1987, part 2NASA-CP-3031-PT-3]P 15N89-25201
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2[NASA-CP-2327-PT-2]p 13N87-11750Firteenth NASTRAN (R) Users' Colloquium[NASA-CP-2481]p 43N87-27231First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)[NASA-CP-2491]p 61N88-17206A generalized method for automatic downhand and wirefeed control of a welding robot and positioner[NASA-TP-2807]p 32N88-17808Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings[NASA-TP-2816]p 41N8SA-18933Second Conference on Artificial Intelligence for Space Applications[NASA-CP-3007]p 63N88-29351Comparison study of gear dynamic computer programs at NASA Lewis Research Center[NASA-TP-2803]p 63N89-2143A knowledge-based tool for multilevel decomposition of a complex design problem[NASA-TP-2903]p 63N89-23181Recent Advances in Multidisciplinary Analysis and Optimization, part 1[NASA-CP-3031-PT-1]p 15N89-25146Recent Advances in Multidisciplinary Analysis and Optimization, part 3[NASA-CP-3031-PT-2]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 15NASA-CP-3031-PT-3]p 16NASA-CP-3031-PT-3] <t< td=""></t<>
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       [NASA-CP-3007]       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       [NASA-TP-2901]       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       [NASA-TP-2903]       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       [NASA-CP-3031-PT-1]       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       [NASA-CP-3031-PT-2]       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2481]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       p 32       N88-17809         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25201         NASA-CP-3031-PT-2]       p 15       N89-25201       NASA-CP-10012-PT-2]       p 46       N89-29789
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       [NASA-TP-2901]       p 41       N89-21243         A knowledge-based tool for multilevel decomposition of a complex design problem       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-252173         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 46       N89-25201         NASA Workshop on Computational Structural Mechanics 1987, p
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Firtheenth NASTRAN (R) Users' Colloquium       NA3-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         (NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17806         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA Lewis Research Center       p 41       N88-29351         INASA-TP-2901]       p 41       N89-21431         Recent Advances in Multidisciplinary Analysis and Optimization, part 1       p 53       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25146         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-252173         Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-257173
Recent Experiences in Multidisciplinary Analysis and Optimization, part 2         [NASA-CP-2327-PT-2]       p 13       N87-11750         Fifteenth NASTRAN (R) Users' Colloquium       [NASA-CP-2481]       p 43       N87-27231         First Annual Workshop on Space Operations Automation and Robotics (SOAR 87)       p 61       N88-17206         [NASA-CP-2491]       p 61       N88-17206         A generalized method for automatic downhand and wirefeed control of a welding robot and positioner       [NASA-TP-2807]       p 32       N88-17869         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2816]       p 41       N88-18933         Second Conference on Artificial Intelligence for Space       Applications       [NASA-CP-3007]       p 63       N88-29351         Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings       [NASA-TP-2807]       p 63       N88-29351         Comparison study of gear dynamic computer programs at NASA-CP-3007]       p 63       N88-29351         Computer beased tool for multilevel decomposition of a complex design problem       [NASA-TP-2903]       p 63       N89-23181         Recent Advances in Multidisciplinary Analysis and Optimization, part 2       p 15       N89-25173       Recent Advances in Multidisciplinary Analysis and Optimization, part 3       p 15       N89-25173         Rec

COMPUTER ASSISTED INSTRUCTION Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) p 61 N89-19817 [NASA-CP-30191 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 COMPUTER GRAPHICS Frontiers of Massively Parallel Scientific Computation [NASA-CP-2478] p 62 N87-26531 A general solution to the silhouette problem p 61 N88-14629 [NASA-TP-2695] Interactive orbital proximity operations planning system p 61 N89-18039 INASA-TP-28391 Graphics Technology in Space Applications (GTSA 1989) p 62 N90-20651 INASA-CP-30451 Spatial Displays and Spatial Instruments [NASA-CP-10032] p 61 N90-22918 Determination of depth-viewing volumes for stereo three-dimensional graphic displays [NASA-TP-2999] p 61 N90-22965 Sensor performance analysis [NASA-RP-1241] p 50 N90-23780 COMPUTER NETWORKS Proceedings of the 5th Annual Users' Conference (NASA-CP-2399) p 62 N87-1 p 62 N87-10720 COMPUTER PROGRAMMING Some path-following techniques for solution of nonlinear equations and comparison with parametric differentiation [NASA-TP-2654] p 64 N87-14054 COMPUTER PROGRAMS Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 transonic-small-disturbance Α wing design methodology [NASA-TP-2806] D7 N88-17614 A performance index approach to aerodynamic design with the use of analysis codes only [NASA-TP-2805] p 7 N88-18552 CARE 3 User's Workshop p 61 N88-21646 [NASA-CP-10011] User's manual for LINEAR, a FORTRAN program to derive linear aircraft models (NASA-TP-27681 p 65 N88-21740 Analysis and testing of the SURE program [NASA-TP-2817] p 65 N88-22653 Third Conference on Artificial Intelligence for Space Applications, part 2 [NASA-CP-2492-PT-2] p 63 N88-24188 Validation of a pair of computer codes for estimation and optimization of subsonic aerodynamic performance of simple hinged-flap systems for thin swept wings p 8 N89-10024 [NASA-TP-2828] OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 Analysis of positron lifetime spectra in polymers p 63 N89-12237 [NASA-TP-2853] BRYNTRN: A baryon transport model p 80 N89-17562 [NASA-TP-2887] Integrated tools for control-system analysis p 20 N89-19309 [NASA-TP-2885] Comparison study of gear dynamic computer programs at NASA Lewis Research Center p 41 N89-21243 [NASA-TP-2901] The Fault Tree Compiler (FTC): Program and mathematics [NASA-TP-2915] p 64 N89-24815 FORTRAN program for x ray photoelectron spectroscopy data reformatting INASA-TP-2957] p 69 N90-12348 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization p 11 N90-14187 [NASA-TP-2961] Surface flow and heating distributions on a cylinder in near wake of Aeroassist Flight Experiment (AFE) configuration at incidence in Mach 10 Air p 38 N90-14493 [NASA-TP-2954] Software Reuse Issues p 63 N90-14789 (NASA-CP-3057) Rotor induced-inflow-ratio measurements and CAMRAD calculations [NASA-TP-2946] p 11 N90-15882 Experimental and theoretical aerodynamic characteristics of a high-lift semispan wing model p 11 N90-20046 (NASA-TP-2990) Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments

[NASA-TP-3028]

p 47 N90-25366

#### COMPUTERIZED SIMULATION

Computer code for predicting coolant flow and heat transfer in turbomachinery p 18 N90-27722 [NASA-TP-2985] Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model [NASA-TP-3017] p 42 N90-28066 Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results [NASA-TP-3021] p 80 N90-29290 COMPUTER SYSTEMS PERFORMANCE Frontiers of Massively Parallel Scientific Computation p 62 N87-26531 NASA-CP-24781 COMPUTER SYSTEMS PROGRAMS Sixth Annual Users' Conference --- Transportable Applications Executive (TAE) [NASA-CP-2463] p 62 N87-23156 NASA Workshop on Computational Structural Mechanics 1987, part 2 [NASA-CP-10012-PT-2] p 46 N89-29789 COMPLITER TECHNIQUES Fifteenth NASTRAN (R) Users' Colloquium [NASA-CP-2481] p 43 N87-27231 Lewis Structures Technology, 1988. Volume 1: Structural **Dvnamics** [NASA-CP-3003-VOL-1] p 44 N88-23226 orbit theory for An economical semi-analytical micro-computer applications [NASA-TP-2811] p 66 N89-14052 Joint University Program for Air Transportation Research, 1987 [NASA-CP-3028] p 2 N89-19230 Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) [NASA-CP-3019] p 61 N89-19817 The Fault Tree Compiler (FTC): Program and mathematics [NASA-TP-2915] p 64 N89-24815 NASAWorkshopOnComputationalMechanics 1987, part 3[NASA-CP-10012-PT-3]p 46 Structural p 46 N89-29799 Applications of the hybrid automated reliability predictor: Revised edition [NASA-TP-2760-REV] p 63 N90-11454 COMPUTER VISION Second Conference on Artificial Intelligence for Space Applications [NASA-CP-3007] p 63 N88-29351 Spatial vision processes: From the optical image to the symbolic structures of contour information INASA-TP-28381 p 39 N89-13762 The 1989 Goddard Conference on Space Applications of Artificial Intelligence (NASA-CP-30331 p 64 N89-26578 Visual Information Processing for Television and Telerobotics (NASA-CP-3053) p 40 N90-16204 COMPUTERIZED SIMULATION Combined aerodynamic and structural dynamic problem routines (CASPER): Theory emulating and implementation [NASA-TP-24181 p 4 N87-17669 Tether Dynamics Simulation [NASA-CP-2458] p 41 N87-18821 Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998 Frontiers of Massively Parallel Scientific Computation [NASA-CP-2478] p 62 N87-26531 The 1988 Goddard Conference on Space Applications of Artificial Intelligence p 64 N88-30330 [NASA-CP-3009] Transonic Symposium: Theory, Application, and Experiment, volume 1, part 2 p 9 N89-20942 [NASA-CP-3020-VOL-1-PT-2] Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 Computational Methods for Structural Mechanics and Dynamics, part 1 p 46 N89-24638 [NASA-CP-3034-PT-1] Computational Methods for Structural Mechanics and Dynamics [NASA-CP-3034-PT-2] p 46 N89-24654 Interactions of Tollmien-Schlichting waves and Dean vortices. Comparison of direct numerical simulation and a weakly nonlinear theory (NASA-TP-2919) p 10 N89-25118 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 (NASA-CP-3031-PT-3) p 15 N89-25201 The 1989 Goddard Conference on Space Applications of Artificial Intelligence p 64 N89-26578 [NASA-CP-3033]

#### COMPUTERS

Mechanics 1987, part 2

simulation evaluation

[NASA-TP-2978]

[NASA-CP-10012-PT-2]

p 13 N90-18378 1977-1986 A time-accurate adaptive grid method and the numerical simulation of a shock-vortex interaction [NASA-TP-2998] p 61 N90-21524

p 46 N89-29789

COMPUTERS A technique for evaluating the application of the pin-level

NASA Workshop on Computational Structural

Delivery performance of conventional aircraft by

terminal-area, time-based air traffic control: A real-time

stuck-at fault model to VLSI circuits [NASA-TP-2738] p 42 N87-28025

CONCRETES Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program

p 16 N90-15902 [NASA-TP-2917] CONCURRENT PROCESSING

Computer Sciences and Data Systems, volume 1 [NASA-CP-2459-VOL-1] p 62 N87p 62 N87-19931 CONDENSING

Finite-rate water condensation in combustion-heated wind tunnels [NASA-TP-2833] p 22 N88-28075

CONES

Hydroburst test of a carbon-carbon involute exit cone (NASA-TP-2556) p 24 N88-14112 CONFERENCES

Doppler Radar Detection of Wind Shear

- [NASA-CP-2435] p 12 N87-10054 Thirteenth International Laser Radar Conference p 39 N87-10263 (NASA-CP-2431) The 1985 Goddard Space Flight Center Battery
- Workshop [NASA-CP-2434] p 34 N87-11072
- Turbine Engine Hot Section Technology, 1984 [NASA-CP-2339] p 43 N87-11180 Recent Experiences in Multidisciplinary Analysis and
- Optimization, part 1 [NASA-CP-2327-PT-1] p 13 N87-11717 NASA/DOD Control/Structures Interaction Technology,

1986 [NASA-CP-2447-PT-1] p 24 N87-16014 The 20th Aerospace Mechanics Symposium

[NASA-CP-2423-REV] p 43 N87-16321 Space Opportunities for Tropospheric Chemistry Research

- [NASA-CP-2450] p 51 N87-18248 Joint University Program for Air Transportation Research, 1983
- [NASA-CP-2451] p 1 N87-18520 Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings
- [NASA-CP-2439] p 79 N87-19328 Computer Sciences and Data Systems, volume 1 p 62 N87-19931 [NASA-CP-2459-VOL-1]
- Computer Sciences and Data Systems, volume 2 [NASA-CP-2459-VOL-2] p 62 N87-1 p 62 N87-19932 The 1986 Get Away Special Experimenter's
- Symposium (NASA-CP-2438) p 22 N87-20302
- Coronal and Prominence Plasmas [NASA-CP-2442] p 79 N87-20871
- Microgravity Fluid Management Symposium [NASA-CP-2465] p 32 p 32 N87-21141

Rapid Fluctuations in Solar Flares p 79 N87-21785 [NASA-CP-2449] Atmospheric Turbulence Relative to Aviation, Missile,

and Space Programs [NASA-CP-2468] p 55 N87-22341 Structural Dynamics and Control Interaction of Flexible

Structures [NASA-CP-2467-PT-2] p 23 N87-22729 Structural Integrity and Durability of Reusable Space Propulsion Systems

- p 26 N87-22766 [NASA-CP-2471] Sixth Annual Users' Conference --- Transportable Applications Executive (TAE)
- [NASA-CP-2463] p 62 N87-23156 Double Layers in Astrophysics [NASA-CP-2469] p 72 N87-23313 Essays in Space Science
- INASA-CP-24641 p 72 N87-24247 Star Formation in Galaxies [NASA-CP-2466] p 73 N87-24266

Supercomputing in Aerospace p 5 N87-25998 [NASA-CP-2454] Space Photovoltaic Research and Technology 1986.

High Efficiency, Space Environment, and Array Technology [NASA-CP-2475] p 50 N87-26413

Fifteenth NASTRAN (R) Users' Colloquium p 43 N87-27231 [NASA-CP-2481]

NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, [NASA-SP-7063(01)] p 70 N87-30218 Spacecraft 2000 [NASA-CP-2473] p 25 N88-10084 Fourteenth Space Simulation Conference: Testing for Permanent Presence in Space [NASA-CP-2446] p 25 N88-10829 Space Construction p 25 N88-10870 [NASA-CP-24901 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Turbine Engine Hot Section Technology, 1985 p 43 N88-11140 [NASA-CP-2405] Spacecraft Fire Safety p 24 N88-12520 [NASA-CP-2476] The 58th Shock and Vibration Symposium, volume 1 [NASA-CP-2488-VOL-1] p 43 N88-13609 Scientific and Operational Requirements for TOMS Data [NASA-CP-2497] p 47 N88-13774 Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-14926 Wind shear detection. Forward-looking sensor technology [NASA-CP-10004] p 12 N88-14970 Aeropropulsion '87. Session 4: Instrumentation and Controls Research [NASA-CP-10003-SESS-4] p 18 N88-15794 Aeropropulsion '87. Session 5: Subsonic Propulsion Technology [NASA-CP-10003-SESS-5] p 18 N88-15800 Aeropropulsion '87. Session 6: High-Speed Propulsion Technology [NASA-CP-10003-SESS-6] p 18 N88-15807 Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion p 37 N88-15924 [NASA-CP-10001] Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 NASA/Army Rotorcraft Technology. Volume 1: Aerodynamics, and Dynamics and Aeroelasticity [NASA-CP-2495-VOL-1] p 1 N88-16625 NASA/Army Rotorcraft Technology. Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics p 1 N88-16632 [NASA-CP-2495-VOL-2] Space Bioreactor Science Workshop [NASA-CP-2485] p58 N88-17168 First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206 Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' Conference [NASA-CP-10006] p 12 N88-17616 The 58th Shock and Vibration Symposium, volume 2 [NASA-CP-2488-VOL-2] p 44 N88-18948 Cryogenic Fluid Management Technology Workshop. Volume 2: Roundtable Discussion of Technology Requirements p 37 N88-20599 [NASA-CP-10009] Sixteenth NASTRAN (R) Users' Colloquium p 44 N88-20652 [NASA-CP-2505] CARE 3 User's Workshop [NASA-CP-10011] p 61 N88-21646 Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-22408 NASA scientific and technical publications: A catalog of Special Publications, Reference Publications,

Conference Publications, and Technical Papers, 1987 [NASA-SP-7063(02)] p 70 N88-22830 Lewis Structures Technology, 1988. Volume 1: Structural **Dynamics** [NASA-CP-3003-VOL-1] Laminar Flow Aircraft Certification p 44 N88-23226

- [NASA-CP-2413] p 8 N88-23737 Structural Ceramics [NASA-CP-2427] p 31 N88-23872
- Noncontact Temperature Measurement [NASA-CP-2503] p 32 N88-23895

Space Station Human Factors Research Review. Volume 1: EVA Research and Development p 59 N88-24145 [NASA-CP-2426-VOL-1]

Third Conference on Artificial Intelligence for Space Applications, part 2 [NASA-CP-2492-PT-2]

p 63 N88-24188

A Study of Space Station Contamination Effects ---p 72 N88-25390

SUBJECT INDEX

(NASA-CP-3002) Integrated Technology Rotor Methodology Assessment Workshop

conference

p 1 N87-27596

- [NASA-CP-100071 p 2 N88-27148 The 1988 Goddard Conference on Space Applications of Artificial Intelligence
- [NASA-CP-3009] p 64 N88-30330 The 1987 Ground Vortex Workshop

p 9 N89-10849 [NASA-CP-10008] The 1988 Get Away Special Experimenter's

Symposium [NASA-CP-3008] p 22 N89-10902 Mixing and Demixing Processes in Multiphase Flows With Application to Propulsion Systems

[NASA-CP-3006] p 37 N89-11153 Technology for Future NASA Missions: Civil Space Technology Initiative (CSTI) and Pathfinder

p 22 N89-11760 [NASA-CP-3016] Fifteenth Space Simulation Conference: Support the

Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582 Advanced Earth-to-Orbit Propulsion Technology 1986,

volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626

- Turbine Engine Hot Section Technology 1986 [NASA-CP-2444] p 45 N89-12876
- Second Workshop on Improvements to Photometry [NASA-CP-10015] p 74 N89-13310
- Thermal Barrier Coatings. Abstracts and figures p 31 N89-13642 [NASA-CP-10019]
- Report of the 1st Planning Workshop for CELSS Flight Experimentation (NASA-CP-10020) p 60 N89-13898
- Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503

Experiments in Planetary and Related Sciences and the Space Station

[NASA-CP-2494] p 72 N89-14998 Turbine Engine Hot Section Technology, 1987 [NASA-CP-2493] p 45 N89-17298

Microgravity Combustion Diagnostics Workshop [NASA-CP-10017] p 32 N89-17682

Proceedings of a conference on Cardiovascular Bioinstrumentation

[NASA-CP-10022] p 59 N89-17997 Proceedings of the Polar Processes on Mars Workshop

[NASA-CP-10021] p 78 N89-18373 Transonic Symposium: Theory, Experiment, Volume 1, Part 1 Application, and

- [NASA-CP-3020-VOL-1-PT-1] p 9 N89-20925 Proceedings of the Scientific Data Compression
- Workshop [NASA-CP-3025] p 63 N89-22332

Rotordynamic Instability Problems in High-Performance Turbomachinery, 1988 INASA-CP-30261 p 41 N89-22891

Seventeenth NASTRAN (R) Users' Colloquium p 45 N89-22940 [NASA-CP-30291

Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029]

p 50 N89-22982 NASA/SDIO Space Environmental Effects on Materials

Workshop, part 1 [NASA-CP-3035-PT-1] o 27 N89-23528 The 23rd Aerospace Mechanisms Symposium

[NASA-CP-3032] p 46 N89-23892

Research in structures, structural dynamics and materials, 1989 p 46 N89-24626 [NASA-CP-10024]

Computational Methods for Structural Mechanics and Dynamics, part 1

[NASA-CP-3034-PT-1] p 46 N89-24638 Computational Methods for Structural Mechanics and Dynamics

[NASA-CP-3034-PT-2] p 46 N89-24654 Space Photovoltaic Research and Technology, 1988. High Efficiency, Space Environment, and Array

Technology [NASA-CP-3030] p 50 N89-24704 Recent Advances in Multidisciplinary Analysis and

- Optimization, part 1 [NASA-CP-3031-PT-1] p 15 N89-25146 Recent Advances in Multidisciplinary Analysis and
- Optimization, part 2 [NASA-CP-3031-PT-2] p 15 N89-25173
- Recent Advances in Multidisciplinary Analysis and Optimization, part 3
- p 15 N89-25201 [NASA-CP-3031-PT-3] Exobiology and Future Mars Missions
- [NASA-CP-10027] p 59 N89-26334 The 1989 Goddard Conference on Space Applications of Artificial Intelligence

[NASA-CP-3033] p 64 N89-26578

## SUBJECT INDEX

	Computational	Structura
[NASA-CP-10012-PT-1]	n 46	N89-29773
NASA Workshop on	Computational	Structural
Mechanics 1987, part 2		
[NASA-CP-10012-PT-2]	p 46	N89-29789
Mechanics 1987, part 3	Computational	Structura
[NASA-CP-10012-PT-3]	р 46	N89-29799
Second Beamed Space-Po	wer Workshop	
[NASA-CP-3037]	p 27	N90-10140
INASA-CP-30391	n 75	N90-10805
Two-Dimensional Interco	mparison of S	Stratospheric
Models		
[NASA-CP-3042]	p 53	N90-11405
Control part 1	har Flow and L	aminar-Flow
[NASA-CP-2487-PT-1]	p 10	N90-12503
Research in Natural Lamin	nar Flow and L	aminar-Flow
Control, part 2	- 10	NO0 10510
Research in Natural Lami	pro par Flow and I	aminar-Flow
Control, part 3		aminarition
[NASA-CP-2487-PT-3]	p 10	N90-12539
Flight deck automation: Pro	mises and real	NOO 1228/
Flight Mechanics/Estimatic	n Theory Symp	osium, 1989
[NASA-CP-3050]	p 23	N90-13413
Cells in Space		
[NASA-CP-10034] Software Reuse Issues	p 61	N90-13939
[NASA-CP-3057]	р 63	N90-14789
Visual Information Proce	ssing for Tel	evision and
Telerobotics	n 40	NOD 1620/
CAST-10-2/DOA 2 Airfoil	Studies Works	shop Results
[NASA-CP-3052]	p 22	N90-17647
Solar-Terrestrial Science S	trategy Workshi	
[NASA-CP-3048] Farth Science Geostationa	p /3 rv Platform Tec	N90-18325
[NASA-CP-3040]	p 24	N90-19249
Space Electrochemical R	esearch and	Technology
(SERT), 1989 (NASA-CP-2056)	n 50	NO0-20454
Graphics Technology in	Space Applica	tions (GTSA
1989)		•
[NASA-CP-3045]	p 62	N90-20651
Research, 1988-1989		ansponation
[NASA-CP-3063]	p 2	N90-20921
NASA/DOD Controls-Struc		
1000	lures interaction	Technology
1989 [NASA-CP-3041]	o 26	N90-21062
1989 [NASA-CP-3041] Free-Space Power Transm	p 26 p 26	N90-21062
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016]	p 26 ission p 27	N90-21062 N90-21795
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062]	p 26 ission anisms Sympos	N90-21062 N90-21062 N90-21795 ium
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech. [NASA-CP-3062] The 1990 Goddard Confer	p 26 ission p 27 anisms Sympos p 47 ence on Space	N90-21062 N90-21062 N90-21795 ium N90-22079 Applications
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence	p 26 ission p 27 anisms Sympos p 47 ence on Space	N90-21062 N90-21795 ium N90-22079 Applications
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Conferr of Artificial Intelligence [NASA-CP-3068] Sential Enclose and Sential	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64	N90-21062 N90-21795 ium N90-22079 Applications N90-22294
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Conferr of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032]	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 ll Instruments p 61	Technology N90-21062 N90-21795 ium N90-22079 Applications N90-22294 N90-222918
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech (NASA-CP-3062) The 1990 Goddard Conferr of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R#	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 al Instruments p 61 ay Experiment	Technology N90-21062 N90-21795 ium N90-22079 Applications N90-22294 N90-222918 Telescope
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech (NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposium	p 26 p 27 p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment	N90-21062 N90-21062 N90-21795 ium N90-22079 Applications N90-22294 N90-22294 Telescope
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer- of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R4 (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works	p 26 p 27 anisms p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment p 77 hop: Llodate 19	N90-21062 N90-21795 WM N90-22079 Applications N90-22948 Telescope N90-23294 Sandarc
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin	p 26 p 27 anisms Sympos p 47 ance on Space p 64 Il Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S	N90-21062 N90-21062 N90-21795 WM N90-22079 Applications N90-22294 Telescope N90-22294 S9 Standard cience and
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Riz (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment 1 p 77 hop: Update 19 g Materials S	N90-21062 N90-21062 N90-21795 N90-22079 Applications N90-22294 Telescope Standarc cience and
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineering Technology [NASA-CP-3074] Low-Temperature CO-Dvid	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 by Experiment 1 p 77 hop: Update 19 g Materials S p 28 ation Catalysts (	N90-21062 N90-21062 N90-21795 N90-22075 Applications N90-22294 N90-22294 B9 Standarc cience and N90-23294
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers	p 26 p 27 anisms Sympos p 47 ance on Space p 64 Il Instruments p 61 ay Experiment 1 p 77 hop: Update 19 g Materials S p 28 ation Catalysts I	N90-21062 N90-21795 Jum N90-22075 Applications N90-22948 Telescope N90-23294 89 Standard cience and N90-24350 for Long-Life
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech (NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposium (NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076]	p 26 p 27 anisms Sympos p 47 ance on Space p 64 ll Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I	N90-21062 N90-21795 Jum N90-22079 Applications N90-222948 Telescope N90-232948 Standard cience and N90-24350 for Long-Life N90-24586
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech (NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-30073] The Energetic Garma-R# (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R)	p 26 p 27 p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I Jsers' Colloquit	N90-21062 N90-21795 Jurn N90-22079 Applications N90-222948 Telescope N90-232948 Standard cience and N90-23294 N90-23294 N90-23294 N90-24350 Juno-24586 M90-24637
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ri (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3076] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois	p 26 p 26 p 27 anisms Sympos p 47 ance on Space p 64 ll Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts i p 40 Jsers' Colloquiu, p 47	N90-21062 N90-21795 ium N90-22079 Applications N90-222948 Telescope N90-23294 89 Standard cience and N90-24350 for Long-Life N90-24586 im
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer- of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3076] Septements in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067]	p 26 p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 ll Instruments p 64 ll Instruments p 77 hop: Update 19 g Materials S p 28 ation Catalysts I Jsers' Colloquin, p 47 e Symposium p 67	N90-21062 N90-21795 ium N90-22079 Applications N90-222948 Telescope N90-23294 89 Standard cience and N90-24350 for Long-Life N90-24586 im N90-24687 N90-24853
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer- of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R/a (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 64 Il Instruments p 64 Il Instruments p 64 ation Catalysts I p 28 ation Catalysts I p 40 Jsers' Colloquit p 47 e Symposium p 67 ase: A Comprel	N90-21062 N90-21795 Imm N90-22079 Applications N90-222948 Telescope N90-23294 89 Standard cience and N90-24350 for Long-Life N90-24586 Imm N90-24637 N90-24637
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3078] The Energetic Gamma-Ra (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070]	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment 1 p 77 hop: Update 19 g Materials S p 28 ation Catalysts I p 28 ation Catalysts I p 47 e Symposium p 47 e Symposium p 47 e Symposium p 47	N90-21062 N90-21062 N90-21795 Imm N90-22079 Applications N90-22918 Telescope N90-22924 89 Standard cience and N90-24586 Imm N90-24587 N90-24637 N90-24853 Densive Plar
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Riz (EGRET) Science Symposiun [NASA-CP-3073] Contemporative Co-Oxid CO2 Lasers [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) 1 [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 il Instruments p 61 ay Experiment 1 p 77 hop: Update 19 g Materials S p 28 ation Catalysts I Jsers' Colloquit, p 47 e Symposium p 67 ase: A Comprel p 78 on Space	Technology N90-21062 N90-21795 Jurn N90-22075 Applications N90-22294 N90-22294 Telescope N90-23294 89 Standard cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Riz [CGRET] Science Symposiun [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) 1 [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Bobotics (SC	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 il Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I D Sers' Colloqui, p 47 e Symposium p 67 ase: A Comprel p 78 on Space DAR 1989)	Technology N90-21062 N90-21795 Jurn N90-22075 Applications N90-22948 Telescope N90-22948 Standard Cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R <i>i</i> [CGRET] Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-30774] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-3059] Senser Experimental Workshop	p 26 p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 ul Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I p 47 e Symposium p 67 ase: A Comprel p 78 o on Space DAR 1989) p 62 p 64 p 78 p 78 p 61 p 78 p 78 p 61 p 78 p 61 p 78 p 78 p 61 p 78 p 78	N90-21062 N90-21795 Jurn N90-2279 Applications N90-22948 Telescope N90-23294 Standard cience and N90-24637 N90-24637 N90-24637 N90-24637 nensive Plar N90-24637 Operations N90-255030 Operations
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech (NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-30032] The Energetic Gamma-R# (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-3059] Space Transportation Avior	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I p 40 Jsers' Colloquit p 47 e Symposium p 67 ase: A Comprel p 78 o on Space DAR 1989) p 62 nics Technology y	N90-21062 N90-21795 Jurn N90-22079 Applications N90-222948 Telescope N90-232948 Standard cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-25030 Operations
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R# (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] FAJ/NASA En Route Nois [NASA-CP-3076] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-3059] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3081-VOL-1]	p 26 p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 ll Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I g 40 Jsers' Colloquit p 47 e Symposium p 67 ase: A Comprel p 78 n on Space p 67 ase: A Comprel p 78 n on Space	Technology N90-21062 N90-21795 Jurn N90-22079 Applications N90-22294 Telescope N90-23294 89 Standard cience and N90-24536 for Long-Life N90-24637 N90-24637 N90-24637 N90-24633 Densive Plar N90-24633 Symposium N90-25503 Symposium
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3073] The Energetic Gamma-Ri (EGRET) Science Symposium [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3077] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3076] FAJ/NASA En Route Nois [NASA-CP-3076] FAJ/NASA En Route Nois [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-309] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3081-VOL-1] Proceedings of the LDE	p 26 p 26 p 27 anisms Sympos p 47 ence on Space p 64 ll Instruments p 61 ay Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I Jsers' Colloquiu p 47 e Symposium p 77 hop: Update 19 g Materials S p 28 ation Catalysts I Jsers' Colloquiu p 47 p 77 ase: A Comprel p 78 n on Space p 67 ase: A Comprel p 77 F Materials D	Technology N90-21062 N90-21795 Jurn N90-22079 Applications N90-22294 Telescope N90-22294 N90-22948 Telescope N90-23294 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24633 N90-25030 Operations N90-25030 Symposium. N90-25980 ata Analysis
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer- of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3078] The Energetic Gamma-R4 (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3068] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3059] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3081-VOL-1] Proceedings of the LDE Workshop	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 64 Il Instruments p 64 Il Instruments p 64 Il Instruments p 64 Il Instruments p 77 hop: Update 19 g Materials S p 40 Jsers' Colloquit p 47 e Symposium p 67 ase: A Comprel p 78 o on Space DAR 1989) p 62 idics Technology y p 17 F Materials D p 28	Technology N90-21062 N90-21795 Jum N90-22079 Applications N90-22294 Telescope N90-22294 B9 Standard cience and N90-24586 for Long-Life N90-24586 m N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-25030 Operations N90-25030 Symposium. N90-25980 ata Analysis N90-26075
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer- of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3076] The Energetic Gamma-R4 (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-305] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3061-VOL-1] Proceedings of the LDE Workshop [NASA-CP-10046] First International Conferer	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 Il Instruments p 64 Il Instruments p 64 Il Instruments p 61 ay Experiment 1 p 77 hop: Update 19 g Materials S p 47 e Symposium p 47 e Symposium p 47 e Symposium p 67 ase: A Comprel p 78 o on Space OAR 1989) p 62 ics Technology y p 17 F Materials D p 28 icce on Laborato	Technology N90-21062 N90-21795 Jum N90-22079 Applications N90-22294 Telescope N90-22294 Standard cience and N90-24586 for Long-Life N90-24586 m N90-24637 N90-24637 N90-24637 N90-25030 Operations N90-25030 Symposium. N90-25980 ata Analysis N90-26075 ny Research
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-R <i>i</i> (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3068] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3070] Third Annual Workshop Automation and Robotics (SC [NASA-CP-3078] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3081-VOL-1] Proceedings of the LDE Workshop [NASA-CP-10046] First International Conferer for Planetary Atmospheres	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 ll Instruments p 61 ly Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I p 47 e Symposium p 67 hop: Colloquit p 47 e Symposium p 77 hop: Colloquit p 47 e Symposium p 78 n on Space DAR 1989) p 62 p 78 n on Space DAR 1989) p 62 p 77 F Materials D p 28 ace on Laborato	Technology N90-21062 N90-21795 Jurn N90-22075 Applications N90-22948 Telescope N90-22948 Standard cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-245030 Operations N90-25033 Operations N90-25032 N90-25503 Symposium. N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503 N90-25503
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Acrospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-10032] The Energetic Gamma-Ra (EGRET) Science Symposiun [NASA-CP-3071] National Educators' Works Experiments in Engineerin Technology [NASA-CP-3071] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3069] FAA/NASA En Route Nois [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3069] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3081-VOL-1] Proceedings of the LDE Workshop [NASA-CP-10046] First International Conferer for Planetary Atmospheres [NASA-CP-3077] Earth Sciences Required	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 il Instruments p 61 p 77 hop: Update 19 g Materials S p 28 ation Catalysts 1 Jers' Colloquit p 47 e Symposium p 77 hop: Update 19 g Materials S p 28 ation Catalysts 1 Jers' Colloquit p 47 e Symposium p 77 hop: Update 19 g Materials S p 28 ation Catalysts 1 Jers' Colloquit p 47 e Symposium p 77 ase: A Comprel p 78 n on Space DAR 1989) p 62 cics Technology y p 17 F Materials D p 28 ce on Laborato p 78 n on Space	Technology N90-21062 N90-21795 Jurn N90-22075 Applications N90-22948 Telescope N90-22948 Standard Cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 N90-24637 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium N90-25503 Symposium
1989 [NASA-CP-3041] Free-Space Power Transm [NASA-CP-10016] The 24th Aerospace Mech [NASA-CP-3062] The 1990 Goddard Confer of Artificial Intelligence [NASA-CP-3068] Spatial Displays and Spatia [NASA-CP-3008] The Energetic Gamma-Ra (EGRET) Science Symposiun [NASA-CP-3073] The Energetic Gamma-Ra (EGRET) Science Symposiun [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3074] Low-Temperature CO-Oxid CO2 Lasers [NASA-CP-3076] Eighteenth NASTRAN (R) I [NASA-CP-3067] Geoscience and a Lunar B for Lunar Exploration [NASA-CP-3069] Space Transportation Avior Volume 1: Executive summar [NASA-CP-3091-VOL-1] Proceedings of the LDE Workshop [NASA-CP-3077] Earth Sciences Requirer Sciences Experiment System	p 26 ission p 27 anisms Sympos p 47 ence on Space p 64 il Instruments p 61 by Experiment p 77 hop: Update 19 g Materials S p 28 ation Catalysts I p 47 e Symposium p 67 ase: A Comprel p 78 on Space DAR 1989) p 62 ciss Technology y p 17 F Materials D p 28 acc on Laborato p 78 ments for the	Technology N90-21062 N90-21795 Jurn N90-22075 Applications N90-22948 Telescope N90-22948 Standard Cience and N90-24350 for Long-Life N90-24637 N90-24637 N90-24637 N90-24637 Symposium N90-25030 Operations N90-25030 Symposium N90-25030 N90-25030 Symposium N90-25030 N90-25040 Information

Fifth Conference on Artificial Intell	iconos for Sasas
Applications	igence for space
[NASA-CP-3073]	p 63 N90-27275
Carbon in the Galaxy: Studies from	n Earth and Space
AMSAHTS 1990: Advances in Ma	terials Science and
Applications of High Temperature Sup	perconductors
[NASA-CP-10043]	p 29 N90-27792
(NASA-CP-3079)	n 58 N90-28224
Advanced Earth-to-Orbit Propulsion	Technology 1988,
volume 1	
[NASA-CP-3012-VOL-1]	p 27 N90-28611
INASA-CP-20401	D 62 N78-74659
Flight Mechanics/Estimation Theor	y Symposium
[NASA-CP-2002]	p 22 N78-76855
Development of confidence limits	by pivotal functions
for estimating software reliability	by protar functions
[NASA-TP-2709]	p 65 N87-23244
CONGRESSIONAL REPORTS	upper etmocobere
1990: An assessment report	upper autosphere
[NASA-RP-1242]	p 54 N90-28929
CONICAL BODIES	
cones	neuro-vortex flow on
[NASA-TP-2989]	p11 N90-20946
CONICAL CAMBER	
Study of lee-side flows over conica	ally cambered delta
[NASA-TP-2660-PT-1]	p 5 N87-23597
Study of lee-side flows over conica	ally cambered Delta
wings at supersonic speeds, part 2	
CONSERVATION FOLIATIONS	p 5 N87-25301
Conservation equations and ph	sical models for
hypersonic air flows in therm	al and chemical
NASA TO 28671	0 29 NR0 16115
CONSOLIDATION	p 30 1003-10115
Effects of combining vertical and he	prizontal information
into a primary flight display	
CONSTITUTIVE EQUATIONS	p 17 N88-12487
Nonlinear Constitutive Relations for	r High Temperature
Applications, 1986	
[NASA-CP-10010]	p 44 N88-21498
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows conf	p 44 N88-21498 odels in Continuum erences
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows conf [NASA-CP-3047]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows cont [NASA-CP-3047] CONTACT LOADS Mixed formulation for tripticalocc	p 44 N88-21498 odels in Continuum erences p 38 N90-10385
[NASA-CP-10010] Constitutive Relationships and Mi Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580
[NASA-CP-10010] Constitutive Relationships and Mi Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b>	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580
[NASA-CP-10010] Constitutive Relationships and Mi Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contam	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 mination Effects
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contan conference [NASA-CP-3002] An Auger electron spectro:	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS BADIATION	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage ntinuous wave, 4.8-
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2972]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8-
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-272] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 a of brazed, oraphite
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contan conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W,
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co 0.9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz to	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 ectors with 500-W, raveling-wave tubes
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co 0.9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tu [NASA-TP-2904] CONTINUUM MECHANICS	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 ectors with 500-W, raveting-wave tubes p 35 N89-21171
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz ti [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz ti [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2702] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz to [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattice	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz to [NASA-TP-2904] <b>CONTINUUM MECHANICS</b> Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTINUUM MODELING</b> Continuoum modeling of large lattice and projections.	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage ntinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] <b>CONTINUUM MECHANICS</b> Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTINUUM MODELING</b> Continuoum modeling of large lattice and projections [NASA-TP-2767]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tu [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattic and projections [NASA-TP-2767] CONTOURS	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage ntinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz the [NASA-TP-2788] Design, fabrication, and performance. electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz the [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveling-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set,
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performanc electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-TP-2904] CONTINUUM MODELING CONTINUUM MODELING CONTINUUM MODELING CONTINUUM MODELING Atlas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation on budget data set,
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-278] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-TP-2904] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Atlas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-RP-1185]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation on budget data set, p 55 N87-26489 optical image to the
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-278] Design, fabrication, and performance electrode, multistage depressed collector [NASA-TP-278] Design, fabrication, and performance electrode, multistage depressed collector [NASA-TP-278] CONTINUUM MOELANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatio July 1975 to June 1978 [NASA-RP-1185] Spatial vision processes: From the symbolic structures of contour informi	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 a of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation on budget data set, p 55 N87-26489 optical image to the ation
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] <b>CONTINUUM MCCHANICS</b> Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTINUUM MODELING</b> Continuum modeling of large lattice and projections [NASA-TP-2767] <b>CONTOURS</b> Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-2888]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set, p 55 N87-26489 optical image to the ation p 39 N89-13762
[NASA-CP-10010] Constitutive Relationships and M Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTACT LOADS</b> Mixed formulation for frictionless [NASA-TP-2897] <b>CONTAMINANTS</b> A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] <b>CONTINUOUS RADIATION</b> Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] <b>CONTINUUM MECHANICS</b> Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] <b>CONTINUUM MODELING</b> Continuum modeling of large lattice and projections [NASA-TP-2767] <b>CONTOURS</b> Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-2888] <b>CONTROL STABILITY</b> NASA(DOD Control/Structures data	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage ntinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveling-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation on budget data set, p 55 N87-26489 optical image to the ation p 39 N89-13762 raction Tachoology
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contan conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2972] CONTINUUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz ti [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattic and projections [NASA-TP-2767] CONTOURS Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatio July 1975 to June 1978 [NASA-TP-2838] CONTROL STABILITY NASA/DD Control/Structures Inte 1986	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage ntinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set, p 55 N87-26489 optical image to the ation p 39 N89-13762 raction Technology,
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tu [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-2838] CONTROL STABILITY NASA/DOD Control/Structures Inte 1986 [NASA-CP-2447-PT-2]	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite ectors with 500-W, raveling-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set, p 55 N87-26489 optical image to the ation p 39 N89-13762 raction Technology, p 25 N87-24495
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contant conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz th [NASA-TP-2788] Design, fabrication, and performance. electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz th [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-CP-3047] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Attas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-2838] [NASA-TP-2838] CONTROL STABILITY NASA/DOD Control/Structures Inte 1986	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveling-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set, p 55 N87-26489 optical image to the ation p 39 N89-13762 raction Technology, p 25 N87-24495
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contan conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUOUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz tr [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-TP-2904] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Atlas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-2838] CONTROL STABLITY NASA/DOD Control/Structures Inte 1986 [NASA-CP-2447-PT-2] CONTROL SUBFACES Steady and unsteady transonic press on a clioped delta wing for nitrbine	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 nination Effects p 72 N88-25390 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation in budget data set, p 35 N87-26489 optical image to the ation p 39 N89-13762 raction Technology, p 25 N87-24495 sure measurements and control surface
[NASA-CP-10010] Constitutive Relationships and M. Theories of Multiphase Flows conf [NASA-CP-3047] CONTACT LOADS Mixed formulation for frictionless [NASA-TP-2897] CONTAMINANTS A Study of Space Station Contam conference [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-CP-3002] An Auger electron spectro: surface-preparation contaminants [NASA-TP-2972] CONTINUUS RADIATION Performance of a small, graphite e depressed collector with a 500-W, co to 9.6-GHz traveling wave tube [NASA-TP-2788] Design, fabrication, and performance electrode, multistage depressed coll continuous wave, 4.8- to 9.6-GHz ti [NASA-TP-2904] CONTINUUM MECHANICS Constitutive Relationships and Mo Theories of Multiphase Flows conf [NASA-TP-2904] CONTINUUM MODELING Continuum modeling of large lattice and projections [NASA-TP-2767] CONTOURS Atlas of wide-field-of-view outgoing derived from Nimbus 6 Earth radiatic July 1975 to June 1978 [NASA-TP-288] Spatial vision processes: From the symbolic structures of contour inform [NASA-CP-2447-PT-2] CONTOL SUBFACES Steady and unsteady transonic pres on a clipped delta wing for pitching oscillations	p 44 N88-21498 odels in Continuum erences p 38 N90-10385 s contact problems p 45 N89-19580 scopy study of p 33 N90-16968 lectrode, multistage intinuous wave, 4.8- p 35 N88-15146 e of brazed, graphite lectors with 500-W, raveting-wave tubes p 35 N89-21171 dels in Continuum erences p 38 N90-10385 e structures: Status p 25 N88-14115 longwave radiation on budget data set, p 35 N89-21362 raction Technology, p 25 N87-26489 optical image to the ation p 39 N89-13762 raction Technology, p 25 N87-24495 sure measurements and control-surface

#### **CONVERGENT NOZZLES**

Control surface spanwise placement in active flutter SUDDression systems p 45 N89-16196 [NASA-TP-2873] Effect of control surface mass unbalance on the stability of a closed-loop active control system [NASA-TP-2952] p 47 N90-12042 CONTROL SYSTEMS DESIGN Piloted simulator study of allowable time delays in large-airplane response [NASA-TP-2652] p 19 N87-16849 Structural Dynamics and Control Interaction of Flexible Structures [NASA-CP-2467-PT-1] p 23 N87-22702 Modeling digital control systems with MA-prefiltered measurements (NASA-TP-2732) p 32 N87-22870 NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-2] p 25 N87-24495 A new approach to state estimation in deterministic digital control systems [NASA-TP-2745] p 32 N87-24585 Aeropropulsion '87. Session 2: Aeropropulsion Structures Research [NASA-CP-10003-SESS-2] p 18 N88-15785 Aeropropulsion '87. Session 4: Instrumentation and Controls Research [NASA-CP-10003-SESS-4] p 18 N88-15794 Further developments in exact state reconstruction in deterministic digital control systems [NASA-TP-2812] p 32 N88-18751 More on exact state reconstruction in deterministic digital control systems [NASA-TP-28471 p 33 N88-28177 Integrated tools for control-system analysis p 20 N89-19309 [NASA-TP-2885] Development and flight test experiences with a flight-crucial digital control system [NASA-TP-2857] p 20 N89-24327 Further developments in modeling digital control systems with MA-prefiltered measurements p 33 N89-24507 [NASA-TP-2909] Research in structures, structural dynamics and materials, 1989 [NASA-CP-10024] p 46 N89-24626 A new state reconstructor for digital controls systems using weighted-average measurements [NAŠA-TP-2936] p 33 N89-27039 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921 NASA/DOD Controls-Structures Interaction Technology 1989 [NASA-CP-3041] p 26 N90-21062 A general-purpose balloon-borne pointing system for solar scientific instruments [NASA-TP-3013] p 33 N90-21219 CONTROL THEORY Joint University Program for Air Transportation Research, 1984 p 1 N87-22604 [NASA-CP-2452] Joint University Program for Air Transportation Research, 1987 [NASA-CP-3028] p 2 N89-19230 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 p 15 N89-25201 [NASA-CP-3031-PT-3] Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921 CONTROLLABILITY Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 NASA/Army Rotorcraft Technology. Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics (NASA-CP-2495-VOL-2) p 1 N88-16632 CONTROLLERS Integrated tools for control-system analysis p 20 N89-19309 INASA-TP-28851 CONVECTIVE FLOW Preparative electrophoresis for space p 32 N88-10977 [NASA-TP-2777] Continuous flow electrophoresis system experiments on shuttle flights STS-6 and STS-7 p 32 N88-10978 [NASA-TP-2778] CONVECTIVE HEAT TRANSFER A review of high-speed, convective, heat-transfer computation methods [NASA-TP-2914] p 38 N89-27116 CONVERGENT NOZZLES Static performance of nonaxisymmetric nozzles with yaw thrust-vectoring varies [NASA-TP-2813] p8 N88-21118

## **CONVERGENT-DIVERGENT NOZZLES**

#### CONVERGENT-DIVERGENT NOZZLES

- Static internal performance of a two-dimensional convergent-divergent nozzle with thrust vectoring [NASA-TP-2721] p 5 N87-24432
- Static performance of an axisymmetric nozzle with post-exit vanes for multiaxis thrust vectoring [NASA-TP-2800] p 8 N88-20280
- Static performance of nonaxisymmetric nozzles with yaw thrust-vectoring vanes [NASA-TP-2813] p 8 N88-21118
- Static investigation of a two-dimensional convergent-divergent exhaust nozzle with multiaxis thrust-vectoring capability
- [NASA-TP-2973] p 11 N90-19193 Internal performance of two nozzles utilizing gimbal concepts for thrust vectoring
- [NASA-TP-2991] p 11 N90-19200 COOL STARS
- The M-type stars [NASA-SP-492] p 75 N88-11592 COPPER
- Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector
- [NASA-TP-2719] p 35 N87-21239 Thermoviscoplastic model with application to copper [NASA-TP-2845] p 45 N89-16183 Tungsten fiber reinforced copper matrix composites: A
- [NASA-TP-2924] p 29 N89-27796 Secondary electron emission characteristics of
- Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211
- COPPER ALLOYS Conventionally cast and forged copper alloy for high-heat-flux thrust chambers
- [NASA-TP-2694] p 30 N87-16902 CORNER FLOW
- Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser [NASA-TP-2624] p 3 N87-12541
- Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2646] p 21 N87-18576
- Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind turnel
- Wind Connect
   p 21
   N88-17686

   CORROSION
   Structural Ceramics
   [NASA-CP-2427]
   p 31
   N88-23872

   Fastener design manual
   Fastener design manual
   Fastener design manual
   Fastener design manual
- [NASA-RP-1228] p 42 N90-18740 CORROSION RESISTANCE The corrosion mechanisms for primer coated 2219-T87
- aluminum [NASA-TP-2715] p 30 N87-21076 COSMIC DUST
- Infrared Observations of Comets Halley and Wilson and Properties of the Grains
- [NASA-CP-3004] p 74 N89-13330 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview
- [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts,
- candidate experiments and feasibility study (NASA-CP-10026-VOL-2) p 59 N89-24023
- Planetary geosciences, 1988

   [NASA-SP-498]
   p 48
   N89-26274

   COSMIC RAYS
   Point Planetary Sector
   Planetary Sector
- Essays in Space Science [NASA-CP-2464] p 72 N87-24247
- COSMOLOGY
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 4: The point source catalog declination range 0 deg greater than delta greater than -30 deg
- [NASA-RP-1190-VOL-4] p 76 N89-14196 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 7: The small scale structure catalog [NASA-RP-1190-VOL-7] p 76 N89-14199
- [NASA-RP-1190-VOL-7]
- Theory of gearing
- [NASA-RP-1212] p 42 N90-19593 COUNTERFLOW
- Weak-wave analysis of shock interaction with a slipstream [NASA-TP-2848] p 8 N89-10020
- COUPLED MODES Revised NASA axially symmetric ring model for
- coupled-cavity traveling-wave tubes [NASA-TP-2675] p 35 N87-22923

#### COUPLING

- Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2681] p 21 N88-17686
- The effects of structural flap-lag and pitch-lag coupling on soft inplane hingeless rotor stability in hover [NASA-TP-3002] p 12 N90-28503
- COVARIANCE The estimation error covariance matrix for the ideal state reconstructor with measurement noise
- [NASA-TP-2881] p 63 N89-13994 CRACKS
- Stress intensity and crack displacement for small edge cracks
- [NASA-TP-2801] p 44 N88-17095 CRASHWORTHINESS
- Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections [NASA-TP-2951] p 16 N90-26823
- CREEP PROPERTIES Aeropropulsion '87. Session 1: Aeropropulsion Materials
- Research [NASA-CP-10003-SESS-1] p 18 N89-16697
- CREW PROCEDURES (INFLIGHT)
- Payload crew utilization for spacelab missions [NASA-TP-2976] p 24 N90-14256
- CRITICAL PATH METHOD
- Some path-following techniques for solution of nonlinear equations and comparison with parametric differentiation [NASA-TP-2654] p 64 N87-14054 CROP GROWTH
- Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module
- [NASA-CP-2479] p 60 N88-13852 CROSS CORRELATION
- Spanwise measurements of vertical components of atmospheric turbulence [NASA-TP-2963] p 58 N90-19718
- CROSSLINKING
- Degradation and crosslinking of perfluoroalkyl polyethers under X-ray irradiation in ultrahigh vacuum [NASA-TP-2910] p 31 N89-21103
- CRUCIFORM WINGS Mach 6 experimental and theoretical stability and performance of a cruciform missile at angles of attack
- up to 65 degrees [NASA-TP-2733] p 5 N87-23592
- CRYOGENIC COOLING Cryogenic Fluid Management Technology Workshop.
- Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924
- Workshop on Technology Development Issues for the Large Deployable Reflector (LDR) [NASA-CP-2407] p 75 N88-20235
- CRYOGENIC FLUID STORAGE
- Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924
- CRYOGENIC FLUIDS Cryogenic Fluid Management Technology Workshop.
- Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924
- Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings [NASA-TP-2816] p 41 N88-18933
- Cryogenic Fluid Management Technology Workshop. Volume 2: Roundtable Discussion of Technology Requirements [NASA-CP-10009] p 37 N88-20599
- [NASA-CP-10009] p 37 N88-20599 CRYOGENIC ROCKET PROPELLANTS Cryogenin Fluid Management Turi
- Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924
- CRYOGENIC TEMPERATURE
- Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump rotors [NASA-TP-3005] p 18 N90-23403
- CRYOGENIC WIND TUNNELS Evolution, calibration, and operational characteristics of
- the two-dimensional test section of the Langley 0.3-meter transonic cryogenic tunnel [NASA-TP-2749] p 21 N87-28570
- [NASA SC(2)-0714 airfoil data corrected for sidewall boundary-layer effects in the Langley 0.3-meter transonic cryogenic tunnel
- [NAŠA-TP-2890] p 9 N89-17568 Hot-jet simulation in cryogenic wind tunnels
- [NASA-RP-1220] p 15 N89-23448 CRYOGENICS
- Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924

SUBJECT INDEX

CRYSTAL DISLOCATIONS		
Indentation plasticity and fracture in	silicon	NR0 10006
CRYSTAL GROWTH	p 30	1403-10330
Growth of solid solution single crysta	als	
(NASA-TP-2787)	p 32	N88-14212
envisation of contract of cont	ncentra	ation near a
[NASA-TP-2865]	p 39	N89-16139
CRYSTAL LATTICES	•	
Hydrogen trapping and the interaction	n of hy	drogen with
(NASA-TP-2744)	n 30	N87-25463
CRYSTALLOGRAPHY	F	
Auger electron intensity variations i	in oxyg	en-exposed
large grain polycrystalline silver	a 67	NIGO 20022
CUES	p 0/	109-30022
Effect of motion cues during comple	x curve	ed approach
and landing tasks: A piloted simulation	study	
[NASA-1P-2773] Stereopsis queing effects on 1	ρ 14 1000 ρτίι	N88-12480
performance in a simulated rotorcraft		- to buichee
[NASA-TP-2980]	p 17	N90-21004
CULTURE TECHNIQUES		
(NASA-CP-2485)	n 58	N88-17168
CURRENT DENSITY	p 00	
Performance of textured carbon on	coppe	er electrode
multistage depressed collectors wit	h mec	lium-power
(NASA-TP-2665)	p 34	N87-17990
CURVATURE	•	
Theory of gearing		NO0 40500
(NASA-RP-1212)	p 42	N90-19593
Simplified curve fits for the thermod	dynami	c properties
of equilibrium air		
[NASA-RP-1181]	p 36	N87-26309
Mixed formulation for frictionless	conta	ct problems
[NASA-TP-2897]	p 45	N89-19580
CURVES		
Theory of gearing	n 42	NO0 10502
	μ 42	1190-19593
Cyclic loads tests of carbon involute	solid r	ocket motor
outer boot ring segments	_	
[NASA-TP-2884]	p 45	N89-16192
boron- and borsic-reinforced 6061 alu	rmai e: minum	composites
[NASA-TP-1063]	p 28	N88-70029
CYCLOHEXANE		
Velocity profiles in laminar diffusion	flames	NO7 40005
[NASA-1P-2596]	p 36	N87-18035
Free-Space Power Transmission		
[NASA-CP-10016]	p 27	N90-21795
CYLINDRICAL BODIES		
Straight cylindrical seal for	high-¢	performance
[NASA-TP-1850]	p 36	N87-23936
Surface flow and heating distribution	ns on a	a cylinder in
near wake of Aeroassist Flight I	Experin	nent (AFE)
configuration at incidence in Mach 10	Air n 28	NOD.14403
CYLINDRICAL SHELLS	P 30	1130-14435
Application of Newton's method to t	he pos	tbuckling of
rings under pressure loadings		
[NASA-TP-2941]	p 46	N89-29811
· <b>_</b>		·
D		
Low velocity instrumented impact to	estina	of four new
damage tolerant carbon/epoxy compo	site sys	stems

[NASA-TP-	3029		p 29	N90-25198
DAMPERS				
Rotordyn	amic Insta	bility Problems in	n High-l	Performance
Turbomachi	inery, 1988	3		
[NASA-CP-	3026]		p 41	N89-22891
DATA ACQU	SITION			
Analog	signal	conditioning	for	flight-test
instrumenta	tion	_		-
(NASA-RP-	1159]		p 17	N87-29533
Five yea	r olobal o	tataset: NMC or	peratio	nal analyses

- (1978 to 1982) [NASA-RP-1194] p 55 N87-29996
- Outgassing data for selecting spacecraft materials [NASA-RP-1124] p 28 N88-10117
- The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302
The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users [NASA-TP-3008] p 12 N90-27649

- DATA BASE MANAGEMENT SYSTEMS Third Conference on Artificial Intelligence for Space Applications, part 1
- INASA-CP-2492-PI-11 p 62 N88-16360 Catalog of open clusters and associated interstellar matter
- [NASA-RP-1202] p 76 N88-29652 DATA BASES
- Catalog of infrared observations. Part 1: Data [NASA-RP-1196-PT-1-ED-2] p 73 N88-15738 The NASA scientific and technical information system:
- Its scope and coverage [NASA-SP-7065] p 71 N89-15779
- BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562 Two-Dimensional Intercomparison of Stratospheric
- Models [NASA-CP-3042] p 53 N90-11405
- Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland p 54 N90-20562 [NASA-RP-1233-VOL-1]
- Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat
- [NASA-RP-1233-VOL-2] p 54 N90-20563 Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat
- p 54 N90-20564 [NASA-RP-1233-VOL-4] Proceedings of the LDEF Materials Data Analysis
- Workshop [NASA-CP-10046] p 28 N90-26075 DATA COMPRESSION
- Experiments in encoding multilevel images as quadtrees [NASA TP-2722] p 65 N87-28367
- Proceedings of the Scientific Data Compression Workshop
- [NASA-CP-3025] p 63 N89-22332 DATA LINKS
- A piloted simulation study of data link ATC message exchange p 13 N89-15900 (NASA-TP-2859)
- DATA MANAGEMENT Computer Sciences and Data Systems, volume 1
- p 62 N87-19931 [NASA-CP-2459-VOL-1] p 62 N87-19931 Proceedings of the Scientific Data Compression Workshop
- [NASA-CP-3025] p 63 N89-22332 The 1989 Goddard Conference on Space Applications of Artificial Intelligence
- [NASA-CP-3033] p 64 N89-26578 The MSFC/UAH Data Management Symposium [NASA-CP-2040] p 62 N78-74659
- DATA PROCESSING
- Pulse Code Modulation (PCM) data storage and analysis using a microcomputer p 33 N87-12718 [NASA-TP-2629]
- NASA/MSFC FY-85 Atmospheric Processes Research Review
- [NASA-CP-2402] p 55 N87-13043 Earth resources: A continuing bibliography with indexes (issue 54)
- [NASA-SP-7041(54)] p 49 N87-27315 User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape
- p 56 N89-14648 [NASA-RP-1210] Nimbus-7 ERB Solar Analysis Tape (ESAT) user's quide
- [NASA-RP-1211] p 79 N89-30151 Satellite radar altimetry over ice. Volume 2: Users' guide
- for Greenland elevation data from Seasat [NASA-RP-1233-VOL-2] p 54 N90-20563 DATA PROCESSING EQUIPMENT
- Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140
- DATA REDUCTION Pulse Code Modulation (PCM) data storage and analysis
- using a microcomputer [NASA-TP-2629] p 33 N87-12718
- A synchronous data analyzer for the Minimum Delay Data Format (MDDF) and Launch Trajectory Acquisition System (LTAS)
- [NASA-TP-2743] p 34 N87-24590 DATA STORAGE
- Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718
- Computer Sciences and Data Systems, volume 2 VASA-CP-2459-VOL-21 p 62 N87-19932 [NASA-CP-2459-VOL-2] Experiments in encoding multilevel images as quadtrees
- p 65 N87-28367 [NASA-TP-2722]

- DATA TRANSMISSION
- A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation (NASA-TP-2837) p 13 N89-11726 Proceedings of the Scientific Data Compression
- Workshop [NASA-CP-3025] o 63 N89-22332
- Digitally modulated bit error rate measurement system for microwave component evaluation [NASA-TP-2912]
- p 23 N89-28545 **DECISION MAKING**
- National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074]
- p 28 N90-24350 DECLINATION
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 6: The point source catalog declination range -50 deg greater than delta greater than -90 deg p 76 N89-14198 [NASA-RP-1190-VOL-6]
- DECOUPLING
- A piloted evaluation of an oblique-wing research aircraft motion simulation with decoupling control laws [NASA-TP-2874] p 20 N89-15930
- DEFLECTION
- Optical measurement of propeller blade deflections [NASA-TP-2841] p 39 N88-28286 DEFLECTORS
- Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability [NASA-TP-2933] p 10 N89-27634
- DEFORMATION
- Mixed formulation for frictionless contact problems [NASA-TP-2897] p 45 N89-19580 p 45 N89-19580 Application of Newton's method to the postbuckling of
- rings under pressure loadings [NASA-TP-2941] p 46 N89-29811 DEGRADATION
- Surface catalytic degradation study of two linear perfluoropolyalkylethers at 345 C
- [NASA-TP-2774] p 27 N88-12543 DEGREES OF FREEDOM Optimized control
- resolved rate Laboratory seven-degree-of-freedom Telerobotic Manipulator (LTM) with application to three-dimensional graphics simulation
- [NASA-TP-2938] p 64 N90-10618 DELAMINATING
- Three-dimensional analysis of a postbuckled embedded delamination
- [NASA-TP-2823] p 44 N88-26684 DELTA WINGS
- Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233
- Study of lee-side flows over conically cambered delta
- wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597
- Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2
- [NASA-TP-2660-PT-2] p 5 N87-25301 Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane
- INASA-TP-27471 p 19 N87-26922 Pressure measurements on a thick cambered and
- twisted 58 deg delta wing at high subsonic speeds [NASA-TP-2713] p 6 N87p 6 N87-27643
- Supersonic aerodynamics of delta wings p7 NBB-17615 [NASA-TP-2771]
- Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations
- [NASA-TP-2594] p 8 N88-28895 DEPLOYMENT
- The 21st Aerospace Mechanisms Symposium [NASA-CP-2470] p 43 N87-29858 Workshop on Technology Development Issues for the
- Large Deployable Reflector (LDR) [NASA-CP-2407] p 75 N88-20235
- The 23rd Aerospace Mechanisms Symposium [NASA-CP-3032] p 46 N89-23892 DEPOSITION
- Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector
- [NASA-TP-2719] p 35 N87-21239 Influence of the deposition conditions on radiofrequency magnetron sputtered MoS2 films
- [NASA-TP-2994] p 33 N90-21210 DEPTH
- Determination of depth-viewing volumes for stereo three-dimensional graphic displays
- [NASA-TP-2999] p 61 N90-22965

# **DIGITAL COMMAND SYSTEMS**

DESERTS

- Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers [NASA-TP-2643] p 48 N87-22281
- Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts
  - [NASA-TP-2756] p 49 N87-28162 Summary of along-track data from the Earth radiation budget satellite for several major desert regions
- [NASA-RP-1197] p 56 N88-20772
- DESIGN ANALYSIS

[NASA-TP-2799]

[NASA-TP-2815]

Optimization, part 2

Optimization, part 3

[NASA-RP-1228]

[NASA-TP-3039]

[NASA-TP-2668]

[NASA-CP-10006]

[NASA-CP-10017]

[NASA-TP-2654]

[NASA-TP-2677]

DIFFUSION FLAMES

[NASA-TP-2757]

DIGITAL COMMAND SYSTEMS

DIFFUSION

svetems

[NASA-SP-7064-VOL-3]

DIFFERENTIAL EQUATIONS

DESORPTION

DETECTION

DIAGNOSIS

Conference

DICTIONARIES

[NASA-CP-3031-PT-2]

(NASA-CP-3031-PT-3)

Fastener design manual

coupled-cavity traveling-wave tube

eclectic design concept

- Recent Experiences in Multidisciplinary Analysis and Optimization, part 1
- [NASA-CP-2327-PT-1] p 13 N87-11717 Applicability of linearized-theory attached-flow methods
- to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges [NASA-TP-2653] p 3 p3 N87-15174
- Design of 9.271-pressure-ratio 5-stage core compressor and overall performance for first 3 stages
- NASA-TP-2597 p 17 N87-17699 Lewis inverse design code (LINDES): Users manual
- p 4 N87-20238 [NASA-TP-2676] Design, fabrication and performance of small, graphite
- electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes
- p 35 N87-20474 [NASA-TP-2693] Structural Dynamics and Control Interaction of Flexible
- Structures [NASA-CP-2467-PT-2] p 23 N87-22729
- On minimizing the number of calculations in design-by-analysis codes [NASA-TP-2706] p 5 N87-23586
- Aeropropulsion '87. Session 2: Aeropropulsion Structures Research
- [NASA-CP-10003-SESS-2] p 18 N88-15785 A transonic-small-disturbance wing design
- methodology [NASA-TP-2806] p7 N88-17614 A performance index approach to aerodynamic design

p 7 N88-19420

p 19 N88-19475

p 15 N89-25173

p 15 N89-25201

p 42 N90-18740

p 35 N90-27965

p 29 N87-18629

p 12 N88-17616

p 32 N89-17682

p 70 N89-13301

p 64 N87-14054

p 30 N87-18644

p 36 N87-18035

p 32 N87-27067

A-15

- with the use of analysis codes only p 7 N88-18552 [NASA-TP-2805]
- Aerodynamic characteristics of wings designed with a combined-theory method to cruise at a Mach number of

Rotorcraft flight-propulsion control integration: An

Recent Advances in Multidisciplinary Analysis and

Recent Advances in Multidisciplinary Analysis and

Spent-beam refocusing analysis and multistage depressed collector design for a 75-W, 59- to 64-GHz

Electron stimulated desorption of atomic oxygen from

Airborne Wind Shear Detection and Warning Systems:

First Combined Manufacturers' and Technologists'

Some path-following techniques for solution of nonlinear

Effect of LID (Registered) processing on the

microstructure and mechanical properties of Ti-6AI-4V and

Exact state reconstruction in deterministic digital control

Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials

Velocity profiles in laminar diffusion flames

equations and comparison with parametric differentiation

Microgravity Combustion Diagnostics Workshop

NASA thesaurus. Volume 3: Definitions

#### DIGITAL DATA

**DIGITAL DATA** 

- A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation [NASA-TP-2837] p 13 N89-11726 Digitally modulated bit error rate measurement system
- for microwave component evaluation [NASA-TP-2912] p 23 N89-28545
- DIGITAL ELECTRONICS Advanced detection, isolation, and accommodation of sensor failures in turbofan engines: Real-time
- microcomputer implementation [NASA-TP-2925] p 20 N90-15112
- DIGITAL FILTERS Modeling digital control systems with MA-prefiltered measurements
- p 32 N87-22870 [NASA-TP-2732] Further developments in modeling digital control systems with MA-prefiltered measurements
- [NASA-TP-2909] p 33 N89-24507 DIGITAL SYSTEMS Modeling digital control systems with MA-prefiltered
- measurements [NASA-TP-2732] p 32 N87-22870
- A new approach to state estimation in deterministic digital control systems [NASA-TP-2745] p 32 N87-24585
- Further developments in exact state reconstruction in deterministic digital control systems p 32 N88-18751 [NASA-TP-2812]
- More on exact state reconstruction in deterministic digital control systems
- [NASA-TP-2847] p 33 N88-28177 Singular perturbations and time scales in the design of digital flight control systems
- [NASA-TP-2844] p 19 N89-12569 Flight control systems development and flight test experience with the HiMAT research vehicles
- [NASA-TP-2822] p 20 N89-15929 Development and flight test experiences with a flight-crucial digital control system
- [NASA-TP-2857] p 20 N89-24327 Further developments in modeling digital control systems with MA-prefiltered measurements
- p 33 N89-24507 [NASA-TP-2909] DIGITAL TECHNIQUES
- Automated Reduction of Data from Images and Holograms [NASA-CP-2477] p 6 N87-29432
- Digital enhancement of flow field images NASA-TP-2770] p 62 N88-20833 A new state reconstructor for digital controls systems [NASA-TP-2770]
- using weighted-average measurements [NASA-TP-2936] p 33 N89-27039 DIHEDRAL ANGLE
- Effect of milling machine roughness and wing dihedral on the supersonic aerodynamic characteristics of a highly swept wing [NASA-TP-2918] p 10 N89-25117
- DIRECT CURRENT An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance
- and dc methods [NASA-TP-2820] p 30 N89-19406
- DIRECTIONAL CONTROL Development and evaluation of an airplane electronic display format aligned with the inertial velocity vector [NASA-TP-2648] p 16 N87-13438 p 16 N87-13438

DIRECTIONAL STABILITY

- Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional characteristics of the F-14 airplane
- [NASA-TP-2769] p 6 N88-12455 DIRECTIVITY
- Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers
- [NASA-TP-2643] p 48 N87-22281 DISCRETE FUNCTIONS
- A transient response method for linear coupled substructures [NASA-TP-2926] p 23 N90-13444
- DISPERSING Compatability of dispersion-strengthened platinum with
- resistojet propellants [NASA-TP-2765] p 27 N88-12538 DISPLACEMENT
- Stress intensity and crack displacement for small edge cracks
- [NASA-TP-2801] p 44 N88-17095 Research in structures, structural dynamics and materials, 1989
- [NASA-CP-10024] p 46 N89-24626 Integrated force method versus displacement method for finite element analysis
- [NASA-TP-2937] p 47 N90-18081

DISPLACEMENT MEASUREMENT

- Optical measurement of propeller blade deflections [NASA-TP-2841] p 39 N88-28286 DISPLAY DEVICES
- Development and evaluation of an airplane electronic display format aligned with the inertial velocity vector [NASA-TP-2648] p 16 N87-13438
- Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation
- p 12 N87-29469 (NASA-TP-25671 Effects of combining vertical and horizontal information into a primary flight display
- [NASA-TP-2783] p 17 N88-12487 A general solution to the silhouette problem
- [NASA-TP-2695] p 61 N88-14629 Simulator evaluation of a display for a Takeoff Performance Monitoring System
- [NASA-TP-2908] p 20 N89-23469 A simulation evaluation of the engine monitoring and control system display
- p 17 N90-18393 [NASA-TP-2960] Graphics Technology in Space Applications (GTSA
- 1989) [NASA-CP-3045] p 62 N90-20651 Stereopsis cueing effects on hover-in-turbulence
- erformance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004
- Spatial Displays and Spatial Instruments [NASA-CP-10032] p 6 p 61 N90-22918 DISTANCE
- Atlas of galaxies useful for measuring the cosmological distance scale
- [NASA-SP-496] p 74 N89-12513 DISTRIBUTED PROCESSING
- Computer Sciences and Data Systems, volume 1 [NASA-CP-2459-VOL-1] p 62 N87-19931
- Computer Sciences and Data Systems, volume 2 [NASA-CP-2459-VOL-2] p 62 N87-19932 First Annual Workshop on Space Operations Automation
- and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206
- DOCUMENTATION NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers,
- 1977-1986 [NASA-SP-7063(01)] p 70 N87-30218
- NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1987 [NASA-SP-7063(02)] p 70 N88-22830 DOCUMENTS
- The NASA scientific and technical information system: Its scope and coverage
- [NASA-SP-7065] p 71 N89-15779 DOMAINS
- Frequency domain laser velocimeter signal processor: A new signal processing scheme
- [NASA-TP-2735] p 40 N87-27994 DOPED CRYSTALS
- Indentation plasticity and fracture in silicon [NASA-TP-2863] p 30 p 30 N89-10996
- DOPPLER RADAR Doppler Radar Detection of Wind Shear
- p 12 N87-10054 [NASA-CP-2435] NASA/MSFC FY-85 Atmospheric Processes Research Review
- (NASA-CP-2402) p 55 N87-13043
- Wind shear detection. Forward-looking sensor [NASA-CP-10004] p 12 N88-14970
- Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' Conference
- [NASA-CP-10006] p 12 N88-17616 DRAG
- Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p 4 N87-21873 (NASA-TP-2704)
- Influence of base modifications on in-flight base drag in the presence of jet exhaust for Mach numbers from 0.7 to 1.5
- [NASA-TP-2802] p 37 N88-18881 DRAG MEASUREMENT
- Drag measurements on a laminar-flow body of revolution in the 13-inch magnetic suspension and balance system p 9 N89-19232 (NASA-TP-28951 DRAG REDUCTION
- Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport
- p 14 N87-20990 INASA-TP-26781

Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers [NASA-TP-2638] p 37 N88-14299 DRAINAGE PATTERNS

Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401

DROPS (LIQUIDS) Liquid drop stability for protein crystal growth in microgravity

- [NASA-TP-2724] p 58 N87-20727 DUCTS
- Aeropropulsion '87. Session 3: Internal Fluid Mechanics Research
- [NASA-CP-10003-SESS-3] p 18 N88-15790 DURABILITY
- Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimides p 27 N87-18611 [NASA-TP-2663]
- Structural Integrity and Durability of Reusable Space Propulsion Systems
- [NASA-CP-2471] p 26 N87-22766 DUST
- Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts [NASA-TP-2756] p 49 N87-28162
- DYNAMIC CHARACTERISTICS Dynamic analysis of multimesh-gear helicopter
- transmissions p 41 N88-17045 [NASA-TP-2789] Dynamic characteristics of a vibrating beam with periodic
- variation in bending stiffness INASA-TP-26971 p 44 N88-23988
- Time-Variable Phenomena in the Jovian System {NASA-SP-494} p 78 N89-28474 Low-speed wind-tunnel investigation of the flight
- dynamic characteristics of an advanced turboprop business/commuter aircraft configuration
- p 20 N90-19239 [NASA-TP-2982] DYNAMIC CONTROL
- Analysis of flight data from a High-Incidence Research Model by system identification methods [NASA-TP-2940] p 20 N90-10074
- DYNAMIC LOADS
- Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears
- [NASA-TP-2610] p 41 N87-18095 Langley Aircraft Landing Dynamics Facility [NASA-RP-1189] p 21 p 21 N87-29544
- DYNAMIC MODELS
- Derivation and definition of a linear aircraft model NASA-RP-1207 j p 19 N89-15123 [NASA-RP-1207] DYNAMIC PRESSURE
  - Aerodynamic pressures and heating rates on surfaces between split elevons at Mach 6.6
- [NASA-TP-2855] p 37 N89-12822 Method for experimental determination of flutter speed by parameter identification

Shape sensitivity analysis of wing static aeroelastic

Three-step cylindrical seal for high-performance

Rotordynamic Instability Problems in High-Performance

Combined aerodynamic and structural dynamic problem

Modeling of joints for the dynamic analysis of truss

Space station structures and dynamics test program

Structural Dynamics and Control Interaction of Flexible

Structural Dynamics and Control Interaction of Flexible

Structural Integrity and Durability of Reusable Space

Preliminary structural design of composite main rotor

p 15 N89-26844

p 15 N88-22031

p 36 N87-24639

p 41 N89-22891

Theory and

p 4 N87-17669

p 43 N87-18855

p 43 N87-20567

p 43 N87-20568

p 23 N87-22702

p 23 N87-22729

p 26 N87-22766

p 28 N87-25435

[NASA-TP-2923]

characteristics

turbomachines

(NASA-TP-18491

(NASA-CP-30261

implementation

structures

Structures

Structures

[NASA-TP-2418]

[NASA-TP-2661]

[NASA-TP-2710]

[NA\$A-CP-2467-PT-1]

[NASA-CP-2467-PT-2]

blades for minimum weight

Propulsion Systems

[NASA-CP-2471]

[NASA-TP-2730]

Turbomachinery, 1988

DYNAMIC STRUCTURAL ANALYSIS

emulating routines (CASPER):

Sensitivity Analysis in Engineering [NASA-CP-2457]

(NASA-TP-2808)

DYNAMIC STABILITY

DYNAMIC RESPONSE

The 58th Shock and Vibration Symposium, volume 1 p 43 N88-13609 [NASA-CP-2488-VOL-1] The 58th Shock and Vibration Symposium, volume 2

- p 44 N88-18948 [NASA-CP-2488-VOL-2] Lewis Structures Technology, 1988. Volume 2: Structural Mechanics
- [NASA-CP-3003-VOL-2] p 44 N88-22382 Lewis Structures Technology, 1988. Volume 3: Structural
- Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-22408 Lewis Structures Technology, 1988. Volume 1: Structural
- Dynamics [NASA-CP-3003-VOL-1] p 44 N88-23226
- SRM propellant and polymer materials structural test program
- [NASA-TP-2821] p 44 N88-25013 Partitioning strategy for efficient nonlinear finite element dynamic analysis on multiprocessor computers [NASA-TP-2850] p 45 N
- p 45 N89-16170 Research in structures, structural dynamics and materials, 1989
- [NASA-CP-10024] p 46 N89-24626 Computational Methods for Structural Mechanics and **Dynamics**
- [NASA-CP-3034-PT-2] p 46 N89-24654 DYNAMIC TESTS
- Space station structures and dynamics test program [NASA-TP-2710] p 43 N87-20568 **DYNAMICS EXPLORER 1 SATELLITE**
- Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite
- [NASA-TP-2723] p 55 N87-26491

# Ε

#### EARTH ALBEDO

- Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's guide p 48 N88-17096 (NASA-RP-1199) Atlas of albedo and absorbed solar radiation derived from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985 [NASA-RP-1231] p 57 N90-17233 EARTH ATMOSPHERE Calculation and accuracy of ERBE scanner neasurement locations p 72 N87-28471 [NASA-TP-2670] An assessment model for atmospheric composition [NASA-CP-3023] p 57 N89-20588 A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun [NASA-RP-1224-VOL-1] p 53 N90-13893 EARTH CRUST Crustal Dynamics Project: Catalogue of site information [NASA-RP-1198] p 52 N88-19037 EARTH LIMB Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide [NASA-TP-2761] p 56 N88-14572 EARTH OBSERVATIONS (FROM SPACE) **Remote Sensing in Polarized Light** p 72 N89-14189 [NASA-CP-3014] Polar Ozone Workshop. Abstracts p 51 N89-14503 [NASA-CP-10014] EARTH OBSERVING SYSTEM (EOS) Earth Sciences Requirements for the Information Sciences Experiment System p 50 N90-27140 [NASA-CP-3072] EARTH ORBITAL ENVIRONMENTS A Study of Space Station Contamination Effects --conference [NASA-CP-3002] p 72 N88-25390 The effects of simulated space environmental parameters on six commercially available composite materials [NASA-TP-2906] p 29 N89-19385 NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 EARTH RADIATION BUDGET Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -November 1978 to October 1985
- p 55 N88-10451 [NASA-RP-1186]

- Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 p 56 N89-17374 [NASA-RP-1214] Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation
- [NASA-RP-1184-VOL-2] p 57 N89-20587 Nimbus-7 data product summary
- [NASA-RP-1215] p 48 N89-22152 Nimbus-7 ERB Solar Analysis Tape (ESAT) user's
- [NASA-RP-1211] p 79 N89-30151 Atlas of albedo and absorbed solar radiation derived from Nimbus 6 earth radiation budget data set, July 1975 to May 1978
- [NASA-RP-1230] p 57 N90-14741 Atlas of albedo and absorbed solar radiation derived
- from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985 [NASA-RP-1231] p 57 N90-17233
- EARTH RADIATION BUDGET EXPERIMENT Calculation and accuracy of ERBE scanner measurement locations
- [NASA-TP-2670] p 72 N87-28471 Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -
- November 1978 to October 1985 [NASA-RP-1186] p 55 N88-10451 Summary of along-track data from the Earth radiation budget satellite for several major desert regions [NASA-RP-1197] p 56 N88-20772
- Summary of along-track data from the earth radiation budget satellite for several representative ocean regions [NASA-RP-1206] p 56 N89-14634 Angular radiation models for earth-atmosphere system.
- Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587
- EARTH RESOURCES Earth resources: A continuing bibliography with indexes (issue 54)
- [NASA-SP-7041(54)] p 49 N87-27315 Earth resources: A continuing bibliography with indexes
- (issue 57) [NASA-SP-7041(57)] o 49 N88-23314
- Earth resources: A continuing bibliography with indexes (issue 62)
- [NASA-SP-7041(62)] p 50 N89-29825 Earth resources: A continuing bibliography with indexes (issue 63) [NASA-SP-7041(63)]
- p 50 N90-12091 ECOLOGY
- Exobiology and Future Mars Missions [NASA-CP-10027] p 59 N89-26334
- EDDY CURRENTS Technique for temperature compensation of eddy-current proximity probes
- [NASA-TP-2880] p 39 N89-15380 Parametric study of power absorption from
- electromagnetic waves by small ferrite spheres [NASA-TP-2949] p 66 N90-12282 EDGES
- Stress intensity and crack displacement for small edge cracks
- [NASA-TP-2801] p 44 N88-17095 Spatial vision processes: From the optical image to the symbolic structures of contour information
- p 39 N89-13762 [NASA-TP-2838] EDUCATION
- National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology
- [NASA-CP-3074] p 28 N90-24350 EFFECTIVE PERCEIVED NOISE LEVELS
- Effects of background noise on total noise annoyance [NASA-TP-2630] p 66 N87-14120 EIGENVALUES
- Sensitivity Analysis in Engineering [NASA-CP-2457] p 43 N87-18855 EIKONAL EQUATION Eikonal solutions to optical model coupled-channel
- auations [NASA-TP-2830] p 68 N88-30402
- Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103
- EJECTION
- Calculation of two-neutron multiplicity in photonuclear reactions [NASA-TP-2968] p 68 N90-14890
- EL NINO On the statistics of El Nino occurrences and the
- relationship of El Nino to volcanic and solar/geomagnetic activity [NASA-TP-2948]
  - p 79 N90-12456

ELE	CTR	OD	ES
-----	-----	----	----

ELASTIC DEFORMATION
Stress intensity and crack displacement for small edge
[NASA-TP-2801] p 44 N88-17095
ELASTIC PROPERTIES
Weld stresses beyond elastic limit: Materials
discontinuity
FLASTIC SCATTERING
Eikonal solutions to optical model coupled-channel
equations
[NASA-TP-2830] p 68 N88-30402
ELECTRIC BATTERIES
(SERT)
[NASA-CP-2484] p 50 N87-29914
Space Electrochemical Research and Technology
(SERT), 1989
{NASA-CP-3056} p 50 N90-20454
ELECTRIC CORONA
electrodes
[NASA-TP-2645] p 68 N87-14998
ELECTRIC DISCHARGES
Asymptotic analysis of corona discharge from thin
electrodes [NASA.TP.2645] 0.68 N87-14998
ELECTRIC ENERGY STORAGE
Space Electrochemical Research and Technology
(SERT), 1989
[NASA-CP-3056] p 50 N90-20454
ELECTRIC FIELDS
Double Layers in Astrophysics
[NASA-GP-2469] p /2 N67-23313
Laser production and beating of plasma for MHD
application
[NASA-TP-2798] p 68 N88-18443
ELECTRICAL RESISTIVITY
Continuous flow electrophoresis system experiments on
SNUTTIE FUGITIS 515-6 and 515-7 [NASA_TP.2778] 0.32 N88-10978
FLECTRO-OPTICS
Sensor performance analysis
[NASA-RP-1241] p 50 N90-23780
ELECTROCATALYSTS
One of the strength of the str
Space Electrochemical Research and Technology
Space Electrochemical Research and Technology (SERT) (NASA_CP-2484) p.50, N87-29914
(SERT) (NASA-CP-2484) p 50 N87-29914 Space Electrochemical Research and Technology
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology
(SERT) (NASA-CP-2484) p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts (NASA-CP-10029) p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 ELECTROCHEMICAL CORROSION An electrochemical study of corrosion protection by
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 ELECTROCHEMICAL CORROSION An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 ELECTROCHEMICAL CORROSION An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods
space Electrochemical Research and Technology (SERT)       [NASA-CP-2484]     p 50       Space Electrochemical Research and Technology Conference: Abstracts       [NASA-CP-1029]     p 50       N89-22982       Space Electrochemical Research and Technology (SERT), 1989       [NASA-CP-3056]     p 50       NSA-CP-3056]     p 50       N90-20454       ELECTROCHEMICAL CORROSION       An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods       [NASA-TP-2820]     p 30
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conterence: Abstracts [NASA-CP-1029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 ELECTROCHEMICAL CORROSION An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 ELECTROCHEMISTRY
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 ELECTROCHEMICAL CORROSION An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 ELECTROCHEMISTRY Space Electrochemical Research and Technology (SERT)
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914
space Electrochemical Research and Technology (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology Conference: Abstracts         [NASA-CP-10029]       p 50         N854-CP-10029]       p 50         N854-CP-10029]       p 50         N854-CP-10029]       p 50         N854-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods         [NASA-TP-2820]       p 30         RELECTROCHEMISTRY       Space Electrochemical Research and Technology (SERT)         [NASA-CP-2484]       p 50         N85-CP-2484]       p 50
(SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N89-22982         Space Electrochemical Research and Technology         (SERT), 1989         [NASA-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-TP-2820]       p 30         N89-19406         ELECTROCHEMISTRY         Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         N87-29914         The 1986 Goddard Space Flight Center Battery         Workshop       [NASA-CP-2486]         [NASA-CP-2486]       p 35
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-1029]       p 50         Space Electrochemical Research and Technology         (SERT)       1989         [NASA-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-TP-2820]       p 30         N89-19406         ELECTROCHEMISTRY         Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         N87-29914         The 1986 Goddard Space Flight Center Battery         Workshop       p 35         [NASA-CP-2466]       p 35         p 35       N88-11021         Space Electrochemical Research and Technology
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N85-22982         Space Electrochemical Research and Technology         (SERT), 1989         [NASA-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-TP-2820]       p 30         Research and Technology         (SERT)         Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         N83-29914         The 1986 Goddard Space Flight Center Battery         Workshop       p 35         [NASA-CP-2486]       p 35         Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-2486]         NaSa-CP-2486]       p 35         Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-1029]         Space Electrochemical Research and Tec
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT) [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT) [NASA-CP-10029] p 50 N89-22982
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N89-22982         Space Electrochemical Research and Technology         (SERT). 1989         [NASA-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-TP-2820]       p 30         P 50       N87-29914         Space Electrochemical Research and Technology         (SERT)       [NASA-CP-2484]         P 50       N87-29914         The 1986 Goddard Space Flight Center Battery         Workshop       [NASA-CP-2486]         [NASA-CP-2486]       p 35         N88-11021       Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-10029]         [NASA-CP-10029]       p 50         Space Electrochemical Research and Technology         (SERT), 1989       [NASA-CP-3056]         [NASA-CP-10029]       p 50
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N89-22982         Space Electrochemical Research and Technology         (SERT), 1989         [NASA-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-TP-2820]       p 30         P 30       N89-19406         ELECTROCHEMISTRY         Space Electrochemical Research and Technology         (SERT)       [NASA-CP-2484]         P 50       N87-29914         The 1986 Goddard Space Flight Center Battery         Workshop       [NASA-CP-2486]         [NASA-CP-2486]       p 35         N88-11021       Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-3056]         [NASA-CP-3056]       p 50         Space Electrochemical Research and Technology         (SERT), 1989       [NASA-CP-3056]         [NASA-CP-3056]<
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-2486] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1969 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-2056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, Iabrication, and performance of brazed, graphile
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W.
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N85A-CP-10029]       p 50         N85A-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-CP-2484]       p 30         N89-19406         ELECTROCHEMISTRY         Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         N83-CP-2486]       p 35         N83-CP-2486]       p 35         N84-11021       Space Electrochemical Research and Technology         (SERT)       [NASA-CP-2486]       p 50         N83-CP-2486]       p 35       N88-11021         Space Electrochemical Research and Technology       (SERT), 1989         [NASA-CP-3056]       p 50       N90-20454         National Educators' Workshop: Update 1989 Standard       technology         [SERT], 1989       p 28       N90-24350
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-2486] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-TP-2904] p 35 N89-21171 Space Electrochemical Research and Technology
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrochemical Research and Technology [NASA-CP-3056] p 50 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-CP-3056] p 35 N89-21171 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-24350
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1889 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1889 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1889 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrochemical Research and Technology (SERT), 1989 [NASA-CP-3076] p 50 N89-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrochemical Research and Technology (SERT), 1989 [NASA-CP-3076] p 50 N90-2455 N89-21171 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3076] p 50 N90-2454
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-CP-3056] p 50 N90-20454 <b>ELECTRODE MATERIALS</b> Design, fabrication and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-CP-3056] p 50 N90-20454 <b>ELECTRODES</b> Asymptotic analysis of corona discharge from thin
Space Electrochemical Research and Technology         [SERT]         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         N85A-CP-3056]       p 50         N90-20454         ELECTROCHEMICAL CORROSION         An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods         [NASA-CP-2484]       p 30         N89-19406         ELECTROCHEMISTRY         Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         N83-29914         The 1986 Goddard Space Flight Center Battery         Workshop       [NASA-CP-2486]         [NASA-CP-2486]       p 35         N83-CP-2486]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-2486]         [NASA-CP-3056]       p 50         [NASA-CP-3056]       p 50         Space Electrochemical Research and Technology         (SERT), 1989       [NASA-CP-30764]         [NASA-CP-30764]       p 28         Desig
Space Electrochemical Research and Technology         (SERT)         [NASA-CP-2484]       p 50         Space Electrochemical Research and Technology         Conference: Abstracts         [NASA-CP-10029]       p 50         Space Electrochemical Research and Technology         (SERT)       1989         [NASA-CP-3056]       p 50         PSO       N90-20454         ELECTROCHEMICAL CORROSION       An electrochemical study of corrosion protection by         primer-topcoat systems on 4130 steel with ac impedance         and dc methods       p 30         [NASA-TP-2820]       p 30         Pace Electrochemical Research and Technology         (SERT)       [NASA-CP-2484]         The 1986 Goddard Space Flight Center Battery         Workshop       [NASA-CP-2486]         [NASA-CP-2486]       p 35         Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-3056]         [NASA-CP-3056]       p 50         N89-22982       Space Electrochemical Research and Technology         Conference: Abstracts       [NASA-CP-3056]         [NASA-CP-3056]       p 50         National Educators' Workshop: Update 1989 Standard         Experiments in Engineering Materials Scie
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3056] p 50 N90-24550 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-CP-3056] p 50 N90-20454 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-TP-2904] p 35 N89-21171 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTRODES</b> Asymptotic analysis of corona discharge from thin electrodes [NASA-TP-2645] p 68 N87-14998 Performance of textured carbon on copper electrode withistee descenced collectors with fourthing-wave
Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 <b>ELECTROCHEMICAL CORROSION</b> An electrochemical study of corosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 <b>ELECTROCHEMISTRY</b> Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N89-22982 Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3074] p 28 N90-20454 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24550 <b>ELECTRODE MATERIALS</b> Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-CP-3056] p 50 N90-20454 Asymptotic analysis of corona discharge from thin electrodes [NASA-CP-3056] p 68 N87-14998 Performance of textured carbon on copper electrode multistage depressed collectors with medium-power traveling wave tubes

# ELECTRODYNAMICS

Design, fabrication and performance of small, graphite electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes [NASA-TP-2693] p 35 N87-20474 Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector p 35 N87-21239 [NASA-TP-2719] Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube [NASA-TP-2788] p 35 N88-15146 Performance of a multistage depressed collector with machined titanium electrodes [NASA-TP-2891] p 35 N89-15337 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 ELECTRODYNAMICS Tether Dynamics Simulation [NASA-CP-2458] p 41 N87-18821 New methods and results for quantification of lightning-aircraft electrodynamics [NASA-TP-2737] p 4 N87-21871 Continuous flow electrophoresis system experiments on shuttle flights STS-6 and STS-7 [NASA-TP-2778] p 32 N88-10978 ELECTROHYDRODYNAMICS Preparative electrophoresis for space [NASA-TP-2777] p 32 N88-10977 ELECTROKINETICS Preparative electrophoresis for space [NASA-TP-2777] p 32 N88-10977 ELECTROMAGNETIC NOISE LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal [NASA-TP-2595-REV] p 49 N89-12114 ELECTROMAGNETIC RADIATION Theory for computing the field scattered from a smooth inflected surface [NASA-TP-2632] p 68 N87-13264 Analytical and experimental procedures for determining propagation characteristics of millimeter-wave gallium arsenide microstrip lines [NASA-TP-2899] p 35 N89-21169 Parametric study of power absorpti electromagnetic waves by small ferrite spheres absorption from [NASA-TP-29491 p 66 N90-12282 ELECTROMAGNETISM Earth Science Geostationary Platform Technology [NASA-CP-30401 p 24 N90-19249 Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump rotors [NASA-TP-3005] p 18 N90-23403 ELECTRON BEAMS Analytical and experimental performance of a dual-mode traveling wave tube and multistage depressed collector [NASA-TP-2752] p 35 N87-25532 p 35 N87-25532 ELECTRON BOMBARDMENT Secondary electron emission characteris molybdenum-masked, ion-textured OFHC copper characteristics of p 31 N90-15211 [NASA-TP-2967] ELECTRON EMISSION Performance of textured carbon on copper electrode multistage depressed collectors with medium-power traveling wave tubes [NASA-TP-2665] p 34 N87-17990 Calculation of secondary electron trajectories in multistage depressed collectors for microwave amplifiers [NASA-TP-2664] p 34 N87-17991 p 34 N87-17991 Electron stimulated desorption of atomic oxygen from sifver [NASA-TP-2668] p 29 N87-18629 Secondary electron emission characteristics of untreated and ion-textured titanium [NASA-TP-2902] p 30 N89-17650 Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tube (NASA-TP-2904) p 35 N89-21171 **ELECTRON FLUX DENSITY** Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver [NASA-TP-2930] p 67 N89-30022 ELECTRON RADIATION Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimides [NASA-TP-2663] p 27 N87-18611 Absorbed dose thresholds and absorbed dose rate

limitations for studies of electron radiation effects on polvetherimides (NASA-TP-2928) p 31 N89-25332

[NASA-TP-2648] ELECTROPHORESIS Preparative electrophoresis for space p 32 N88-10977 [NASA TP-2777] Continuous flow electrophoresis system experiments on shuttle flights STS-6 and STS-7 p 32 N88-10978 (NASA-TP-2778) ELECTROPOLISHING Auger electron spectroscopy study of surface-preparation contaminants [NASA-TP-2972] p 33 N90-16968 ELEVONS Aerodynamic pressures and heating rates on surfaces between split elevons at Mach 6.6 [NASA-TP-2855] p 37 N89-12822 ELLIPTIC DIFFERENTIAL EQUATIONS Solution of elliptic partial differential equations by fast Poisson solvers using a local relaxation factor. 2: Two-step method [NASA-TP-2530] p 64 N87-14918 **ELLIPTIC FUNCTIONS** Solution of elliptic partial differential equations by fast Poisson solvers using a local relaxation factor. 2: Two-step method [NASA-TP-2530] p 64 N87-14918 ELLIPTICAL CYLINDERS Propagation of sound waves in tubes of noncircular cross section [NASA-TP-2601] n 3 N87-14284 EMBEDDING Efficient solutions to the Euler equations for supersonic flow with embedded subsonic regions p 3 N87-15183 INASA-TP-25231 **EMISSION SPECTRA** Commentary on interstellar matter associated with 18 open clusters [NASA-RP-1229] p 77 N89-27612 EMITTANCE Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb [NASA-TP-2955] p 31 N90-10248 END EFFECTORS Workshop on Space Operations Third Annual Automation and Robotics (SOAR 1989) [NASA-CP-3059] p 62 N90-25503 ENERGY ABSORPTION Low-energy gamma ray attenuation characteristics of aviation fuels [NASA-TP-2974] p 63 N90-18882 ENERGY CONSERVATION Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: piloted simulation study [NASA-TP-2616] p 16 N87-10864 Advanced turboprop project (NASA-SP-495) p 18 N89-12565 **ENERGY CONVERSION** Second Beamed Space-Power Workshop p 27 N90-10140 [NASA-CP-3037] ENERGY CONVERSION EFFICIENCY Laser-powered MHD generators for space application [NASA-TP-2621] p 68 N87-10764 Space Photovoltaic Research and Technology 1986. High Efficiency, Space Environment, and Array Technology p 50 N87-26413 [NASA-CP-2475] Laser production and heating of plasma for MHD application [NASA-TP-2798] p 68 N88-18443 ENERGY STORAGE The 1985 Goddard Space Flight Center Battery Workshop [NASA-CP-24341 p 34 N87-11072 Space Electrochemical Research and Technology Conference: Abstracts [NASA-CP-10029] p 50 N89-22982 ENERGY TRANSFER **Double Layers in Astrophysics** [NASA-CP-2469] p 72 N87-23313 BRYNTRN: A baryon transport model p 80 N89-17562 [NASA-TP-2887]

ELECTRON SPECTROSCOPY

An Auger electron

surface-preparation contaminants

microcomputer implementation

[NASA-TP-2957]

[NASA-TP-2972]

[NASA-TP-2925]

ELECTRONIC CONTROL

ELECTRONIC EQUIPMENT

FORTRAN program for x ray photoelectron spectroscopy data reformatting

Advanced detection, isolation, and accommodation of

Development and evaluation of an airplane electronic display format aligned with the inertial velocity vector

sensor failures in turbofan engines: Real-time

spectroscopy

p 69 N90-12348

p 33 N90-16968

p 20 N90-15112

p 16 N87-13438

study of

#### SUBJECT INDEX

ENGINE AIRFRAME INTEGRATION
An experimental investigation of an advanced turboprop installation on a swept wing at subsonic and transonic
speeds [NASA-TP-2729] p 6 N87-26883
Advanced detection, isolation and accommodation of
sensor failures: Heal-time evaluation [NASA-TP-2740] p 19 N87-25331
ENGINE COOLANTS
transfer in turbomachinery
[NASA-TP-2985] p 18 N90-27722 ENGINE DESIGN
Aeropropulsion '87. Session 5: Subsonic Propulsion
[NASA-CP-10003-SESS-5] p 18 N88-15800
NASA/Army Hotorcraft Technology, Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control and Acoustics
[NASA-CP-2495-VOL-2] p 1 N88-16632 Aeropropulsion '87. Session 1: Aeropropulsion Materials
Nesearch [NASA-CP-10003-SESS-1] p 18 N88-16697 ENCINE EAU (IPE
Piloted simulation study of the effects of an automated
trim system on flight characteristics of a light twin-engine airplane with one engine inoperative
[NASA-TP-2633] p 3 N87-10843
sensor failures: Real-time evaluation
[NASA-TP-2740] p 19 N87-25331 Probabilistic risk analysis of flying the space shuttle with
and without fuel turbine discharge temperature redline
[NASA-TP-2759] p 65 N87-27474
ENGINE INLETS Measurements of flow rate and trajectory of aircraft
[NASA-TP-2718] p 14 N87-24458
ENGINE MONITORING INSTRUMENTS A simulation evaluation of the engine monitoring and
control system display [NASA-TP-2960] p 17 N90-18393
ENGINE NOISE Measured and calculated acoustic attenuation rates of
tuned resonator arrays for two surface impedance
[NASA-TP-2766] p 67 N88-17440
flyover noise: Single-rotating propeller configuration
[NASA-TP-2782] p 67 N88-17441 ENGINE PARTS
Aeropropulsion '87. Session 1: Aeropropulsion Materials Research
[NASA-CP-10003-SESS-1] p 18 N88-16697 ENGINE TESTING LABORATORIES
Aeronautical facilities assessment [NASA-RP-1146] p 21 N87-10876
ENGINE TESTS
performance of a 1030:1 area ratio rocket nozzle at a
chamber pressure of 2413 kN/m2 (350 psia) [NASA-TP-2725] p 26 N87-25423
Efficiency testing of a helicopter transmission planetary
[NASA-TP-2795] p 41 N88-15224
Thrust-reverser flow investigation on a twin-engine transport
[NASA-TP-2856] p 9 N89-14213 Advanced detection isolation and accommodation of
sensor faitures in turbofan engines: Real-time
[NASA-TP-2925] p 20 N90-15112
Evaluation of various thrust calculation techniques on an F404 engine
[NASA-TP-3001] p 16 N90-25134 ENTROPY
On the Maxwellian distribution, symmetric form, and entropy conservation for the Euler equations
[NASA-TP-2583] p 35 N87-11963 ENVIRONMENT EFFECTS
Proceedings of the LDEF Materials Data Analysis Workshop
[NASA-CP-10046] p 28 N90-26075 ENVIRONMENTAL MONITORING
Space Station Induced Monitoring [NASA-CP-3021] p 73 N89-15790
An assessment model for atmospheric composition (NASA-CP-3023) 0.57 N89-20588
Nimbus-7 TOMS Antarctic ozone atlas: August through
[NASA-RP-1237] p 58 N90-23837
EPHEMERIDES Fifty year canon of solar eclipses: 1986 - 2035
[NASA-RP-1178-REV] p 73 N87-25906

Compilation of methods in orbital mechanics and solar	
Geometry	
[NASA-RP-1204] p 52 N89-10420	
effect of ephemeris errors on the accuracy of the	
scanning ray as measured by the SAGE 1 and 2	
instruments	
[NASA-TP-2866] p 65 N89-16415	
Fifty year canon of lunar eclipses: 1986-2035	
[NASA-RP-1216] p 75 N90-18342	
EPOXY COMPOUNDS	
Analysis of positron lifetime spectra in polymers	
[NASA-TP-2853] p 63 N89-12237	
EPOXY MATRIX COMPOSITES	
Instrumented impact and residual tensile strength testing	
of eight-ply carbon eopoxy specimens	
[NASA-TP-2981] p 29 N90-16007	
Low velocity instrumented impact testing of four new	
damage tolerant carbon/epoxy composite systems	
EDUAN DECING	
Investigation of the effects of cohalt ions on enory	
properties	
[NASA-TP-2639] p 31 N87-12680	
Properties of two composite materials made of	
toughened epoxy resin and high-strain graphite fiber	
[NASA-TP-2826] p 28 N88-25480	
EQUATIONS OF MOTION	
Nonlinear programming extensions to rational function	
approximation methods for unsteady aerodynamic forces	
[NASA-1P-2776] p 15 N88-24623	
aguations: Energy and spatially dependent problems	
[NASA_TP-2878] n 79 N89-16714	
EQUATIONS OF STATE	
Further developments in exact state reconstruction in	
deterministic digital control systems	
[NASA-TP-2812] p 32 N88-18751	
Derivation and definition of a linear aircraft model	
[NASA-RP-1207] p 19 N89-15123	
EQUILIBRIUM	
General equilibrium characteristics of a dual-lift	
helicopter system	
[NASA-1P-2015] p.2 N86-19407	
Integrated force method versus displacement method	
for finite element analysis	
[NASA-TP-2937] D 47 N90-18081	
[NASA-1P-2937] p 47 N90-18081 EQUILIBRIUM FLOW	
[NASA-1P-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties	
[NASA-17-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air	
[NASA-1P-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS EQUIPMENT SPECIFICATIONS	
[NASA-IP-2937] p 4/ N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-IP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140 ERROR ANALYSIS	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     p 36     N87-26309       EQUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     p 50     N90-27140       ERROR ANALYSIS     P 50     n90-27140	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-RP-1181]     p 36     N87-26309       EQUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086	
[NASA-IP-2937]     p 47     N90-18081       EGUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-RP-1181]     p 36     N87-26309       EOUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade     Dade     Dade     Dade     Dade	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181]     p 36     N87-26309       EQUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     p 50     N90-27140	
[NASA-IP-2937]     p 47     N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]     p 36     N87-26309 <b>EQUIPMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]     p 50     N90-27140 <b>ERROR ANALYSIS</b> Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     p 17     N87-24481	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRUIW FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-IP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140 ERROR ANALYSIS Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-TP-2746] p 17 N87-24481 A technique for evaluating the application of the pin-level burk at four model by 10 C institute	
[NASA-IP-2937]     p 47     N90-18081       EGUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-RP-1181]     p 36     N87-26309       EOUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade     tip clearance measurement system     p 17     N87-24481       A technique for evaluating the application of the pin-level     stuck-at fault model to VLSI circuits     N87 20026	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-RP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140 ERROR ANALYSIS Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-TP-2746] p 17 N87-24481 A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits [NASA-TP-2738] p 42 N87-28025 Analysis and testing of the SUBE program	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-IP-1181]     p 36     N87-26309       EQUIDEMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     [NASA-TP-2746]     p 17     N87-24481       A technique for evaluating the application of the pin-level stuck-at fault model to VLSi circuits     [NASA-TP-2738]     p 42     N87-28025       Analysis and testing of the SURE program     [NASA-TP-2817]     p 65     N88-29653	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-IP-1181]     p 36     N87-26309       EQUIDEMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-IP-20372]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     [NASA-TP-2746]     p 17     N87-24481       A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits     [NASA-TP-2738]     p 42     N87-28025       Analysis and testing of the SURE program     [NASA-TP-2817]     p 5     N88-22653       The estimation error covariance matrix for the ideal state	
[NASA-IP-2937]     p 47     N90-18081       EQUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-IP-1181]     p 36     N87-26309       EQUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     [NASA-TP-2736]     p 17     N87-24481       A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits     [NASA-TP-2738]     p 42     N87-28025       Analysis and testing of the SURE program     [NASA-TP-2817]     p 65     N88-22653       The estimation error covariance matrix for the ideal state reconstructor with measurement noise     State	
[NASA-IP-2937]     p 47     N90-18081       EGUILIBRIUM FLOW     Simplified curve fits for the thermodynamic properties of equilibrium air     [NASA-RP-1181]     p 36     N87-26309       EQUIPMENT SPECIFICATIONS     Earth Sciences Requirements for the Information Sciences Experiment System     [NASA-CP-3072]     p 50     N90-27140       ERROR ANALYSIS     Preliminary estimates of radiosonde thermistor errors     [NASA-TP-2637]     p 55     N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system     [NASA-TP-2746]     p 17     N87-24481       A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits     [NASA-TP-2738]     p 42     N87-28025       Analysis and testing of the SURE program     [NASA-TP-2817]     p 65     N88-22653       The estimation error covariance matrix for the ideal state reconstructor with measurement noise     [NASA-TP-2881]     p 63	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIPMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140 <b>ERROR ANALYSIS</b> Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 65       N89-28053         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-281]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing       Satellite radar altimetry over ice.       Nource       N89-13994	
[NASA-IP-2937] p 47 N90-18081 EQUILIBRIUM FLOW Simplified curve fits for the thermodynamic properties of equilibrium air [NASA-IP-1181] p 36 N87-26309 EQUIPMENT SPECIFICATIONS Earth Sciences Requirements for the Information Sciences Experiment System [NASA-IP-20372] p 50 N90-27140 ERROR ANALYSIS Preliminary estimates of radiosonde thermistor errors [NASA-IP-2637] p 55 N87-12086 Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-IP-2738] p 17 N87-24481 A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits [NASA-IP-2738] p 42 N87-28025 Analysis and testing of the SURE program [NASA-IP-2817] p 53 N89-13994 Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland	
[NASA-IP-2937]       p 47       N90-18081         EGUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 65       N88-22653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2881]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and Corrections of Seasat data over Greenland       [NASA-RP-233-VOL-1]       p 54       N90-20562	
[NASA-IP-2937]       p 47       N90-18081         EGUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 65       N88-22653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2881]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1233-VOL-1]       p 54       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1233-VOL-1]       p 54       N90-20562	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309 <b>EQUIPMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERROR ANALYSIS</b> p 50       N90-27140       ERROR ANALYSIS         Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade       tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level       stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 65       N89-28533         The estimation error covariance matrix for the ideal state       reconstructor with measurement noise       [NASA-TP-2881]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1232]       p 40       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1222]       p 40       N90-21351	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRUW FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EQUIVERNT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-IP-20372]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2637]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-122]       p 40       N90-21351         Endors       Foundations of measurement and instrumentation       [NASA-RP-122]       p 40       N90-21351	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2873]       p 65       N88-28653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2881]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1233-VOL-1]       p 54       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1232]       p 40       N90-21351         ERRORS       Investigation of the misfueling of reciprocating piston aircraft enoines       p 170       N90-21351       N9	
[NASA-IP-2937]       p 47       N90-18081         EGUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2881]       p 65       N88-28053         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2881]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1233-VOL-1]       p 54       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1223]       p 40       N90-21351         ERRORS       Investigation of the misfueling of reciprocating piston aircaft engines       [NASA-TP-2803]       p 12 <td< td=""><td></td></td<>	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIDMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERNOR ANALYSIS</b> p 50       N90-27140       Preliminary estimates of radiosonde thermistor errors         [NASA-TP-2637]       p 55       N87-12086       Low-cost FM oscillator for capacitance type of blade tip clearance measurement system         [NASA-TP-2746]       p 17       N87-24481       A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits         [NASA-TP-2738]       p 42       N87-28025       Analysis and testing of the SURE program         [NASA-TP-2817]       p 63       N89-13994       Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland         [NASA-RP-1233-VOL-1]       p 54       N90-2052       Foundations of measurement and instrumentation         [NASA-RP-1222]       p 40       N90-21351       ERRORS       Investigation of the misfueling of reciprocating piston aircraft engines	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-RP-1181]       p 36       N87-26309 <b>EQUIVERNT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-3072]       p 50       N90-27140 <b>ERROR ANALYSIS</b> Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1223]       p 40       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1223]       p 40       N90-21351         ERRORS       Investigation of the mistueling of reciprocating piston aircraft engines       [NASA-TP-2803]       p 12       N88-21144         Ester oxidation on an aluminum surface using       Surface using       Surface using       Surface using	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-181]       p 36       N87-26309         EARTH Sciences Requirements for the Information Sciences Experiment System       [NASA-IP-20372]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2737]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSi circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 65       N88-28653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2801]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1222]       p 40       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1222]       p 40       N90-21351         ERRORS       Investigation of the mistueling of reciprocating piston aircraft engines       [NASA-TP-2803]       p 12       N88-21144	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIPMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERROR ANALYSIS</b> p 50       N90-27140       Preliminary estimates of radiosonde thermistor errors         [NASA-TP-2637]       p 55       N87-12086       Low-cost FM oscillator for capacitance type of blade       tip clearance measurement system         [NASA-TP-2746]       p 17       N87-24481       A technique for evaluating the application of the pin-level         Suck-at fault model to VLSi circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 63       N89-13994         Satellite radar attimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1233-VOL-1]       p 54       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-1233]       p 40       N90-21351         FRORS       Investigation of the misfueling of reciprocating piston aircraft engines       [NASA-RP-2803]       p 12       N88-21144 <b>ESTERS</b> Ester oxidation on an aluminum surface	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIDMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERNOR ANALYSIS</b> P 50       N90-27140       Preliminary estimates of radiosonde thermistor errors         [NASA-TP-2637]       p 55       N87-12086       Low-cost FM oscillator for capacitance type of blade         tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level       stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1233-VOL-1]       p 54       N90-2052         Foundations of measurement and instrumentation       [NASA-RP-1222]       p 40       N90-21351         ERRORS       [NASA-RP-2803]       p 12       N88-21144         ESTERS       Ester oxidation on an aluminum surface using chemiluminescence       [NASA-TP-2811]       p 31 <td< td=""><td></td></td<>	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EARTH Sciences Requirements for the Information Sciences Experiment System       [NASA-IP-2037]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2637]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1223]       p 40       N90-21351         ERORS       [NASA-TP-2803]       p 12       N88-21144       Ester oxidation on an aluminum surface using chemiluminescence         [NASA-TP-2611]       p 31       N87-18666       ESTIMATES       p 31       N87-18666	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2637]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 65       N88-28653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2808]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1222]       p 40       N90-21351         ERRORS       Investigation of the mistueling of reciprocating piston aircraft engines       [NASA-TP-2803]       p 12       N88-21144         Ester oxidation on an aluminum surface using chemiluminescence       [NASA-TP-2801]       p 31 <td></td>	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIDMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERNOR ANALYSIS</b> Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 65       N89-28053         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-TP-2803]       p 12       N89-21351         ERRORS       Investigation of the mistueling of reciprocating piston aircraft engines       [NASA-TP-2603]       p 12       N89-21144         ESTERS       Ester oxidation on an aluminum surface using chemiluminescence       p 31	
[NASA-IP-2937]       p 47       N90-18081 <b>COULLBRUW FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUIDMENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERNOR ANALYSIS</b> P 50       N90-27140       ERROR ANALYSIS       P 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-123]       p 40       N90-2052         Foundations of measurement and instrumentation       [NASA-RP-1223]       p 40       N90-21351         ERRORS       Ester oxidation on an aluminum surface using chemiluminescence       [NASA-RP-2601]       p 31       N87-18666         ESTIMATES       Fight Mechanics/Estimation Theory Symposium 1988       [NASA-CP-3011] <td></td>	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EARTH Sciences Requirements for the Information Sciences Experiment System       [NASA-IP-2072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade       tip clearance measurement system       p 17       N87-24481         A technique for evaluating the application of the pin-level       stuck-at fault model to VLSI circuits       NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 63       N89-1394         Satellite radar altimetry over ice. Volume 1. Processing and corrections of Seasat data over Greenland       [NASA-TP-2803]       p 40       N90-21351         ERRORS       Investigation of the misfueling of reciprocating piston aircraft engines       [NASA-TP-2603]       p 31       N87-18666         ESTIMATES       Flight Mechanics/Estimation Theory Symposium 1988       [NASA-CP-301]       p 31       N87-18666         ESTIMATES       Flight Mechanics/Estimation Theory Symposium 1988       [NASA-CP-301]       p 31       N87-18666 <t< td=""><td></td></t<>	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EQUIPMENT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-CP-3072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2737]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 65       N88-28653         The estimation error covariance matrix for the ideal state reconstructor with measurement noise       [NASA-TP-2808]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-RP-1222]       p 40       N90-21351         ERRORS       Investigation of the mistueling of reciprocating piston aircraft engines       [NASA-TP-2803]       p 12       N88-21144         ESTERORS       Investigation of the matueninum surface using chemiluminescence       p 31	
[NASA-IP-2937]p 47N90-18081EQUILIBRUM FLOWSimplified curve fits for the thermodynamic properties of equilibrium air (NASA-RP-1181)p 36N87-26309EARTH Sciences Requirements for the Information Sciences Experiment System (NASA-RP-2072)p 50N90-27140ERROR ANALYSISp 50N90-27140ERROR ANALYSISp 55N87-12086Low-cost FM oscillator for capacitance type of blade tip clearance measurement systemp 17N87-24481A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits [NASA-TP-2738]p 42N87-28025Analysis and testing of the SURE program [NASA-TP-2817]p 63N89-13994Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland [NASA-RP-1233-VOL-1]p 54N90-20562Foundations of measurement and instrumentation [NASA-RP-2803]p 12N88-21144Ester oxidation on an aluminum surface using cherniluminescence [NASA-TP-2611]p 31N87-18666ESTIMATES Flight Mechanics/Estimation Theory Symposium 1988 [NASA-CP-3011]p 23N89-15934ESTIMATING Mental-State Estimation, 1987 [NASA-CP-2504]p 60N88-23370Diode laser satellite systems for beamed power transmission [NASA-TP-292]p 40N90-24585	
[NASA-IP-2937]       p 47       N90-18081 <b>EQUILIBRUM FLOW</b> Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309 <b>EQUINENT SPECIFICATIONS</b> Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140 <b>ERNOR ANALYSIS</b> Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2817]       p 63       N89-13944         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greentand       [NASA-RP-123]       p 40       N90-20562         Foundations of measurement and instrumentation       [NASA-RP-122]       p 40       N90-21351         Enterostigation of the misfueling of reciprocating piston aircraft engines       [NASA-RP-2601]       p 31       N87-18666         ESTIMATES       Ester oxidation on an aluminum surface using chemiluminescence       [NASA-RP-2504]       p 40       N90-15934      <	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRIUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EARTH Sciences Requirements for the Information Sciences Experiment System       [NASA-IP-2072]       p 50       N90-27140         ERROR ANALYSIS       Preliminary estimates of radiosonde thermistor errors       [NASA-TP-2637]       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade       tip clearance measurement system       p 17       N87-24481         A technique for evaluating the application of the pin-level       stuck-at fault model to VLSI circuits       NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 63       N89-1394         Satellite radar altimetry over ice. Volume 1. Processing and corrections of Seasat data over Greenland       [NASA-TP-2803]       p 40       N90-21351         ERROR       Investigation of the misfueling of reciprocating piston aircraft engines       [NASA-TP-2603]       p 31       N87-18666         ESTIMATES       Flight Mechanics/Estimation Theory Symposium 1988       [NASA-CP-301]       p 31       N87-18666         ESTIMATES       Flight Mechanics/Estimation Theory Symposium 1988       [NASA-CP-301]       p 31       N87-18666 <t< td=""><td></td></t<>	
[NASA-IP-2937]       p 47       N90-18081         EQUILIBRUM FLOW       Simplified curve fits for the thermodynamic properties of equilibrium air       [NASA-IP-1181]       p 36       N87-26309         EQUILIBRUT SPECIFICATIONS       Earth Sciences Requirements for the Information Sciences Experiment System       [NASA-RP-1181]       p 50       N90-27140         ERROR ANALYSIS       p 50       N90-27140       ERROR ANALYSIS       p 55       N87-12086         Low-cost FM oscillator for capacitance type of blade tip clearance measurement system       [NASA-TP-2746]       p 17       N87-24481         A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits       [NASA-TP-2738]       p 42       N87-28025         Analysis and testing of the SURE program       [NASA-TP-2738]       p 63       N89-13994         Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-TP-1232]       p 40       N90-20562         Foundations of measurement and instrumentation       [NASA-TP-2801]       p 12       N88-11394         Stellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland       [NASA-TP-2803]       p 12       N89-1144         ESTEROS       Investigation of the misfueling of reciprocating piston aircraft engines       [NASA-TP-2603]       p 12       N89-118666 </td <td></td>	

ETHYL ALCOHOL

Velocity profiles in laminar diffu	sion flames	
[NASA-TP-2596]	p 36	N87-18035
EULER EQUATIONS OF MOTION	•	
On the Maxwellian distribution	. symmetric	form, and
entropy conservation for the Eule	r equations	
[NASA-TP-2583]	p 35	N87-11963
Efficient solutions to the Euler e	equations for	supersonic
<b>n</b>		•

flow with embedded subsonic regions [NASA-TP-2523] p 3 N87-15183 A second-order accurate kinetic-theory-based method

for inviscid compressible flows [NASA-TP-2613] p 36 N87-18783 Three-dimensional multigrid algorithms for the flux-split

Euler equations [NASA-TP-2829]

 [NASA-TP-2829]
 p 65
 N89-12316

 An
 approximate
 method
 for
 calculating

 three-dimensional inviscid hypersonic flow (ields)
 [NASA-TP-3018]
 p 39
 N90-27066

EUROPEAN SPACE AGENCY Spacelab: An international success story

[NASA-SP-487] p 72 N88-19375 EVACUATING (VACUUM)

Experimental evaluation of blockage ratio and plenum evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section of NASA Lewis Research Center's proposed altitude wind tunnel

[NASA-TP-2702] p 21 N87-22694 EVALUATION

Experimental evaluation of blockage ratio and plenum evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2702] p 21 N87-22694

A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits [NASA-TP-2738] p 42 N87-28025

A study to evaluate STS heads-up ascent trajectory performance employing a minimum-Hamiltonian optimization strategy

[NASA-TP-2793] p 23 N88-15820 Present state of knowledge of the upper atmosphere 1988: An assessment report

[NASA-RP-1208] p 52 N88-29233 Technique for temperature compensation of

eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380

Simulation evaluation of TIMER, a time-based, terminal air traffic, flow-management concept [NASA-TP-2870] p 13 N89-15901

A piloted evaluation of an oblique-wing research aircraft motion simulation with decoupling control laws [NASA-TP-2874] p 20 N89-15930

EVOLUTION (DEVELOPMENT) Evolution, calibration, and operational characteristics of

the two-dimensional test section of the Langley 0.3-meter transonic cryogenic tunnel [NASA-TP-2749] p 21 N87-28570

EXCITATION Calculation of two-neutron multiplicity in photonuclear

reactions [NASA-TP-2968] p 68 N90-14890

The effectiveness of vane-aileron excitation in the experimental determination of flutter speed by parameter identification

[NASA-TP-2971] p 16 N90-15100 EXHAUST FLOW SIMULATION

Hot-jet simulation in cryogenic wind tunnels [NASA-RP-1220] p 15 N89-23448 EXHAUST GASES

EXMAUST GASES

The 1987 Ground Vortex Workshop [NASA-CP-10008] p 9 N89-10849 EXHAUST NOZZLES

- Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle
- [NASA-TP-2726] p 27 N87-25424 Hydroburst test of a carbon-carbon involute exit cone [NASA-TP-2556] p 24 N88-14112 Static investigation of a two-dimensional convergent-divergent exhaust nozzle with multiaxis

thrust-vectoring capability [NASA-TP-2973] p 11 N90-19193

Exhaust nozzles for propulsion systems with emphasis on supersonic cruise aircraft {NASA-RP-1235} p 18 N90-21037

EXOBIOLOGY

Aerospace medicine and biology: A cumulative index to the 1986 issues (supplement 293) [NASA-SP-7011(293)] p 59 N87-18976

Aerospace medicine and biology: A continuing bibliography with indexes (supplement 302) [NASA-SP-7011(302)] p 59 N87-30041

# **EXTRATERRESTRIAL RADIATION**

Aerospace medicine and biology: A cumulative index to a continuing bibliography (supplement 306) p 60 N88-18180 [NASA-SP-7011(306)] Aerospace medicine and biology: A continuing bibliography with indexes (supplement 315) [NASA-SP-7011(315)] p 60 p 60 N88-30281 **Exobiology and Future Mars Missions** [NASA-CP-10027] p 59 N89-26334 Aerospace medicine and biology: A continuing bibliography with indexes (supplement 327) [NASA-SP-7011(327)] p 60 p 60 N89-29951 Aerospace medicine and biology: A continuing bibliography with indexes (supplement 340) [NASA-SP-7011(340)] p 60 N90-28963 EXPERIMENT DESIGN Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module [NASA-CP-2479] p 60 N88-13852 Cells in Space [NASA-CP-10034] p 61 N90-13939 National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology p 28 N90-24350 [NASA-CP-3074] EXPERIMENTATION Mach 6 experimental and theoretical stability and performance of a cruciform missile at angles of attack up to 65 degrees [NASA-TP-2733] p 5 N87-23592 EXPERT SYSTEMS Computer Sciences and Data Systems, volume 1 [NASA-CP-2459-VOL-1] p 62 N87-19931 Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206 Third Conference on Artificial Intelligence for Space Applications, part 2 [NASA-CP-2492-PT-2] p 63 N88-24188 Second Conference on Artificial Intelligence for Space Applications [NASA-CP-3007] o 63 N88-29351 The 1988 Goddard Conference on Space Applications of Artificial Intelligence [NASA-CP-3009] p 64 N88-30330 Fourth Conference on Artificial Intelligence for Space Applications [NASA-CP-3013] p 63 N89-15549 Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) [NASA-CP-3019] p 61 N89-19817 Recent Advances in Multidisciplinary Analysis and Optimization, part 1 [NASA-CP-3031-PT-1] p 15 N89-25146 The 1989 Goddard Conference on Space Applications of Artificial Intelligence [NASA-CP-3033] p.64 N89-26578 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) p 62 N90-25503 [NASA-CP-3059] EXPLORER SATELLITES Into the thermosphere: The atmosphere explorers [NASA-SP-490] p 52 N88-18084 EXPLORER 51 SATELLITE Into the thermosphere: The atmosphere explorers p 52 N88-18084 [NASA-SP-490] EXPLORER 54 SATELLITE Into the thermosphere: The atmosphere explorers [NASA-SP-490] p 52 N88-18084 EXPLORER 55 SATELLITE Into the thermosphere: The atmosphere explorers NASA-SP-4901 p 52 N88-18084 EXPOSURE Improved model for solar cosmic ray exposure in manned Earth orbital flights [NASA-TP-29871 p 80 N90-25031 EXTERNAL STORES Drag measurements of blunt stores tangentially mounted on a flat plate at supersonic speeds CONTRACTOR DE DE N87-27626 EXTRATERRESTRIAL ENVIRONMENTS NASA/SDIO Space Environmental Effects on Materials Workshop, part 2 [NASA-CP-3035-PT-2] p 28 N89-23547 EXTRATERRESTRIAL RADIATION Comparison of dose estimates using the buildup-factor

p 80 N90-29290

method and a Baryon transport code (BRYNTRN) with

Monte Carlo results

[NASA-TP-3021]

# **EXTRAVEHICULAR ACTIVITY**

#### **EXTRAVEHICULAR ACTIVITY**

Soace Construction [NASA-CP-2490] p 25 N88-10870 Space Station Human Factors Research Review. Volume 1: EVA Research and Development INASA-CP-2426-VOL-11 p 59 N88-24145

F

- F STARS
- FGK stars and T Tauri stars: Monograph series on nonthermal phenomena in stellar atmospheres [NASA-SP-502] p 77 N90-18344 F-106 AIRCRAFT
- Wind-tunnel free-flight investigation of a 0.15-scale model of the F-106B airplane with vortex flaps p 4 N87-21855 [NASA-TP-27001
- New methods and results for quantification of lightning-aircraft electrodynamics [NASA-TP-2737] p 4 N87-21871
- Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters
- [NASA-TP-2818] p 8 N88-23760 F-14 AIRCRAFT
- Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional characteristics of the F-14 airplane [NASA-TP-2769] p.6 N88-12455
- F-15 AIRCRAFT
- Dynamic ground-effect measurements on the F-15 STOL and Maneuver Technology Demonstrator (S/MTD) configuration [NASA-TP-30001 p 11 N90-22531
- Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles
- [NASA-TP-3036] p 11 N90-25938 F-16 AIRCRAFT Development and flight test experiences with a
- flight-crucial digital control system [NASA-TP-2857] p 20 N89-24327
- FABRICATION Design, fabrication and performance of small, graphite electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes
- [NASA-TP-2693] p 35 N87-20474 FABRICS Measured and predicted root-mean-square errors in
- quare and triangular antenna mesh facets [NASA-TP-2896] p 45 N89-17892 The interlaminar fracture toughness of woven
- graphite/epoxy composites p 29 N90-10179 (NASA-TP-2050) **FABRY-PEROT INTERFEROMETERS**
- Three component laser anemometer measurements in an annular cascade of core turbine vanes with contoured end wall [NASA-TP-2846] p 8 N89-10844
- FAILURE A Protection And Detection Surface (PADS) for damage
- tolerance [NASA-TP-3011] p 29 N90-27788
- FAILURE ANALYSIS Development of confidence limits by pivotal functions for estimating software reliability
- [NASA-TP-2709] p 65 N87-23244 The 1986 Goddard Space Flight Center Battery Workshop
- [NASA-CP-2486] p 35 N88-11021 Thermal Barrier Coatings. Abstracts and figures
- p 31 N89-13642 [NASA-CP-10019] The 1989 Goddard Conference on Space Applications of Artificial Intelligence
- [NASA-CP-3033] p 64 N89-26578 Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments
- [NASA-TP-3028] p 47 N90-25366 FAILURE MODES
- Modal interaction in postbuckled plates. Theory [NASA-TP-2943] p 47 N90-27121 Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual p 47 N90-28099 [NASA-TP-2916]
- FAN BLADES

A-20

- Laser anemometer measurements in a transonic axial-flow fan rotor [NASA-TP-2879] p 38 N90-11245
- FAR INFRARED RADIATION Far infrared supplement: Catalog of infrared observations, second edition [NASA-RP-1205] p 74 N88-30545 FASTENERS Fastener design manual
- p 42 N90-18740 [NASA-RP-1228]

- FATIGUE (MATERIALS)
- Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears [NASA-TP-2610] p 41 N87-18095
- Structural Integrity and Durability of Reusable Space Propulsion Systems
- [NASA-CP-2471] p 26 N87-22766 Aeropropulsion '87. Session 1: Aeropropulsion Materials
- Research [NASA-CP-10003-SESS-1] p 18 N88-16697 Lewis Structures Technology, 1988. Volume 2: Structural
- Mechanics p 44 N88-22382 [NASA-CP-3003-VOL-2]
- Turbine Engine Hot Section Technology 1986 [NASA-CP-2444] p 45 N89-12876
- FATIGUE LIFE
- Life prediction of thermomechanical fatigue using total strain version of strainrange partitioning (SRP): A proposal
- (NASA-TP-2779) p 44 N88-15263 FAULT TOLERANCE
- Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation
- p 19 N87-25331 [NASA-TP-2740] Joint University Program for Air Transportation Research, 1985
- [NASA-CP-2453] p 1 N87-27596 A technique for evaluating the application of the pin-level
- stuck-at fault model to VLSI circuits p 42 N87-28025 [NASA-TP-2738]
- SURE reliability analysis: Program and mathematics [NASA-TP-2764] p 65 N88-17380
- CARE 3 User's Workshop [NASA-CP-10011] p 61 N88-21646
- Analysis and testing of the SURE program [NASA-TP-2817] p 65 N88-22653
- The Fault Tree Compiler (FTC): Program and mathematics
- p 64 N89-24815 [NASA-TP-2915] Applications of the hybrid automated reliability predictor: Revised edition
- (NASA-TP-2760-REV) p 63 N90-11454 The 1990 Goddard Conference on Space Applications
- Artificial Intelligence [NASA-CP-3068] p 64 N90-22294
- FAULT TREES The Fault Tree Compiler (FTC): Program and mathematics
- [NASA-TP-2915] p 64 N89-24815
- FEASIBILITY ANALYSIS Analysis of quasi-hybrid solid rocket booster concepts
- for advanced earth-to-orbit vehicles p 27 N87-25425 [NASA-TP-2751] Evaluation of a scale-model experiment to investigate
- long-range acoustic propagation p 66 N88-11450 [NASA-TP.2748]
- FEEDBACK CONTROL
- Effect of control surface mass unbalance on the stability of a closed-loop active control system p 47 N90-12042 [NASA-TP-2952]
- Advanced detection, isolation, and accommodation of sensor failures in turbofan engines: Real-time microcomputer implementation [NASA-TP-2925] p 20 N90-15112
- FERRITES Parametric study of power absorption from
- electromagnetic waves by small ferrite sphere p 66 N90-12282 INASA TP.20401
- FIBER COMPOSITES Cyclic loads tests of carbon involute solid rocket motor outer boot ring segments
- [NASA-TP-2884] p 45 N89-16192 The effects of simulated space environmental parameters on six commercially available composite
- materials [NASA-TP-2906] p 29 N89-19385 Tungsten fiber reinforced copper matrix composites: A
- review [NASA-TP-2924] p 29 N89-27796 Heat treatment study of the SiC/Ti-15-3 composite
- system [NASA-TP-2970] p 29 N90-19302
- National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology p 28 N90-24350 (NASA-C -3074]
- FIBER OPTICS Computer Sciences and Data Systems, volume 2
- p 62 N87-19932 [NASA-CP-2459-VOL-2] Aeropropulsion '87. Session 4: Instrumentation and
- Controls Research [NASA-CP-10003-SESS-4] p 18 N88-15794
- Second Workshop on Improvements to Photometry p 74 N89-13310 [NASA-CP-10015]

NASA Laser Light Scattering Advanced Technology Development Workshop, 1988 [NASA-CP-10033]

SUBJECT INDEX

- p 40 N90-17085 FIELD OF VIEW
- Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978
- p 55 N87-26489 (NASA-RP-1185) FIGHTER AIRCRAFT

Interference effects of thrust reversing on horizontal tail effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90

- [NASA-TP-2350] p 19 N87-10870 Subsonic maneuver capability of a supersonic cruise fighter wing concept
- [NASA-TP-2642] o 3 N87-15184 Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with
- nonaxisymmetric nozzles [NASA-TP-2392] p 14 N87-17693 Effects of afterbody boattail design and empennage
- arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p 4 N87-21873 [NASA-TP-2704]
- Multiaxis control power from thrust vectoring for a supersonic fighter aircraft model at Mach 0.20 to 2.47 (NASA-TP-2712) p 5 N87-24433
- Steady and unsteady aerodynamic forces from the SOUSSA surface-panel method for a fighter wing with tip missile and comparison with experiment and PANAIR p 5 N87-26032 [NASA-TP-2736]
- Subsonic longitudinal and lateral-dir characteristics of a forward-swept-wing lateral-directional fighter
- configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874
- Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds
- [NASA-TP-2588] p 6 N88-10765 FILM COOLING
- Jet model for slot film cooling with effect of free-stream and coolant turbulence
- [NASA-TP-2655] p 36 N87-18034 Gas-jet and tangent-slot film cooling tests of a 12.5 deg
- cone at Mach number of 6.7 [NASA-TP-2786] p 39 N90-28806 FINENESS RATIO
- Planform effects on the supersonic aerodynamics of multibody configurations
- [NASA-TP-2762] p 6 N88-12454 FINITE ELEMENT METHOD
  - Exploiting symmetries in the modeling and analysis of tiroe
  - [NASA-TP-2649] p 13 N87-17690 Fifteenth NASTRAN (R) Users' Colloquium
  - [NASA-CP-2481] p 43 N87-27231 Finite-element reentry heat-transfer analysis of space
  - shuttle Orbiter p 37 N87-29795 (NASA-TP-2657)
  - Measured and calculated acoustic attenuation rates of tuned resonator arrays for two surface impedance distribution models with flow p 67 N88-17440 [NASA-TP-2766]

[NASA-CP-2488-VOL-2]

detamination

[NASA-TP-2823]

[NASA-TP-2850]

[NASA-CP-2493]

thin-walled beams

(NASA-TP-2868)

[NASA-TP-2897]

[NASA-CP-3029]

[NASA-TP-2931]

Mechanics 1987, part 1

[NASA-CP-10012-PT-1]

NASA Workshop

Mechanics 1987, part 2

[NASA-CP-10012-PT-2]

[NASA-CP-10012-PT-3]

for finite element analysis

[NASA-TP-2937]

The 58th Shock and Vibration Symposium, volume 2 NASA-CP-2488-VOL-2) p 44 N88-18948

Three-dimensional analysis of a postbuckled embedded

Partitioning strategy for efficient nonlinear finite element

Mixed finite element models for free vibrations of

Mixed formulation for frictionless contact problems

Derivation of a tappered p-version beam finite element

NASA Workshop on Computational Structural

NASA Workshop on Computational Structural Mechanics 1987, part 3

Integrated force method versus displacement method

on Computational

dynamic analysis on multiprocessor computers

Seventeenth NASTRAN (R) Users'

Turbine Engine Hot Section Technology, 1987

p 44 N88-26684

p 45 N89-16170

p 45 N89-17298

p 45 N89-19579

o 45 N89-19580

p 45 N89-22940

p 46 N89-26255

p 46 N89-29773

p 46 N89-29789

p 46 N89-29799

p 47 N90-18081

Structural

Colloquium

Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595 Eighteenth NASTRAN (R) Users' Colloquium p 47 N90-24637 [NASA-CP-3069] FINS Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system [NASA-TP-2401] p 4 N87-17668 FIRE EXTINGUISHERS Spacecraft Fire Safety [NASA-CP-2476] p 24 N88-12520 FIRES Spacecraft Fire Safety (NASA-CP-2476) p 24 N88-12520 FLAME TEMPERATURE Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flames [NASA-TP-2900] p 38 N89-25409 FLAMMABILITY Spacecraft Fire Safety [NASA-CP-2476] p 24 N88-12520 FLAPPING HINGES Validation of a pair of computer codes for estimation and optimization of subsonic aerodynamic performance of simple hinged-flap systems for thin swept wings p 8 N89-10024 [NASA-TP-2828] FLAPS (CONTROL SURFACES) Applicability of linearized-theory attached-flow methods to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges p3 N87-15174 [NASA-TP-2653] An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter rotor in hover p 7 N88-20257 [NASA-TP-2546] Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 FLAT PLATES Drag measurements of blunt stores tangentially mounted on a flat plate at supersonic speeds p 6 N87-27626 NASA-TP-27421 FLEXIBLE BODIES Structural Dynamics and Control Interaction of Flexible Structures [NASA-CP-2467-PT-1] p 23 N87-22702 Structural Dynamics and Control Interaction of Flexible Structures [NASA-CP-2467-PT-2] p 23 N87-22729 Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces p 15 N88-24623 (NASA TP-2776) NASA/DOD Controls-Structures Interaction Technology 1989 [NASA-CP-3041] p 26 N90-21062 FLEXIBLE SPACECRAFT NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-1] p 24 N87-16014 The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REV] p 43 N87-16321 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 FLIGHT CHARACTERISTICS Wind-tunnel investigation of the flight characteristics of canard general-aviation airplane configuration [NASA-TP-2623] p 3 N87-10039 Piloted simulator study of allowable time delays in large-airplane response p 19 N87-16849 [NASA-TP-2652] Flight characteristics of the AD-1 oblique-wing research aircraft [NASA-TP-2223] p 19 N87-18570 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application p 19 N88-14987 [NASA-TP-2482] Analysis of flight data from a High-Incidence Research Model by system identification methods [NASA-TP-2940] p 20 N90-10074 Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks p 20 N90-11757 [NASA-TP-2962] Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research

very-rign-Autuoe Aircraft for Atmospheric Hesearch [NASA-CP-10041] p 16 N90-14220 Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA)

[NASA-TP-2965] p 20 N90-17639

Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration [NASA-TP-2982] p 20 N90-19239 FLIGHT CONTROL Joint University Program for Air Transportation Research, 1983 p 1 N87-18520 [NASA-CP-2451] Joint University Program for Air Transportation Research, 1985 p 1 N87-27596 [NASA-CP-2453] NASA/Army Rotorcraft Technology. Volume 1: Aerodynamics, and Dynamics and Aeroelasticity [NASA-CP-2495-VOL-1] p1 N88-16625 Singular perturbations and time scales in the design of digital flight control systems [NASA-TP-2844] p 19 N89-12569 Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 Modal control of an oblique wing aircraft [NASA-TP-2898] p 20 p 20 N89-16845 Development and flight test experiences with a flight-crucial digital control system [NASA-TP-2857] p 20 N89-24327 Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks [NASA-TP-2962] p 20 N90-11757 FLIGHT CREWS Cockpit Resource Management Training [NASA-CP-2455] p 12 N87-22634 Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation (NASA-TP-2978) n 13 N90-18378 FLIGHT HAZARDS Piloted-simulation evaluation of escape guidance for microburst wind shear encounters p 17 N89-16820 (NASA-TP-2886) FLIGHT INSTRUMENTS A simulation evaluation of the engine monitoring and control system display [NASA-TP-2960] p 17 N90-18393 FLIGHT MANAGEMENT SYSTEMS Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study [NASA-TP-2616] p 16 N87-10864 FLIGHT MECHANICS Derivation and definition of a linear aircraft model [NASA-RP-1207] p 19 N89-15123 Flight Mechanics/Estimation Theory Symposium 1988 [NASA-CP-3011] p 23 N89-15934 Flight Mechanics/Estimation Theory Symposium, 1989 [NASA-CP-3050] p 23 N90-13413 Flight Mechanics/Estimation Theory Symposium [NASA-CP-2002] p 22 N78-76855 FLIGHT SAFETY Wind Shear/Turbulence Inputs to Flight Simulation and Systems Certification [NASA-CP-2474] p 1 N87-25267 Meteorological and Environmental Inputs to Aviation p 56 N88-25105 (NASA-CP-2498) Practices in adequate structural design p 24 N89-18504 (NASA-TP-2893) FLIGHT SIMULATION Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study [NASA-TP-2616] p 16 N87-10864 Cockpit Resource Management Training p 12 N87-22634 [NASA-CP-2455] Wind Shear/Turbulence Inputs to Flight Simulation and Systems Certification [NASA-CP-2474] p 1 N87-25267 Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application [NASA-TP-2482] p 19 N88-14987 A piloted simulation study of data link ATC message exchange [NASA-TP-2859] p 13 N89-15900 A piloted evaluation of an oblique-wing research aircraft motion simulation with decoupling control laws p 20 N89-15930 (NASA-TP-2874)

Piloted-simulation evaluation of escape guidance for

p 17 N89-16820

microburst wind shear encounters

[NASA-TP-2886]

Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks [NASA-TP-2962] p 20 N90-11757

Stereopsis cueing effects on hover-in-turbulence performance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004

- FLIGHT SIMULATORS Aeronautical facilities assessment (NASA-RP-1146) p.21 N87-1087(
- [NASA-RP-1146] p 21 N87-10876 Piloted simulator study of allowable time delays in

large-airplane response [NASA-TP-2652] p 19 N87-16849 FLIGHT TESTS

In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane [NASA-TP-2224] p 19 N87-10103

Development and evaluation of an airplane electronic display format aligned with the inertial velocity vector [NASA-TP-2648] p 16 N87-13438

New methods and results for quantification of lightning-aircraft electrodynamics [NASA-TP-2737] p 4 N87-21871

Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614

[NASA-TP-2691] p 14 N87-23614 Application of parameter estimation to aircraft stability and control: The output-error approach

[NASA-RP-1168] p 14 N87-29499 Analog signal conditioning for flight-test instrumentation

[NASA-RP-1159] p 17 N87-29533

Comparison of wind tunnel and flight test atterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds

[NASA-TP-2588] p 6 N88-10765 The 1986 Goddard Space Flight Center Battery Workshop

[NASA-CP-2486] p 35 N88-11021 Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers

[NASA-TP-2638] p 37 N88-14299 NASA/Army Rotorcraft Technology. Volume 3: Systems Integration, Research Aircraft, and Industry

[NASA-CP-2495-VOL-3] p1 N88-16650 Influence of base modifications on in-flight base drag in the presence of jet exhaust for Mach numbers from 0.7 to 1.5

[NASA-TP-2802] p 37 N88-18881 A perspective on 15 years of proof-of-concept aircraft development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985

[NASA-RP-1187] p 14 N88-19467 A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-loot subsonic tunnel

 
 [NASA-TP-2796]
 p 7
 N88-20264

 Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618]
 p 15
 N88-21153

 Flight control systems development and flight test
 flight test
 flight test

experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 A piloted evaluation of an oblique-wing research aircraft

motion simulation with decoupling control laws [NASA-TP-2874] p 20 N89-15930

Tip aerodynamics and acoustics test: A report and data survey

 [NASA-RP-1179]
 p 9
 N89-17579

 Transonic
 Symposium:
 Theory,
 Application,
 and

 Experiment,
 Volume 1,
 Part 1
 [NASA-CP-3020-VOL-1-PT-1]
 p 9
 N89-20925

[NASA-CP-3020-VOL-1-PT-1] p 9 N89-20925 Effect of advanced rotorcraft airfoil sections on the hover

performance of a small-scale rotor model [NASA-TP-2832] p 10 N89-24264 Method for experimental determination of flutter speed by parameter identification

[NASA-TP-2923] p 15 N89-26844 Longitudinal stability and control characteristics of the

Quiet Short-Haul Research Aircraft (QSRA) [NASA-TP-2965] p 20 N90-17639 Low-speed wind-tunnel investigation of the flight

dynamic characteristics of an advanced turboprop business/commuter aircraft configuration [NASA-TP-2982] p 20 N90-19239

Evaluation of various thrust calculation techniques on an F404 engine [NASA-TP-3001] p 16 N90-25134

[NASA-TP-3001] p 16 N90-25134 Supercritical wing technology: A report on flight evaluations

[NASA-SP-301]

p 2 N77-85474

÷.

# **FLIGHT TRAINING**

FLIGHT TRAINING

Cockpit Resource Management Training [NASA-CP-2455] p 12 N87-22634 FLIR DETECTORS

Wind shear detection. Forward-looking sensor technology

[NASA-CP-10004] p 12 N88-14970 FLOORS

Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections p 16 N90-26823 [NASA-TP-2951]

FLOW CHARACTERISTICS The Langley 14- by 22-foot subsonic tunnel: Description,

flow characteristics, and guide for users [NASA-TP-3008] p 12 N90-27649 FLOW DEFLECTION

Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability

[NASA-TP-2933] p 10 N89-27634 FLOW DISTRIBUTION

- Design of 9.271-pressure-ratio 5-stage core compressor and overall performance for first 3 stages
- p 17 N87-17699 [NASA-TP-2597] Aerothermal evaluation of a spherically blunted body with a trapezoidal cross section in the Langley 8-foot high-temperature tunnel

[NASA-TP-2641] p 36 N87-18782 Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's

proposed altitude wind tunnel [NASA-TP-2680] p 21 N87-20295 Study of lee-side flows over conically cambered delta

wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597

Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2 [NASA-TP-2660-PT-2] p 5 N87-25301

Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack [NASA-TP-2716] p 14 p 14 N87-29497

- A spectral collocation solution to the compressible stability eigenvalue problem [NASA-TP-2858]
- p 9 N89-12543 Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 2

[NASA-CP-3022-PT-2] p 9 N89-19247 CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-CP-3052] p 22 N90-17647

Spanwise measurements of vertical components of atmospheric turbulence

- [NASA-TP-2963] p 58 N90-19718 Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8
- [NASA-TP-2462] p 2 N90-20942 Discrete-vortex model for the symmetric-vortex flow on cones

[NASA-TP-2989] p 11 N90-20946 An approximate method for ca three-dimensional inviscid hypersonic flow fields [NASA.TP.3019] calculating p 39 N90-27066 [NASA-TP-3018]

Computer code for predicting coolant flow and heat transfer in turbomachinery [NASA-TP-2985] p 18 N90-27722

FLOW MEASUREMENT Three component laser anemometer measurements in

an annular cascade of core turbine vanes with contoured end wall [NASA-TP-2846] p 8 N89-10844

Rotor induced-inflow-ratio measurements and CAMRAD calculations

[NASA-TP-2946] p 11 N90-15882 FLOW STABILITY

- A spectral collocation solution to the compressible stability eigenvalue problem (NASA-TP-2858) p 9 N89-12543
- Research in Natural Laminar Flow and Laminar-Flow Control, part 1
- [NASA-CP-2487-PT-1] p 10 N90-12503 FLOW VELOCITY
- Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel
- p 21 N87-17717 (NASA-TP-2666) Jet model for slot film cooling with effect of free-stream and coolant turbulence
- p 36 N87-18034 [NASA-TP-2655] Measurements of flow rate and trajectory of aircraft tire-generated water spray
- p 14 N87-24458 [NASA-TP-2718] Laser anemometer measurements in a transonic axial-flow fan rotor
- [NASA-TP-2879] p 38 N90-11245 FLOW VISUALIZATION
- Evaluation of diffuse-illumination holographic cinematography in a flutter cascade [NASA-TP-2593] p 39 N87-13731

A-22

- In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data p 4 N87-20966 [NASA-TP-2395]
- Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2 [NASA-TP-2660-PT-2] p 5 N87-25301
- Digital enhancement of flow field images
- p 62 N88-20833 [NAŠA-TP-2770] FLUENCE
- Improved model for solar cosmic ray exposure in manned Earth orbital flights p 80 N90-25031 [NASA-TP-2987]
- FLUID DYNAMICS
- NASA-Chinese Aeronautical Establishment (CAE) Symposium
- p 17 N87-20267 [NASA-CP-2433] Mixing and Demixing Processes in Multiphase Flows With Application to Propulsion Systems
- p 37 N89-11153 [NASA-CP-3006] FLUID FLOW
- Experimental cavity pressure distributions at supersonic speeds p 5 N87-22626
- [NASA-TP-2683]
- FLUID MANAGEMENT Microgravity Fluid Management Symposium p 32 N87-21141 [NASA-CP-2465]
- Cryogenic Fluid Management Technology Workshop. Volume 2: Roundtable Discussion of Technology Requirements

p 37 N88-20599

- [NASA-CP-10009]
- Workshop on Two-Phase Fluid Behavior in a Space Environment
- [NASA-CP-3043] p 38 N89-26184 FLUID MECHANICS
- Aeropropulsion '87. Session 3: Internal Fluid Mechanics Research
- [NASA-CP-10003-SESS-3] p 18 N88-15790 Aeropropulsion '87. Session 4: Instrumentation and
- Controls Research [NASA-CP-10003-SESS-4] p 18 N88-15794 Aeropropulsion '87. Session 5: Subsonic Propulsion
- Technology [NASA-CP-10003-SESS-5] p 18 N88-15800 Aeropropulsion '87. Session 6: High-Speed Propulsion
- Technology [NASA-CP-10003-SESS-6] p 18 N88-15807
- FLUTTER
- Effects of winglet on transonic flutter characteristics of cantilevered twin-engine-transport wing model p 43 N87-13789
- [NASA-TP-2627] Method for experimental determination of flutter speed by parameter identification
- p 15 N89-26844 [NASA-TP-2923] Effect of control surface mass unbalance on the stability
- of a closed-loop active control system [NASA-TP-2952] p 47 N90-12042
- The effectiveness of vane-aileron excitation in the experimental determination of flutter speed by parameter identification (NASA-TP-2971) p 16 N90-15100
- FLUTTER ANALYSIS
- Control surface spanwise placement in active flutter suppression systems p 45 N89-16196
- [NASA-TP-2873] Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 1 [NASA-CP-3022-PT-1]
- p 9 N89-19234 FLUX VECTOR SPLITTING
- Three-dimensional multigrid algorithms for the flux-split Euler equations [NASA-TP-2829]
- p 65 N89-12316 FOG DISPERSAL
- Development testing of large volume water sprays for warm fog dispersal [NASA-TP-2607] p 24 N87-12585
- FOOD Controlled Ecological Life Support System. Design,
- Development, and Use of a Ground-Based Plant Growth Module [NASA-CP-2479] p 60 N88-13852
- FOREST MANAGEMENT Earth resources: A continuing bibliography with indexes
- (issue 57) [NASA-SP-7041(57)] p 49 N88-23314
- FORMAT Proceedings of the 5th Annual Users' Conference p 62 N87-10720 [NASA-CP-2399] FORTRAN program for x ray photoelectron spectroscopy data reformatting [NASA-TP-2957] p 69 N90-12348
- FORTRAN User's manual for LINEAR, a FORTRAN program to
- derive linear aircraft models [NASA-TP-2768] p 65 N88-21740

User's manual for interactive LINEAR: A FORTRAN program to derive linear aircraft models [NASA-TP-2835] p 65 N89-16437

SUBJECT INDEX

- FORTRAN program for x ray spectroscopy data reformatting photoelectron [NASA TP-2957] p 69 N90-12348
- FOSSILS
- Exobiology and Future Mars Missions [NASA-CP-10027] p 59 N89-26334 FRACTURE MECHANICS
- Structural Integrity and Durability of Reusable Space Propulsion Systems
- [NASA-CP-2471] p 26 N87-22766 NASA/Army Rotorcraft Technology. Volume 2: Materials
- and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics
- [NASA-CP-2495-VOL-2] p 1 N88-16632 Lewis Structures Technology, 1988. Volume 2: Structural
- Mechanics [NASA-CP-3003-VOL-2] p 44 N88-22382
- Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-22408
- Structural Ceramics p 31 N88-23872 [NASA-CP-2427]
- Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2
- [NASA-CP-2437-VOL-2] p 27 N89-12626 Turbine Engine Hot Section Technology 1986
- [NASA-CP-2444] p 45 N89-12876
- Turbine Engine Hot Section Technology, 1987 [NASA-CP-2493] p 45 N89-17298
- FRACTURE STRENGTH

[NASA-TP-2700]

[NASA-TP-2658]

[NASA-TP-2856]

[NASA-TP-2954]

thin-walled beams

[NASA-TP-2868]

[NASA-TP-2735]

[NASA-TP-2746]

[NASA-CP-2456]

[NASA-TP-2781]

FRICTION FACTOR

[NASA-TP-2897]

[NASA-TP-2917]

FUEL COMBUSTION

[NASA-CP-3006]

[NASA-CP-2437-VOL-2]

volume 2

FRICTION MEASUREMENT

. Fechnology

FRICTION

tires

FREQUENCY STABILITY

FREQUENCY MODULATION

tip clearance measurement system

Closed-Cycle, Frequency-Stable

With Application to Propulsion Systems

FREQUENCIES

FREE VIBRATION

Helicopter

FREE FLOW

transport

- Indentation plasticity and fracture in silicon p 30 N89-10996 [NASA-TP-2863]
- The interlaminar fracture toughness of woven graphite/epoxy composites [NASA-TP-2950] p 29 N90-10179
- FREE ELECTRON LASERS
- Free-Space Power Transmission [NASA-CP-10016] p 27 N90-21795 FREE FLIGHT

Wind-tunnel free-flight investigation of a 0.15-scale model of the F-106B airplane with vortex flaps p 4 N87-21855

blade-vortex interaction

Thrust-reverser flow investigation on a twin-engine

Scale-model acoustics and free-wake analysis results

Surface flow and heating distributions on a cylinder in near wake of Aeroassist Flight Experiment (AFE)

Mixed finite element models for free vibrations of

Frequency domain laser velocimeter signal processor: A new signal processing scheme

Low-cost FM oscillator for capacitance type of blade

Advances in contact algorithms and their application to

Mixed formulation for frictionless contact problems

Evaluation of two transport aircraft and several ground

test vehicle friction measurements obtained for various

runway surface types and conditions. A summary of test

results from joint FAA/NASA Runway Friction Program

Mixing and Demixing Processes in Multiphase Flows

Advanced Earth-to-Orbit Propulsion Technology 1986,

configuration at incidence in Mach 10 Air

locations:

p 4 N87-18537

o 9 N89-14213

p 38 N90-14493

p 45 N89-19579

p 40 N87-27994

p 17 N87-24481

p 40 N87-20522

p 44 N88-21456

p 45 N89-19580

p 16 N90-15902

p 37 N89-11153

p 27 N89-12626

Laser

CO2

FUEL CONSUMPTION		
Ground-based time-quidance algorit	thm for	control of
airplanes in a time-metered air traffic co	ontrol e	nvironment:
A piloted simulation study		
[NASA-TP-2616]	p 16	N87-10864
Advanced turboprop project		
[NASA-SP-495]	p 18	N89-12565
FUEL CONTAMINATION		
Contamination of liquid oxygen by pr	essuriz	ed naseous
nitrogen		.ee gaooeae
[NASA-TP-2894]	p 38	N89-19499
FUEL PUMPS	r	
Space shuttle main engine high ores	sure fi	el numo aft
platform seal cavity flow analysis		
[NASA-TP-2685]	p 36	NB7-17000
Three-step labyrinth seal for	, hiah-a	erformance
turbomachines		
[NASA-TP-1848]	p 36	N87-23921
Straight cylindrical seal for	, hiah-r	performance
turbomachines		
[NASA-TP-1850]	p 36	N87-23936
Three-step cylindrical seal for	hiah-r	erformance
turbomachines		
[NASA-TP-1849]	p 36	N87-24639
FUEL SYSTEMS	-	
Low-energy gamma ray attenuation	chara	cteristics of
aviation fuels		
[NASA-TP-2974]	p 63	N90-18882
FUSELAGES		
Measurements of pressures on the t	ail and	aft fuselage
of an airplane model during rotary	motic	ins at spin
attitudes		
[NASA-TP-2939]	p 10	N90-10829
Fuselage design for a specified	Mach	sliced area

· ubbluge	acoign	 i opeemea		0	4.04
distribution					
(NASA-TP-2	975]		p 16	N90-1	3385

# G

G STARS		
FGK stars and T Tauri stars: Mon	ograpi	n series on
nonthermal phenomena in stellar atmo	sphere	95
(NASA-SP-502)	0 77	N90-18344
GALACTIC COSMIC DAVE		
Bossible complementary cosmic r	av ever	ome: Nuclei
Possible complementary cosmic-n	ay syst	enis. Nuclei
	- 00	NO7 04077
[NASA-1P-2/41]	p 68	NB/-249//
Cosmic ray heavy ion LET mapping to	or alumi	rium, silicon,
and tissue targets		
(NASA-RP-1180)	p 79	N87-25984
A general formatism for phase space	e calcu	ilations
[NASA-TP-2843]	p 66	N89-14053
Radiation exposure for manned Mar	's surfa	ce missions
[NASA-TP-2979]	p 80	N90-18357
The Energetic Gamma-Bay Experi	iment	Telescope
(EGBET) Science Symposium		releasepe
(NASA-CP-3071)	n 77	N90-23294
GALACTIC RADIATION	μ	
Benchmark solutions for the ca	lactic i	on transport
equations: Energy and enatially depen	dent o	robleme
INASA TD-28781	o 70	N80.16714
The Energetic Commo Ray Expo	imont	Telescone
/EGPET) Science Sumposium	ment	releacope
(EGHET) Science Symposium	n 77	NO0 22204
	p / /	1450-23254
GALACTIC STRUCTURE		
Star Formation in Galaxies	- 70	NOT 04088
[NASA-CP-2400]	p /3	N87-24200
The Energetic Gamma-Hay Exp	erimen	t relescope
(EGRET) Science Symposium		
[NASA-CP-30/1]	p//	N90-23294
GALAXIES		
Doubly differential cross sections to	r galac	lic neavy-lon
fragmentation		
[NASA-TP-2659]	p 68	N87-17487
Star Formation in Galaxies		
[NASA-CP-2466]	p 73	N87-24266
Atlas of galaxies useful for measuring	ig the c	cosmological
distance scale	_	
[NASA-SP-496]	p 74	N89-12513
GALILEO PROBE		
Galileo probe parachute test progra	m: Wak	e properties
of the Galileo probe at Mach numbers	s from	0.25 to 0.95
[NASA-RP-1130]	p 37	N88-18884
GAMMA RAY ABSORPTION		
Low-energy damma ray attenuation	n chara	acteristics of
Eowenergy guinna ray anonauto.		
aviation fuels		
aviation fuels [NASA-TP-2974]	p 63	N90-18882
aviation fuels [NASA-TP-2974] GAMMA RAY ASTRONOMY	p 63	N90-18882
aviation fuels [NASA-TP-2974] GAMMA RAY ASTRONOMY Essays in Space Science	p 63	N90-18882
[NASA-TP-2974] GAMMA RAY ASTRONOMY Essays in Space Science [NASA-CP-2464]	р 63 р 72	N90-18882 N87-24247
[NASA-TP-2974] GAMMA RAY ASTRONOMY Essays in Space Science [NASA-CP-2464] The Energetic Gamma-Ray Exce	p 63 p 72 riment	N90-18882 N87-24247 Telescope

The Energeue Gamma-may	CAPONNON	10.000000
(EGRET) Science Symposium		
[NASA-CP-3071]	p 77	N90-23294

The Energetic Gamma-Ray Experiment Telescope
[NASA-CP-3071] p 77 N90-23294
GAMMA RAY TELESCOPES
The Energetic Gamma-Ray Experiment Telescope
(EGHET) Science Symposium (NASA-CP-3071) p 77 N90-23294
GAMMA RAYS
Low-energy gamma ray attenuation characteristics of
aviation fuels
[NASA-1P-29/4] p 63 N90-18882 GAS DETECTORS
A simplified method for determining heat of combustion
of natural gas
[NASA-TP-2682] p 39 N87-20514
The Jovian Atmospheres
[NASA-CP-2441] p 77 N87-17598
Preliminary design of turbopumps and related
machinery
GAS EXCHANGE
Controlled Ecological Life Support System:
Regenerative Life Support Systems in Space
[NASA-CP-2480] p 60 N88-12251
An upwind-biased, point-implicit relaxation algorithm for
viscous, compressible perfect-gas flows
[NASA-TP-2953] p 38 N90-17042
GAS GIANT PLANETS
[NASA-CP-2441] p 77 N87-17598
GAS JETS
Gas-jet and tangent-slot film cooling tests of a 12.5 deg
Cone at Mach number of 6.7
GAS TEMPERATURE
Determination of combustion gas temperatures by
infrared radiometry in sooting and nonsooting flames
[NASA-1P-2900] p 38 N89-25409 GAS TURBINE ENGINES
Turbine Engine Hot Section Technology, 1985
[NASA-CP-2405] p 43 N88-11140
Turbine Engine Hot Section Technology 1986
[NASA-CP-2444] p 45 N89-12876 Turbine Engine Hot Section Technology 1987
Infolite Engline Hot Section Technology, 1987
INASA-GP-24931 D 45 N89-1/298
[NASA-CP-2493] p 45 N89-1/298 GAS TURBINES
GAS TURBINES Thermal Barrier Coatings. Abstracts and figures
[NASA-OF-2493] p 45 N89-1/298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 CAS CAS UNTERACTIONS
[NASA-CP-2493] p 45 N89-1/298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hudrone tracotion and the interaction of budrosce with
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-GAS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals
[NASA-DP-2493]     p 45     N89-17298       GAS TURBINES     Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]     p 31     N89-13642       GAS-CR-SINTERACTIONS     Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]     p 38     N89-19499       GAS-METAL INTERACTIONS     Hydrogen trapping and the interaction of hydrogen with metals       [NASA-TP-2744]     p 30     N87-25463
[NASA-DF-2493]     p 45     N89-17298       GAS TURBINES     Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]     p 31     N89-13642       GAS-GAS INTERACTIONS     Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]     p 38     N89-19499       GAS-METAL INTERACTIONS     Hydrogen trapping and the interaction of hydrogen with metals       [NASA-TP-2744]     p 30     N87-25463
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GASES
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-2493] p 45 N89-17298 [NASA-CP-10019] p 31 N89-13642 [NASA-CP-1019] p 31 N89-13642 [Cas-Cas INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 [GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 [GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 [GASES Space Opportunities for Tropospheric Chemistry
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-GAS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-GAS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b>
[NASA-CP-2493]     p 45     N89-17298       GAS TURBINES     Thermal Barrier Coatings. Abstracts and figures     [NASA-CP-10019]     p 31     N89-13642       GAS-CAS INTERACTIONS     Contamination of liquid oxygen by pressurized gaseous nitrogen     [NASA-TP-2894]     p 38     N89-19499       GAS-METAL INTERACTIONS     Hydrogen trapping and the interaction of hydrogen with metals     [NASA-TP-2744]     p 30     N87-25463       GASEGUS DIFFUSION     Contamination of liquid oxygen by pressurized gaseous nitrogen     [NASA-TP-2894]     p 38     N89-19499       GASES     Space     Opportunities for Tropospheric Chemistry Research     [NASA-CP-2450]     p 51     N87-18248       GAUSSIAN ELIMINATION     Parallel Gaussian elimination of a block tridiagonal matrix     Parallel Gaussian elimination of a block tridiagonal matrix
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GASES Space Opportunities for Tropospheric Chemistry Research (NASA-CP-2450] p 51 N87-18248 GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GASES Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-2493] p 45 N89-17298 [NASA-CP-10019] p 31 N89-13642 [AAS-ACB-10019] p 31 N89-13642 [AAS-ACP-1019] p 31 N89-13642 [CAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 [GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 [GASEGUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 [GASES Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 [GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 [GEAT TEETH Geat tooth stress measurements on the UH-60A
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-1019] p 31 N89-13642 [AASA-CP-1019] p 31 N89-13642 [AASA-CP-1019] p 31 N89-13642 [AASA-CP-1019] p 38 N89-13642 [CAS-CAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-TP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-2493] p 45 N89-17298 [NASA-CP-10019] p 31 N89-13642 [AS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-TP-2894] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2258] p 41 N87-22235 Theorements of the stress measurements on the UH-60A helicopter transmission
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-GRS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235- Theory of gearing [NASA-TP-2699] p 42 N90-19593
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-GRS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEQUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235- Theory of gearing [NASA-RP-1212] p 42 N90-19593 <b>GEARS</b>
[NASA-CP-2493]       p 45       N89-17298         GAS TURBINES       Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642         GAS-CR-10019]       p 31       N89-13642       GAS-GAS INTERACTIONS       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38       N89-19499         GAS-METAL INTERACTIONS       Hydrogen trapping and the interaction of hydrogen with metals         [NASA-TP-2744]       p 30       N87-25463         GASEOUS DIFFUSION       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38       N89-19499         GASES       Space       Opportunities for Tropospheric Chemistry Research         [NASA-CP-2450]       p 51       N87-18248         GAUSSIAN ELIMINATION       Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]       p 64       N89-17422         GEAR TEETH       Gear tooth stress measurements on the UH-60A helicopter transmission       p 41       N87-22235-Theory of gearing       [NASA-RP-1212]       p 42       N90-19593         GEARS       Predicted effect of dynamic load on pitting fatigue life       Predicted effect of dynamic load on pitting fatigue life       N80-19593
[NASA-CP-2493] p 45 N89-17298 GAS TURBINES Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 GAS-GAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GASES Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 GEAR TEETH Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-RP-1212] p 42 N90-19593 GEARS Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears [NASA-TP-2794] p 36 N87-18248 [NASA-RP-1212] p 44 N87-2235- Theory of gearing [NASA-RP-1212] p 42 N90-19593 GEARS
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-1019] p 31 N89-13642 [AASA-CP-1019] p 31 N89-13642 [AASA-CP-1019] p 31 N89-13642 [CAS-CAS INTERACTIONS Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-RP-1212] p 42 N90-19593 <b>GEARS</b> Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears [NASA-TP-2603] p 41 N87-18095 Efficiency testing of a helicopter transmission Pataletage 100 p 41 N87-18095 Efficiency testing of a helicopter transmission Pataletage 100 p 41 N87-18095 Efficiency testing of a helicopter transmission p anetary
[NASA-CP-2493] p 45 N89-17298 [NASA-CP-1019] p 31 N89-13642 [AASA-RP-1019] p 31 N89-13642 [AASA-RP-1212] p 42 N90-19593 [AASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2894] p 38 N89-19499 GAS-METAL INTERACTIONS Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 GASEOUS DIFFUSION Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 GASES Space Opportunities for Tropospheric Chemistry Research [NASA-TP-2894] p 51 N87-18248 GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 GEAR TEETH Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2288] p 41 N87-22235- Theory of gearing [NASA-TP-212] p 42 N90-19593 GEARS Predicted effect of dynamic, load on pitting fatigue life for low-contact-ratio spur gears [NASA-TP-2603] p 41 N87-18095 Efficiency testing of a helicopter transmission planetary reduction stage
[NASA-CP-2493]       p 45       N89-17298         [CAS TURBINES       Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642         [GAS-CP-10019]       p 31       N89-13642       GAS-CASINTERACTIONS       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38       N89-19499         GAS-METAL INTERACTIONS       Hydrogen trapping and the interaction of hydrogen with metals         [NASA-TP-2894]       p 30       N87-25463         GASEOUS DIFFUSION       Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]       p 30       N87-25463         GASES       Space       Opportunities for Tropospheric Chemistry Research       [NASA-TP-2894]       p 51       N87-18248         GAUSSIAN ELIMINATION       Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]       p 64       N89-17422         GEAR TEETH       Gear tooth stress measurements on the UH-60A helicopter transmission       [NASA-TP-2293]       p 42       N90-19593         GEARS       Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears       [NASA-TP-2603]       p 41       N87-18095         Efficiency testing of a helicopter transmission planetary reduction stage       [NASA-TP-2795]       p 41       N
[NASA-CP-2493]       p 45       N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642 <b>GAS-CP-10019</b> p 31       N89-13642       gascas       N89-13642 <b>GAS-CP-10019</b> p 31       N89-13642       gascas       N89-13642 <b>GAS-CP-10019</b> p 31       N89-13642       N89-13642 <b>GAS-CP-10019</b> p 38       N89-19499       Sascas <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals         [NASA-TP-2894]       p 30       N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen       (NASA-TP-2894]       p 38       N89-19499 <b>GASES</b> Space       Opportunities for Tropospheric Chemistry Research       Chemistry Research       Chaussian elimination of a block tridiagonal matrix using multiple microcomputers         [NASA-TP-2892]       p 64       N89-17422 <b>GEART TEETH</b> Gear tooth stress measurements on the UH-60A       helicopter transmission       [NASA-TP-2698]       p 41       N87-22235         Theory of gearing       [NASA-TP-2698]       p 41       N87-18095 <b>GEARS</b> Predicted effect of dynamic load on pitting fatigue life for low-contact-
[NASA-CP-2493]       p 45       N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642 <b>GAS-CP-10019</b> p 31       N89-13642       GAS-CASINTERACTIONS       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38       N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals         [NASA-TP-2744]       p 30       N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen       (NASA-TP-2894]         (NASA-TP-2894]       p 38       N89-19499 <b>GASES</b> Space       Opportunities for Tropospheric Chemistry Research         (NASA-CP-2450]       p 51       N87-18248 <b>GAUSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]         [NASA-TP-2698]       p 41       N87-22235-         Theory of gearing       [NASA-RP-1212]       p 42         [NASA-TP-2603]       p 41       N87-18095 <b>GEARS</b> Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears       [NASA-TP-2751]       p 41       N88-15224         Dynamic analysis of
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-CAS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235: Theory of gearing [NASA-TP-2610] p 41 N87-18095 <b>Efficiency testing of a helicopter transmission planetary</b> reduction stage [NASA-TP-273] p 41 N88-15224 Dynamic analysis of multimesh-gear helicopter transmissions [NASA-TP-2789] p 41 N88-15224 Dynamic analysis of multimesh-gear helicopter transmissions [NASA-TP-2789] p 41 N88-17045 Comparison study of gear dynamic computer programs
[NASA-CP-2493] p 45 N89-17298 <b>GAS TURBINES</b> Thermal Barrier Coatings. Abstracts and figures [NASA-CP-10019] p 31 N89-13642 <b>GAS-CAS INTERACTIONS</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metals [NASA-TP-2744] p 30 N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499 <b>GASES</b> Space Opportunities for Tropospheric Chemistry Research [NASA-CP-2450] p 51 N87-18248 <b>GAUSSIAN ELIMINATION</b> Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 <b>GEAR TEETH</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-2235: Theory of gearing [NASA-TP-2698] p 41 N87-2235: Theory of gearing [NASA-TP-269] p 41 N87-18095 Efficiency testing of a helicopter transmission planetary reduction stage [NASA-TP-2795] p 41 N88-15224 Dynamic analysis of multimesh-gear helicopter transmissions [NASA-TP-2795] p 41 N88-15244 Dynamic analysis of multimesh-gear helicopter transmissions [NASA-TP-2799] p 41 N88-17045 Comparison study of gear dynamic computer programs at NASA Lewis Research Center [NASA-TP-2799] p 41 N88-17045
[NASA-CP-2493]       p 45       N89-17298         [CAS TURBINES       p 31       N89-13642         [NASA-CP-10019]       p 31       N89-13642         [CAS-CP-10019]       p 31       N89-13642         [CAS-CP-10019]       p 31       N89-13642         [CAS-CP-10019]       p 38       N89-13642         [CAS-CP-10019]       p 38       N89-13642         [CAS-CAS-INTERACTIONS       p 38       N89-19499         GAS-METAL INTERACTIONS       Hydrogen trapping and the interaction of hydrogen with metals         [NASA-TP-2894]       p 30       N87-25463         GASEGUS DIFFUSION       Contamination of liquid oxygen by pressurized gaseous nitrogen       NASA-TP-2843]         [NASA-TP-2894]       p 38       N89-19499         GASES       Space       Opportunities for Tropospheric Chemistry Research         [NASA-CP-2450]       p 51       N87-18248         GAUSSIAN ELIMINATION       Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]         [NASA-TP-2892]       p 64       N89-17422         GEAR TEETH       Gearn tecoth stress measurements on the UH-60A         helicopter transmission       [NASA-TP-2892]       p 41         [NASA-TP-2688]       p 41       N87-18
[NASA-CP-2493]p 45N89-17298[CAS TURBINESp 31N89-13642[CAS THEINACTIONSp 31N89-13642[CAS-CA-10019]p 31N89-13642[CAS-CAS INTERACTIONSContamination of liquid oxygen by pressurized gaseous nitrogenp 38N89-19499 <b>GAS-METAL INTERACTIONS</b> Hydrogen trapping and the interaction of hydrogen with metalsp 30N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogenp 30N87-25463 <b>GASEOUS DIFFUSION</b> Contamination of liquid oxygen by pressurized gaseous nitrogenp 38N89-19499 <b>GASES</b> SpaceOpportunities for Tropospheric Chemistry ResearchP 51N87-18248 <b>GAUSSIAN ELIMINATION</b> P 51N87-18248GAUSSIAN ELIMINATION Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputersp 41N87-22235- Theory of gearing [NASA-TP-2698]p 41N87-22235- Theory of gearing [NASA-RP-1212]p 41N87-18095[MASA-RP-1212]p 41N87-18095Efficiency testing of a helicopter transmission planetary reduction stagep 41N87-18095[NASA-TP-275]p 41N88-15224Dynamic analysis of multimesh-gear helicopter transmissionsp 41N88-17045 Comparison study of gear dynamic computer programs at NASA Lewis Research Center [NASA-RP-1212]p 42N90-19593[NASA-RP-1212]p 41N88-17045Comparison study of gear dynamic computer programs at NASA-RP-1212]p 41N89-17423Theory of geari
[NASA-CP-2493]       p 45       N89-17298         [CAS TURBINES       Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642         [CAS-CP-10019]       p 31       N89-13642       GAS-CAS INTERACTIONS       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38       N89-19499         GAS-METAL INTERACTIONS       Hydrogen trapping and the interaction of hydrogen with metals       [NASA-TP-284]       p 30       N87-25463         GASEOUS DIFFUSION       Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]       p 38       N89-19499         GASES       Space       Opportunities for Tropospheric Chemistry Research       [NASA-TP-2894]       p 51       N87-18248         GAUSSIAN ELIMINATION       Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]       p 64       N89-17422         GEAR TEETH       Gear tooth stress measurements on the UH-60A       helicopter transmission       [NASA-TP-2898]       p 41       N87-2235-         Theory of gearing       [NASA-TP-2613]       p 42       N90-19593       GEARS         Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio spur gears       [NASA-TP-2613]       p 41       N84-16095         Efficiency testin
[NASA-CP-2493]       p 45       N89-17298         [CAS TURBINES       Thermal Barrier Coatings. Abstracts and figures       [NASA-CP-10019]       p 31       N89-13642         [CAS-CAR INTERACTIONS       Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]       p 38       N89-19499         GAS-METAL INTERACTIONS       Hydrogen trapping and the interaction of hydrogen with metals       [NASA-TP-2894]       p 30       N87-25463         GASEOUS DIFFUSION       Contamination of liquid oxygen by pressurized gaseous nitrogen       [NASA-TP-2894]       p 30       N87-25463         GASES       Space       Opportunities for Tropospheric Chemistry Research       [NASA-TP-2894]       p 51       N87-18248         GAUSSIAN ELIMINATION       Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers       [NASA-TP-2892]       p 64       N89-17422         GEAR TEETH       Gear tooth stress measurements on the UH-60A helicopter transmission       [NASA-TP-2689]       p 41       N87-2235: Theory of gearing         [NASA-TP-2610]       p 41       N87-18095       Efficiency testing of a helicopter transmission planetary reduction stage         [NASA-TP-2795]       p 41       N88-17045       Comparison study of gear dynamic computer programs at NASA Lewis Research Center         [NASA-TP-2795]       p 41       N88-17045       Compa

GAMMA RAY OBSERVATORY

of

Flight investigation of the effect of tail configuration on stall, spin, and recovery characteristics of a low-wing general aviation research airplane p 13 N87-16815 [NASA-TP-2644] A simulation evaluation of a pilot interface with an automatic terminal approach system [NASA-TP-2669] p 16 N87-19393 Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 Wind-tunnel investigation of a full-scale general aviation airplane equipped with an advanced natural laminar flow INASA-TP-27721 p.6 N88-10009 Investigation of the misfueling of reciprocating piston aircraft engines [NASA-TP-2803] p 12 N88-21144 GEOCENTRIC COORDINATES Ten year planetary ephemeris: 1986-1995 [NASA-RP-1176] p 73 p 73 N87-14219 Compilation of methods in orbital mechanics and solar geometry [NASA-RP-1204] p 52 N89-10420 GEOCHEMISTRY Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274 GEODETIC SURVEYS Project: Catalogue Crustal Dynamics of site information [NASA-RP-1198] p 52 N88-19037 GEODYNAMICS Crustal Dynamics Project: Catalogue of site information [NASA-RP-1198] p 52 N88-19037 GEOLOGY Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration p 78 N90-25030 [NASA-CP-3070] GEOMAGNETISM On the statistics of El Nino occurrences and the relationship of El Nino to volcanic and solar/geomagnetic activity [NASA-TP-2948] p 79 N90-12456 GEOMORPHOLOGY Geomorphology from space: A global overview of regional landforms [NASA-SP-486] p 47 N87-18139 Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 GEOPHYSICS NASA/MSFC FY-85 Atmospheric Processes Research Review p 55 N87-13043 [NASA-CP-2402] Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274 Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration [NASA-CP-3070] p 78 N90-25030 GEOPOTENTIAL HEIGHT Comparison of satellite-derived dynamical quantities for the stratosphere of the Southern Hemisphere p 53 N89-25540 INASA-CP-30441 GEOSYNCHRONOUS ORBITS Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications p 26 N90-27738 [NASA-TP-3016] GET AWAY SPECIALS (STS) Special The 1986 Get Away Experimenter's Symposium [NASA-CP-2438] p 22 N87-20302 Special The 1987 Get Away Experimenter's Symposium p 22 N88-17691 [NASA-CP-2500] The 1988 Symposium Get Away Special Experimenter's p 22 N89-10902 [NASA-CP-3008] GIMBALS Internal performance of two nozzles utilizing gimbal concepts for thrust vectoring p 11 N90-19200 [NASA-TP-2991] GLACIERS Surface topography of the Greenland Ice Sheet from satellite radar altimetry [NASA-SP-503] p 54 N90-22850 GLASS FIBER REINFORCED PLASTICS An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 **GLASS LASERS** Analysis of Nd3 + :glass, solar-pumped, high-powr laser systems [NASA-TP-2905] p 40 N89-17855

# **GLOBAL POSITIONING SYSTEM**

# SUBJECT INDEX

**GLOBAL POSITIONING SYSTEM** 

- Joint University Program for Air Transportation Research, 1985 [NASA-CP-2453] p 1 N87-27596
- GOVERNMENT/INDUSTRY RELATIONS The 1986 Get Away Special Experimenter's
- Symposium [NASA-CP-2438] p 22 N87-20302
- GRAIN BOUNDARIES Permeation of oxygen through high purity, large grain
- Silver p 30 N87-27024 [NASA-TP-2755] GRAINS
- Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive
- summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts.
- candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 59 N89-24023 GRAMMARS
- Grammar, punctuation, and capitalization: A handbook for technical writers and editors
- p 71 N90-26710 [NASA-SP-7084] GRAPHITE
- Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube
- [NASA-TP-2788] p 35 N88-15146 GRAPHITE-EPOXY COMPOSITES
- Properties of two composite materials made of toughened epoxy resin and high-strain graphite fiber
- [NASA-TP-2826] p 28 N88-25480 The interlaminar fracture toughness of woven graphite/epoxy composites
- [NASA-TP-2950] p 29 N90-10179 Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular Cutouts
- [NASA-TP-3007] p 29 N90-26077 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels p 29 N90-27876 [NASA-TP-3042]
- **GRAVITATIONAL EFFECTS** Continuous flow electrophoresis system experiments on shuttle flights STS-6 and STS-7
- [NASA-TP-2778] p 32 N88-10978 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Cells in Space [NASA-CP-10034] p 61 N90-13939 Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754
- GRAVITATIONAL PHYSIOLOGY Cells in Space [NASA-CP-10034] p 61 N90-13939
- GRAVITATIONAL WAVES Relativistic Gravitational Experiments in Space [NASA-CP-3046] p 77 N9 p 77 N90-19940
- GRAY SCALE Experiments in encoding multilevel images as
- quadtrees [NASA-TP-2722] p 65 N87-28367 **GRAZING FLOW**
- Measured and calculated acoustic attenuation rates of tuned resonator arrays for two surface impedance distribution models with flow
- [NASA-TP-2766] p 67 N88-17440 GREENLAND
- Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland
- [NASA-RP-1233-VOL-1] p 54 N90-20562 Satellite radar altimetry over ice. Volume 2: Users' guide
- for Greenland elevation data from Seasat [NASA-RP-1233-VOL-2] p 54 N90-20563 Surface topography of the Greenland Ice Sheet from
- satellite radar altimetry INASA-SP-5031 p 54 N90-22850 GRID GENERATION (MATHEMATICS)
- Transonic Symposium: Theory, Application, and Experiment, Volume 1, Part 1
- [NASA-CP-3020-VOL-1-PT-1] p 9 N89-20925 Transonic Symposium: Theory, Application, and Experiment, volume 1, part 2
- [NASA-CP-3020-VOL-1-PT-2] p 9 N89-20942 A time-accurate adaptive grid method and the numerical simulation of a shock-vortex interaction
- [NASA-TP-2998] p 61 N90-21524 GROUND EFFECT (AERODYNAMICS)
- Proceedings of the 1985 NASA Ames Research Center's Ground-Effects Workshop
- [NASA-CP-2462] p 5 N87-24410

- Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with a secondary-nozzle thrust reverser [NASA-TP-2834] p 8 N88-29752 The 1987 Ground Vortex Workshop p 9 N89-10849 [NASA-CP-10008] Thrust-reverser flow investigation on a twin-engine transport [NASA-TP-2856] p 9 N89-14213 Dynamic ground-effect measurements on the F-15 STOL and Maneuver Technology Demonstrator (S/MTD) configuration p 11 N90-22531 [NASA-TP-3000] The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users p 12 N90-27649 [NASA-TP-3008] GROUND STATIONS Crustal Dynamics Project: Catalogue of site intormation [NASA-8P-1198] p 52 N88-19037 GROUND SUPPORT EQUIPMENT The 24th Aerospace Mechanisms Symposium p 47 N90-22079 INASA-CP-30621 GROUND SUPPORT SYSTEMS Proceedings of a conference on Cardiovascular Bioinstrumentation p 59 N89-17997 [NASA-CP-10022] GROUND TESTS Large-scale static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft p 13 N87-15959 [NASA-TP-2684] Applications and requirements for real-time simulators in around-test facilities [NASA-TP-2672] p 64 N87-23202 Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program [NASA-TP-2917] p 16 N90-15902 NASA/DOD Controls-Structures Interaction Technology 1989 [NASA-CP-3041] p 26 N90-21062 Dynamic ground-effect measurements on the F-15 STOL Maneuver Technology Demonstrator (S/MTD) configuration
- (NASA-TP-30001 p 11 N90-22531 GROUND WATER
- Sapping features of the Colorado Plateau: A comparative planetary geology field guide p 49 N89-10401 [NASA-SP-491]
- GROUP DYNAMICS
- Cockpit Resource Management Training p 12 N87-22634 [NASA-CP-2455]
- GUIDANCE (MOTION) Joint University Program for Air Transportation Research, 1987
- [NASA-CP-3028] p 2 N89-19230 GUIDE VANES
- Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel INASA-TP-2680
- Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel
- [NASA-TP-2681] p 21 N88-17686 GÚSTS
- Spanwise measurements of vertical components of atmospheric turbulence
- [NASA-TP-2963] p 58 N90-19718 GYROSCOPES Further developments in modeling digital control
- systems with MA-prefiltered measurements [NASA-TP-2909]

# Н

- HALF LIFE
- Analysis of positron lifetime spectra in polymers NASA-TP-2853 p 63 N89-12237 HALLEY'S COMET
- Atlas of Comet Halley 1910 II p 75 N87-30235 [NASA-SP-488] Infrared Observations of Comets Halley and Wilson and
- Properties of the Grains p 74 N89-13330 INASA-CP-30041 HAMILTONIAN FUNCTIONS
- A study to evaluate STS heads-up ascent trajectory performance employing a minimum-Hamiltonian optimization strategy [NASA-TP-2793] p 23 N88-15820

HANDBOOKS	
Propagation effects handbook for design A summary of propagation im	or satellite systems
100 GHz satellite links with tech	pairments on TU to
design	inques for system
[NAŠA-RP-1082(04)]	p 34 N89-17060
Grammar, punctuation, and capitality	zation: A handbook
for technical writers and editors	
[NASA-SP-7084]	p 71 N90-26710
Indentation plasticity and fracture in	silicon
(NASA-TP-2863)	p 30 N89-10996
HEAD DOWN TILT	,
Joint US/USSR study: Comparis	ion of effects of
horizontal and head-down bed rest	
[NASA-TP-3037]	p 60 N90-28965
Conventionally cast and forced	conner alloy for
high-heat-flux thrust chambers	copper anoy for
[NASA-TP-2694]	p 30 N87-16902
Experimental evaluation of heat tra	insfer on a 1030:1
area ratio rocket nozzle	
[NASA-TP-2726]	p 27 N87-25424
Measurement of local high-level, tra	nsient surface heat
[NASA-TP-2840]	p.39_N88-30099
HEAT OF COMBUSTION	p 00 /100 00000
A simplified method for determining	heat of combustion
of natural gas	
[NASA-TP-2682]	p 39 N87-20514
Actobermal evaluation of a sphore	cally blunted body
with a trapezoidal cross section in th	he Landley 8-foot
high-temperature tunnel	the Langiery 0-1001
[NASA-TP-2641]	p 36 N87-18782
Experimental evaluation of heat tra	insfer on a 1030:1
area ratio rocket nozzle	
[NASA-TP-2726]	p 27 N87-25424
Application of turbulence modeling	to predict surface
neat transfer in stagnation flow region	of circular cylinder
Eifteenth Space Simulation Confer	p 3/ N8/-2/161
Highway to Space Through Testing	ence. Support the
(NASA-CP-3015)	p 25 N89-12582
Turbine Engine Hot Section Techno	logy 1986
[NASA-CP-2444]	p 45 N89-12876
[NASA-CP-2444] Turbine Engine Hot Section Techno	p 45 N89-12876 logy, 1987
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493]	p 45 N89-12876 logy, 1987 p 45 N89-17298
[NASA-CF-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distributio	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distributio near wake of Aeroassist Flight	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE)
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment {NASA-CP-3043} Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment {NASA-CP-3043} Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight 1 configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer is hythomachingon	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2954]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment {NASA-CP-3043} Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-iet and tangent-slot film cooling	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deo
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bel Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment {NASA-CP-3043} Surface flow and heating distributio near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-TP-2124]	p 45 N89-12876 logy, 1987 p 45 N89-1298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials o 28 N88-10117
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2985] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-RP-1124]	p 45 N89-12876 logy, 1987 p 45 N89-1298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-RP-1124] HEATING	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-RP-1124] <b>HEATING</b> Aerodynamic pressure and heating- tile gaps around chine regions with pre-	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in resure gradients at
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-TP-1124] HEATING Aerodynamic pressure and heating- tile gaps around chine regions with pro- a Mach number of 6.6	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in essure gradients at
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-TP-124] HEATING Aerodynamic pressure and heating-file gaps around chine regions with pre- a Mach number of 6.6	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in assure gradients at p 38 N90-23670
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-TP-2985] HEATING Aerodynamic pressure and heating- tile gaps around chine regions with pro- a Mach number of 6.6 [NASA-TP-2988] HEAYY IONS	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in assure gradients at p 38 N90-23670
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-RP-1124] <b>HEATING</b> Aerodynamic pressure and heating- tile gaps around chine regions with pro- a Mach number of 6.6 [NASA-TP-2988] <b>HEAY1 IONS</b> Doubly differential cross sections for	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in p 38 N90-23670 galactic heavy-ion
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2785] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-RP-1124] <b>HEATING</b> Aerodynamic pressure and heating-f tile gaps around chine regions with pro- a Mach number of 6.6 [NASA-TP-2988] <b>HEAYY IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2950]	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in sesure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-12497
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2988] <b>HEATY IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementation complements	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in essure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-1124] <b>HEATING</b> Aerodynamic pressure and heating- tile gaps around chine regions with pre a Mach number of 6.6 [NASA-TP-2988] <b>HEAVY IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antimuclei	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in assure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 y systems: Nuclei
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2988] <b>HEATY IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antinucclei [NASA-TP-2711]	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2785] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-RP-1124] <b>HEATING</b> Aerodynamic pressure and heating-f tile gaps around chine regions with pro- a Mach number of 6.6 [NASA-TP-2885] <b>HEAY 10NS</b> Doubly differential cross sections for fragmentation [NASA-TP-2657] Possible complementary cosmic-ray and antinuctei [NASA-TP-2711] Eikonal solutions to optical model	p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in essure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 7 a coupled-channel
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-286] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2863] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2863] <b>HEATY 10NS</b> Doubly differential cross sections for fragmentation [NASA-TP-2741] Eikonal solutions to optical mode equations	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in essure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 al coupled-channel
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2988] <b>HEATY IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antinucclei [NASA-TP-2741] Eikonal solutions to optical mode equations [NASA-TP-2830]	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cytinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in pssure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 al coupled-channel p 68 N87-24977
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight 1 configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TRASTRENT</b> Outgassing data for selecting space [NASA-TP-2988] <b>HEAY1NG</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antinuclei [NASA-TP-280] Benchmark solutions to optical mode equations [NASA-TP-2830] Benchmark solutions for the galax	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 al coupled-channel p 68 N87-20402 cic ion transport
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-RP-1124] <b>HEATING</b> Aerodynamic pressure and heating-f tile gaps around chine regions with pro- a Mach number of 6.6 [NASA-TP-2988] <b>HEAYING</b> Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antinucclei [NASA-TP-2741] Eikonal solutions to optical mode equations: Energy and spatially dependention [NASA-TP-281] Outpatians.	p 45 N89-12876 logy, 1987 p 45 N89-12876 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in pssure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 al coupled-channel p 68 N88-30402 citic ion transport tent problems
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Bei Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2955] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2659] <b>Possible</b> complementary cosmic-ray and antinuclei [NASA-TP-2783] Benchmark solutions to optical model equations [NASA-TP-2830] Benchmark solutions for the galax equations: Energy and spatially dependent	p 45 N89-12876 logy, 1987 p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in essure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 y systems: Nuclei p 68 N87-24977 el coupled-channel p 68 N87-24977 el coupled-channel p 68 N88-30402 ctic ion transport fent problems p 79 N89-16714
[NASA-CP-2444] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-slot film cooling cone at Mach number of 6.7 [NASA-TP-2986] HEAT TRANSFER COEFFICIENTS Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] HEAT TREATMENT Outgassing data for selecting space [NASA-TP-2988] HEATTREATMENT Outgassing data for selecting space [NASA-TP-2988] HEATY IONS Doubly differential cross sections for fragmentation [NASA-TP-2659] Possible complementary cosmic-ray and antinuclei [NASA-TP-2830] Benchmark solutions to optical mode equations: [NASA-TP-2878] HEAYY LIFT HELICOPTERS	p 45 N89-12876 logy, 1987 p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 lant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in pssure gradients at p 38 N90-23670 galactic heavy-ion p 68 N87-17487 r systems: Nuclei p 68 N87-24977 al coupled-channel p 68 N87-24977 al coupled-channel p 68 N87-24977 al coupled-channel p 68 N88-30402 citic ion transport fant problems p 79 N89-16714
[NASA-CP-2443] Turbine Engine Hot Section Techno [NASA-CP-2493] Workshop on Two-Phase Fluid Be Environment [NASA-CP-3043] Surface flow and heating distribution near wake of Aeroassist Flight I configuration at incidence in Mach 10 [NASA-TP-2954] Computer code for predicting cool transfer in turbomachinery [NASA-TP-2985] Gas-jet and tangent-stot film cooling cone at Mach number of 6.7 [NASA-TP-2786] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TRANSFER COEFFICIENTS</b> Finite-element reentry heat-transfer shuttle Orbiter [NASA-TP-2657] <b>HEAT TREATMENT</b> Outgassing data for selecting space [NASA-TP-2988] <b>HEAY1 IONS</b> Doubly differential cross sections for fragmentation [NASA-TP-2781] Eikonal solutions to optical mode equations: Energy and spatialty depend [NASA-TP-2878] <b>HEAY1 LIFT HELICOPTERS</b> General equilibrium characteristic	p 45 N89-12876 logy, 1987 p 45 N89-12876 logy, 1987 p 45 N89-17298 havior in a Space p 38 N89-26184 ns on a cylinder in Experiment (AFE) Air p 38 N90-14493 ant flow and heat p 18 N90-27722 tests of a 12.5 deg p 39 N90-28806 analysis of space p 39 N90-28806 analysis of space p 37 N87-29795 craft materials p 28 N88-10117 rate distributions in p 38 N90-23670 galactic heavy-ion p 68 N87-24977 al coupled-channel p 68 N88-30402 ctic ion transport dent problems p 79 N89-16714 s of a dual-lift

- HELICOPTER ENGINES
- reduction stage INASA-TP-27951

A-24

- p 33 N89-24507
  - - p 2 N88-19407
    - - Efficiency testing of a helicopter transmission planetary
        - p 41 N88-15224

- p 21 N87-20295

p 12 N90-28503

o 59 N88-19883

The effects of structural flap-lag and pitch-lag coupling

Space Station Human Factors Research Review.

Space Station Human Factors Research Review.

Volume 3: Space Station Habitability and Function:

on soft inplane hingeless rotor stability in hove

Dynamic analysis of multimesh-gear helicopter transmissions (NASA-TP-2789) p 41 N88-17045 HELICOPTER PERFORMANCE Transonic flow analysis for rotors. Part 2: Three-dimensional, unsteady, full-potential calculation

[NASA-TP-2375-PT-2] p 3 N87-10841 NASA/Army Rotorcraft Technology. Volume 3: Systems Integration, Research Aircraft, and Industry

[NASA-CP-2495-VOL-3] p1 N88-16650 HELICOPTER PROPELLER DRIVE

Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607

HELICOPTER WAKES Rotor induced-inflow-ratio measurements and CAMRAD calculations [NASA-TP-2946] p 11 N90-15882

HELICOPTERS Testing of UH-60A helicopter transmission in NASA

ewis 2240-kW (3000-hp) facility [NASA-TP-2626] p 41 N87-10391

Recent Experiences in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-2327-PT-2] p 13 N87-11750

Power cepstrum technique with application to model helicopter acoustic data [NASA-TP-2586] p 66 N87-17479

Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results [NASA-TP-2658] p 4 N87-18537 Vibration characteristics of OH-58A helicopter main rotor

transmission [NASA-TP-2705] p 41 N87-20555

Preliminary structural design of composite main rotor blades for minimum weight

[NASA-TP-2730] p 28 N87-25435 NASA/Army Rotorcraft Technology. Volume 1: Aerodynamics, and Dynamics and Aeroelasticity [NASA-CP-2495-VOL-1] p 1 N8 p 1 N88-16625

NASA/Army Rotorcraft Technology. Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics

[NASA-CP-2495-VOL-2] p 1 N88-16632 An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter rotor in hover

[NASA-TP-2546] p 7 N88-20257 Tip aerodynamics and acoustics test: A report and data survey

[NASA-RP-1179] p 9 N89-17579 HELIUM ISOTOPES

Lunar Helium-3 and Fusion Power [NASA-CP-10018] p 69 N89-14842 HEPTANES

Velocity profiles in laminar diffusion flames [NASA-TP-2596] p 36 p 36 N87-18035

- HIGH POWER LASERS Analysis of Nd3+:glass, solar-pumped, high-powr laser
- p 40 N89-17855 [NASA-TP-2905] Mode-medium instability and its correction with a Gaussian reflectivity mirror

(NASA-TP-3023) p 68 N90-25673 HIGH PRESSURE

Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis

p 36 N87-17000 INASA-TP-26851 High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N85

p 27 N89-15979 Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6

[NASA-TP-2988] p 38 N90-23670 HIGH RESOLUTION

Theoretical Problems in High Resolution Solar Physics,

[NASA-CP-2483] p 79 N88-11609 HIGH SPEED

Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport (NASA-TP-2678) p 14 N87-20990 [NASA-TP-2678]

Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel

p 21 N88-17686 [NASA-TP-2681] HIGH TEMPERATURE Conventionally cast and forged copper alloy for

high-heat-flux thrust chambers [NASA-TP-2694] p 30 N87-16902

A rapid method for the computation of equilibrium chemical composition of air to 15000 K p 30 N88-16830 [NASA-TP-2792]

Fluctuating pressures measured beneath high-temperature, turbulent boundary layer on a flat plate at Mach number of 5

HIGH TEMPERATURE ENVIRONMENTS Finite-rate water condensation in combustion-heated wind tunnels

[NASA-TP-2833] p 22 N88-28075 Evaluation of a strain-gage load calibration on a

low-aspect-ratio wing structure at elevated temperature [NASA-TP-2921] p 46 N89-28034 HIGH TEMPERATURE SUPERCONDUCTORS

AMSAHTS 1990: Advances in Materials Science and Applications of High Temperature Superconductors

HIGHLY MANEUVERABLE AIRCRAFT

- Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702
- Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618]
- p 15 N88-21153 Flight control systems development and flight test
- experience with the HiMAT research vehicles [NASA-TP-2822] p 20 p 20 N89-15929 HISTORIES
- Evolution, calibration, and operational characteristics of the two-dimensional test section of the Langley 0.3-meter transonic cryogenic tunnel
- [NASA-TP-2749] p 21 N87-28570
- NASA historical data book. Volume 1: NASA resources 1958-1968
- [NASA-SP-4012-VOL-1] p 80 N88-25428 NASA historical data book. Volume 2: Programs and projects 1958-1968
- NASA-SP-4012-VOL-21 p 80 N88-25429 NASA historical data book. Volume 3: Programs and

orajects 1969-1978 [NASA-SP-4012-VOL-3] p 81 N88-25430 Where no man has gone before: A history of Apollo

- lunar exploration missions [NASA-SP-4214] p 81 N89-25946 Astronautics and aeronautics, 1985: A chronology
- [NASA-SP-4025] p.81 N89-26803 Orders of magnitude: A history of the NACA and NASA, 1915-1990
- [NASA-SP-4406] p 81 N89-26805 HODOGRAPHS
- Lewis inverse design code (LINDES): Users manual p 4 N87-20238 INASA-TP-26761
- HOLOGRAPHIC INTERFEROMETRY Evaluation of diffuse-illumination holographic cinematography in a flutter cascade
- [NASA-TP-2593] p 39 N87-13731 Automated Reduction of Data from Images and
- Holograms [NASA-CP-2477] p 6 N87-29432 HOLOGRAPHY
- Evaluation of diffuse-illumination holographic cinematography in a flutter cascade [NASA-TP-2593] p 39 N87-13731
- HONEYCOMB CORES
- An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876
- HONEYCOMB STRUCTURES
- Experimental evaluation of honeycomb/screen configurations and short contraction section for NASA Lewis Research Center's altitude wind tunnel [NASA-TP-2692] p 21 N87-23662
- HORIZONTAL ORIENTATION
- Effects of combining vertical and horizontal information into a primary flight display (NASA-TP-2783)
- p 17 N88-12487 HORIZONTAL TAIL SURFACES
- Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization
- [NASA-TP-2961] p 11 N90-14187 HOVERING
- An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter rotor in hover
  - p 7 N88-20257 (NASA-TP-2546) Effect of advanced rotorcraft airfoil sections on the hover
- performance of a small-scale rotor model [NASA-TP-2832] p 10 N89-24264
- Stereopsis cueing effects on hover-in-turbulence performance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004
- The effects of structural flap-lag and pitch-lag coupling
- on soft inplane hingeless rotor stability in hover p 12 N90-28503 [NASA-TP-3002]

Volume 1: EVA Research and Development (NASA-CP-2426-VOL-1) p 59 o 59 N88-24145 Space Station Human Factors Research Review. Volume 4: Inhouse Advanced Development and Research [NASA-CP-2426-VOL-4] p 59 N88-24148 Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) [NASA-CP-3019] p 61 N89-19017 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) p 62 N90-25503 [NASA-CP-3059] p 62 N90-25503 HUMAN PERFORMANCE Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370 HUMAN TOLERANCES Annoyance response to simulated advanced turboprop aircraft interior noise containing tonal beats [NASA-TP-2689] p 66 p 66 N87-24161 Annoyance caused by advanced turboprop aircraft flyover noise: Counter-rotating-propeller configuration [NASA-TP-3027] p 67 N90-29166 p 67 N90-29166 HYBRID PROPELLANT ROCKET ENGINES Analysis of quasi-hybrid solid rocket booster concepts for advanced earth-to-orbit vehicles [NASA-TP-2751] p 27 N87-25425 HYDRAULIC EQUIPMENT The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REV] p 43 N87-16321

HOVERING STABILITY

[NASA-TP-3002]

Architectural Research

[NASA-CP-2426-VOL-3]

HUMAN FACTORS ENGINEERING

HYDRODYNAMICS Preliminary design of turbopumps and related nachinery

[NASA-RP-1170] p.3 N87-17665 Hydroburst test of a carbon-carbon involute exit cone p 24 N88-14112 [NASA-TP-2556] A procedure for computing surface wave trajectories on

- an inhomogeneous surface [NASA-TP-2929] p 10 N89-26811
- HYDROGEN The Jovian Atmospheres
- [NASA-CP-2441] p 77 N87-17598 Hydrogen trapping and the interaction of hydrogen with
- metals [NASA-TP-2744]
- p 30 N87-25463 HYDROGEN EMBRITTLEMENT
- Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2

NASA-CP-2437-VOL-2] p 27 N89-12626 HYDROGEN FUELS

- Effect of Reynolds number variation on aerodynamics
- of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87 p 5 N87-26031 HYDROGEN OXYGEN ENGINES
- An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion
- p 30 N88-15846 [NASA-TP-2791] Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2
- [NASA-CP-2437-VOL-2] p 27 N89-12626 HYDROGEN OXYGEN FUEL CELLS
  - Space Electrochemical Research and Technology Conference: Abstracts
- [NASA-CP-10029] p 50 N89-22982 Space Electrochemical Research and Technology
- (SERT), 1989 [NASA-CP-3056] p 50 N90-20454
- HYDROGEN PEROXIDE
- Future directions for H sub x O sub y detection [NASA-CP-2448] p 51 N87 p 51 N87-15528 HYDROXYL RADICALS
- Future directions for H sub x O sub y detection [NASA-CP-2448] p 51 N87 p 51 N87-15528
- HYPERSONIC AIRCRAFT
  - Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6
  - p 5 N87-26031 [NASA-TP-2728] Aeropropulsion '87. Session 6: High-Speed Propulsion
- Technology [NASA-CP-10003-SESS-6] p 18 N88-15807 Aerothermal tests of quilted dome models on a flat plate
- at a Mach number of 6.5 [NASA-TP-2804] p 37 N88-22325

Aerodynamic pressures and heating rates on surfaces between split elevons at Mach 6.6

p 37 N89-12822

A-25

HYPERSONIC FLIGHT

[NASA-TP-2855]

# HYPERSONIC FLOW

#### HYPERSONIC FLOW

Simplified curve fits for the thermodynamic properties of equilibrium air

- [NASA-RP-1181] p 36 N87-26309 Conservation equations and physical models for hypersonic air flows in thermat and chemical nonequilibrium
- [NASA-TP-2867] p 38 N89-16115 Low-speed, high-lift aerodynamic characteristics of slender, hypersonic accelerator-type configurations [NASA-TP-2945] p 10 N90-10830
- [NASA-TP-2945] p 10 N90-10830 Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration
- [NASA-TP-2956] p 11 N90-14185 An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows
- [NASA-TP-2953] p 38 N90-17042 An approximate method for calculating three-dimensional inviscid hypersonic flow fields [NASA-TP-3018] p 39 N90-27066
- HYPERSONIC SPEED Mach 6 experimental and theoretical stability and
- performance of a cruciform missile at angles of attack up to 65 degrees [NASA-TP-2733] p 5 N87-23592
- Aerodynamic characteristics of wings designed with a combined-theory method to cruise at a Mach number of 4.5 [NASA-TP-2799] p 7 N88-19420
- Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6
- (NASA-TP-2988) p 38 N90-23670 HYPERSONIC VEHICLES
- Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5
- [NASA-TP-2631] p 35 N87-13664 Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration
- [NASA-TP-2956] p 11 N90-14185 HYPERSONIC WIND TUNNELS
- Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as occurs for a real gas [NASA-TP-2384] p 37 N87-29778
- Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499
- HYPERVELOCITY PROJECTILES
- Trajectory characteristics and heating of hypervelocity projectiles having large ballistic coefficients [NASA-TP-2614] p 7 N88-19412
- Joint US/USSR study: Comparison of effects of
- horizontal and head-down bed rest [NASA-TP-3037] p 60 N90-28965
- HYSTERESIS Parametric study of power absorption from electromagnetic waves by small ferrite spheres [NASA-TP-2949] p 66 N90-12282

I

ICE

A-26

- Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland [NASA-RP-1233-VOL-1] p 54 N90-20562 Satellite radar altimetry over ice. Volume 2: Users' guide
- Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat [NASA-RP-1233-VOL-2] p 54 N90-20563
- [NASA-HP-1233-VOL-2] p 54 N90-20563 Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat
- [NASA-RP-1233-VOL-4] p 54 N90-20564 ICE ENVIRONMENTS
- SeaRISE: A Multidisciplinary Research Initiative to Predict Rapid Changes in Global Sea Level Caused by Collapse of Marine Ice Sheets
- [NASA-CP-3075] p 48 N90-22824
- Arctic Sea ice, 1973-1976: Satellite passive-microwave observations
- {NASA-SP-489}
   p 58
   N87-24870

   Polar
   microwave
   brightness
   temperatures

   Nimbus-7
   SMMR: Time series of daily and monthly maps

   from 1978 to 1987

   [NASA-RP-1223]
   p 48
   N89-26275
- [NASA-RF-1223] p 48 N89-262/5 Surface topography of the Greenland Ice Sheet from satellite radar altimetry [NASA-SP-503] p 54 N90-22850
- IMAGE ANALYSIS
- Automated Reduction of Data from Images and Holograms INASA-CP-24771 p 6 N87-29432

- Spatial Displays and Spatial Instruments [NASA-CP-10032] p 61 N90-22918
- IMAGE ENHANCEMENT
- A general solution to the silhouette problem [NASA-TP-2695] p 61 N88-14629
- Digital enhancement of flow field images [NASA-TP-2770] p 62 N88-20833
- IMAGE PROCESSING Proceedings of the 5th Annual Users' Conference
- (NASA-CP-2399) p 62 N87-10720 Sixth Annual Users' Conference --- Transportable Applications Executive (TAE)
- [NASA-CP-2463] p 62 N87-23156 Experiments in encoding multilevel images as
- quadtrees [NASA-TP-2722] p 65 N87-28367
- A general solution to the silhouette problem [NASA-TP-2695] p 61 N88-14629 Digital enhancement of flow field images
- [NASA-TP-2770] p 62 N88-20833 Sensitivity of F-106B leading-edge-vortex images to
- flight and vapor-screen parameters (NASA-TP-2818) p 8 N88-23760
- The 1988 Goddard Conference on Space Applications of Artificial Intelligence
- [NASA-CP-3009] p 64 N88-30330 Spatial vision processes: From the optical image to the symbolic structures of contour information
- [NASA-TP-2838] p 39 N89-13762 Proceedings of the Scientific Data Compression Workshop

p 63 N89-22332

- [NASA-CP-3025]
- The 1989 Goddard Conference on Space Applications of Artificial Intelligence [NASA-CP-3033] 0 64 N89-26578
- [NASA-CP-3033] p 64 N89-20 IMAGE RECONSTRUCTION
- Visual Information Processing for Television and Telerobotics
- [NASA-CP-3053] p 40 N90-16204 IMAGING TECHNIQUES
- Remote Sensing in Polarized Light [NASA-CP-3014] p 72 N89-14189 Proceedings of the Scientific Data Compression Workshop
- [NASA-CP-3025] p 63 N89-22332 Visual Information Processing for Television and Televisotics
- [NASA-CP-3053] p 40 N90-16204 Spatial interferometry in optical astronomy
- [NASA-RP-1245] p 75 N90-28470
- Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198
- [NASA-1P-3029] p 29 N90-25198 A Protection And Detection Surface (PADS) for damage tolerance
- [NASA-TP-3011] p 29 N90-27788 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels
- INASA-TP-3042] p 29 N90-27876
- Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007
- IMPACT TESTS
- Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens
- [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems
- [NASA-TP-3029] p 29 N90-25198
- An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods
- [NASA-TP-2820] p 30 N89-19406
- Rotordynamic Instability Problems in High-Performance Turbornachinery, 1988 (NASA-CP-3026) p 41 N89-22891
- [NASA-CP-3026] p 41 N89-2289 IN-FLIGHT MONITORING
- In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data [NASA-TP-2395] p 4 N87-20966
- INDEXES (DOCUMENTATION) Technology for large space systems: A bibliography with
- indexes (supplement 17) [NASA-SP-7046(17)] p 22 N87-29576 NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers,
- 1977-1986 [NASA-SP-7063(01)] p 70 N87-30218 A performance index approach to aerodynamic design
- with the use of analysis codes only [NASA-TP-2805] p 7 N88-18552

- NASA scientific and technical publications: A catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1987 [NASA-SP-7063(02)] p 70 N88-22830
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement
- [NASA-RP-1190-VOL-1] p 76 N89-14194 Space station systems: A bibliography with indexes (supplement 7)
- [NASA-SP-7056(07)] p 25 N89-18522 Aeronautical engineering: A continuing bibliography with indexes (supplement 242)
- [NASA-SP-7037(242)] p 2 N89-29304 Earth resources: A continuing bibliography with indexes (issue 62)
- [NSSA-SP-7041(62)] p 50 N89-29825 Aerospace medicine and biology: A continuing
- bibliography with indexes (supplement 327) [NASA-SP-7011(327)] p 60 N89-29951 NASA scientific and technical publications: A catalog
- of special publications, reference publications, conference publications, and technical papers, 1988 [NASA-SP-7063(03)] p 71 N90-10782
- Earth resources: A continuing bibliography with indexes (issue 63)
- [NASA-SP-7041(63)] p 50 N90-12091 NASA Thesaurus supplement: A four part cumulative supplement to the 1988 edition of the NASA Thesaurus (supplement 3)
- [NASA-SP-7064-SUPPL-3] p 71 N90-22438 Space station systems: A bibliography with indexes (supplement 10)
- [NASA-SP-7056(10)] p 26 N90-25171 Aeronautical engineering: A continuing bibliography with
- (NASA-SP-7037(255)) p 2 N90-27648
- Aerospace medicine and biology: A continuing bibliography with indexes (supplement 340)
- [NASA-SP-7011(340)] p 60 N90-28963 INDUSTRIES
- Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] p. 81 N89-26805
- [NASA-SP-4406] p 81 N89-26805 INELASTIC SCATTERING
- Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402
- [NASA-1P-2830] p 66 N66-3040. INERT ATMOSPHERE Spacecraft Fire Safety
- [NASA-CP-2476] p 24 N88-12520 INERTIA
- Effect of control surface mass unbalance on the stability of a closed-loop active control system
- [NASA-TP-2952] p 47 N90-12042 INERTIAL NAVIGATION

[NASA-TP-2648]

Research, 1985

NASA-CP-24531

NASA-CP-10016]

[NASA-SP-7079]

[NASA-SP-7079]

(supplement 3)

[NASA-SP-7079]

[NASA-CP-2463]

[NASA-SP-7065]

[NASA-CP-3019]

INFLATABLE STRUCTURES

bibliography with indexes

bibliography with indexes

INFORMATION RETRIEVAL

[NASA-SP-7064-VOL-3]

[NASA-SP-7064-SUPPL-3]

bibliography with indexes

Applications Executive (TAE)

Automation and Robotics (SOAR 1988)

INFORMATION SYSTEMS

Its scope and coverage

bibliography with indexes [NASA-SP-7079]

INFORMATION MANAGEMENT

INFORMATION DISSEMINATION

Free-Space Power Transmission

NASA thesaurus. Volume 3: Definitions

Development and evaluation of an airplane electronic

Joint University Program for Air Transportation

Information resources management, 1984-1989: A

Information resources management, 1984-1989: A

NASA Thesaurus supplement: A four part cumulative

Information resources management, 1984-1989: A

Sixth Annual Users' Conference --- Transportable

The NASA scientific and technical information system:

Second Annual Workshop on Space Operations

Information resources management, 1984-1989: A

supplement to the 1988 edition of the NASA Thesaurus

p 16 N87-13438

p 1 N87-27596

p 27 N90-21795

p 71 N90-27548

p 71 N90-27548

p 70 N89-13301

p 71 N90-22438

p 71 N90-27548

p 62 N87-23156

p 71 N89-15779

p 61 N89-19817

p 71 N90-27548

display format aligned with the inertial velocity vector

INFORMATION TRANSFER Airborne Wind Shear Detection and Warning Systems:

First Combined Manufacturers' and Technologists' Conference [NASA-CP-10006] p 12 N88-17616

- INFRARED ASTRONOMY Infrared source cross-index, first edition [NASA-RP-1182] p 73 N87-22573 Essays in Space Science
- [NASA-CP-2464] p 72 N87-24247 Star Formation in Galaxies [NASA-CP-2466] p 73 N87-24266
- Workshop on Technology Development Issues for the Large Deployable Reflector (LDR)
- [NASA-CP-2407] p 75 N88-20235 Far infrared supplement: Catalog of infrared observations, second edition
- [NASA-RP-1205] D 74 N88-30545 Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS)
- [NASA-RP-1217] p 75 N90-10807 INFRARED ASTRONOMY SATELLITE
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement
- [NASA-RP-1190-VOL-1] p 76 N89-14194 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 5: The point source catalog declination range -30 deg greater than delta greater than -50 deg [NASA-RP-1190-VOL-5] p 76 N89-14195 Infrared astronomical satellite (IRAS) catalogs and
- atlases. Volume 4: The point source catalog declination range 0 deg greater than delta greater than -30 deg [NASA-RP-1190-VOL-4] p 76 N89-14 p 76 N89-14196
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 2: The point source catalog declination range 90 deg greater than delta greater than 30 deg [NASA-RP-1190-VOL-2] p 76 N89-14197
- Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 6: The point source catalog declination range -50 deg greater than delta greater than -90 deg p 76 N89-14198 [NASA-RP-1190-VOL-6] Infrared astronomical satellite (IRAS) catalogs and
- atlases. Volume 7: The small scale structure catalog [NASA-RP-1190-VOL-7] p 76 N89-14199 Infrared astronomical satellite (IRAS) catalogs and
- atlases. Volume 3: The point source catalog declination range 30 deg greater than delta greater than 0 deg [NASA-RP-1190-VOL-3] p 77 N89-1 p 77 N89-14201 INFRARED DETECTORS
- Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid
- [NASA-TP-2625] p 51 N87-13022 Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide
- [NASA-TP-2761] p 56 N88-14572 INFRARED RADIATION
- Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 Catalog of infrared observations. Part 2: Appendixes
- p 74 N88-16615 [NASA-RP-1196-PT-2-ED-2] p 74 The Cassini mission: Infrared and microwave spectroscopic measurements p 78 N89-16709
- [NASA-RP-1213] Nimbus-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide NASA-RP-12211 p 53 N89-26304
- INFRARED RADIOMETERS

### Noncontact Temperature Measurement

p 32 N88-23895 [NASA-CP-2503] Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flames p 38 N89-25409 [NASA-TP-2900]

# INFRARED SOURCES (ASTRONOMY)

- Infrared source cross-index, first edition [NASA-RP-1182] p 73 N87-22573
- Catalog of infrared observations. Part 1: Data [NASA-RP-1196-PT-1-ED-2] p 73 Net p 73 N88-15738 Catalog of infrared observations. Part 2: Appendixes [NASA-RP-1196-PT-2-ED-2] p 74 N88-16615 Far infrared supplement: Catalog of infrared
- observations, second edition [NASA-RP-1205] p 74 N88-30545 INFRARED SPECTRA
- Infrared Observations of Comets Halley and Wilson and Properties of the Grains
- [NASA-CP-3004] p 74 N89-13330 A high-resolution atlas of the infrared spectrum of the sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1
- p 53 N89-28969 [NASA-RP-1224-VOL-2] Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS)
- [NASA-RP-1217] p 75 N90-10807

A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun

[NASA-RP-1224-VOL-1] p 53 N90-13893 Spatial interferometry in optical astronomy INASA-RP-1245] p 75 N90-28470

INFRARED SPECTROSCOPY A high-resolution atlas of the infrared spectrum of the

- sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1
- p 53 N89-28969 [NASA-RP-1224-VOL-2] INFRARED TELESCOPES
- Workshop on Technology Development Issues for the Large Deployable Reflector (LDR) (NASA-CP-2407) p 75 N88-20235
- INGESTION (ENGINES) Proceedings of the 1985 NASA Ames Research Center's
- Ground-Effects Workshop p 5 N87-24410 [NASA-CP-2462]
- Measurements of flow rate and trajectory of aircraft tire-generated water spray [NASA-TP-2718] p 14 N87-24458 INGOTS
- Oxidation characteristics of Ti-14AI-21Nb ingot alloy (NASA-TP-3012) p 31 N90-25206 INHOMOGENEITY
- A procedure for computing surface wave trajectories on an inhomogeneous surface [NASA-TP-2929] n 10 N89-26811
- INLET FLOW Aeropropulsion '87. Session 3: Internal Fluid Mechanics
- Research [NASA-CP-10003-SESS-3] p 18 N88-15790
- Numerical simulation of scramjet inlet flow fields p 8 N88-23735 [NASA-TP-2517] Rotor induced-inflow-ratio measurements and CAMRAD alculations
- [NASA-TP-2946] p 11 N90-15882 INSPECTION
- Electronics reliability and measurement technology [NASA-CP-2472] p 42 N87-27204 INSTALLING
- installed performance Evaluation of of wing-tip-mounted pusher turboprop on a semispan wing [NASA-TP-2739] p 14 N87-26041 Integration effects of pylon geometry on a high-wing
- transport airplane [NASA-TP-2877]
- p 9 N89-15888 INSTRUMENT APPROACH
- Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation
- [NASA-TP-2567] p 12 N87-29469 INTEGRATED CIRCUITS
- Pulse Code Modulation (PCM) encoder handbook for ydin Vector MMP-600 series system [NASA-RP-1171] p 33 N87-11916
- A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits
- p 42 N87-28025 [NASA-TP-27381 Universal test fixture for monolithic mm-wave integrated circuits calibrated with an augmented TRD algorithm
- p 34 N89-17767 [NASA-TP-2875] INTEGRATORS
- Rotorcraft flight-propulsion control integration: An eclectic design concept [NASA-TP-2815] p 19 N88-19475
- INTERACTIONAL AERODYNAMICS
- Supercomputing in Aerospace [NASA-CP-2454]
- p 5 N87-25998 Transonic Symposium: Theory, Application, and Experiment, volume 1, part 2
- [NASA-CP-3020-VOL-1-PT-2] p 9 N89-20942 INTERACTIVE CONTROL
- NASA/DOD Control/Structures Interaction Technology, 1986
- p 25 N87-24495 [NASA-CP-2447-PT-2] User's manual for interactive LINEAR: A FORTRAN program to derive linear aircraft models
- [NASA-TP-2835] p 65 N89-16437 INTERFACES
- Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials
- [NASA-TP-2677] p 30 N87-18644 INTERNATIONAL COOPERATION
- Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] p 81 N89-26805
- INTERPLANETARY DUST
- Carbon in the Galaxy: Studies from Earth and Space p 73 N90-27562 (NASA-CP-30611

#### JET AIRCRAFT

INTERPLANETARY NAVIGATION The effect of interplanetary trajectory options on a manned Mars aerobrake configuration INASA-TP-3019] p 24 N90-26036 INTERPLANETARY TRAJECTORIES The effect of interplanetary trajectory options on a manned Mars aerobrake configuration INASA-TP-30191 p 24 N90-26036 INTERPOLATION Quantitative analysis of the reconstruction performance of interpolants (NASA-TP-2688) p 65 N87-22441 INTERSTELLAR CHEMISTRY Experiments in Planetary and Related Sciences and the Space Station [NASA-CP-2494] p 72 N89-14998 Carbon in the Galaxy: Studies from Earth and Space p 73 N90-27562 [NASA-CP-3061] INTERSTELLAR MATTER Catalog of open clusters and associated interstellar natter p 76 N88-29652 [NASA-RP-1202] Commentary on interstellar matter associated with 18 open clusters [NASA-RP-1229] p 77 N89-27612 INVENTIONS Significant NASA inventions. Available for licensing in foreign countries [NASA-SP-7038(04)] p 72 N87-70425 INVERSIONS Lewis inverse design code (LINDES): Users manual [NASA-TP-2676] p 4 N87-20238 p 4 N87-20238 INVESTIGATION Investigation of the effects of cobalt ions on epoxy properties p 31 N87-12680 [NASA-TP-2639] Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane INASA-TP-26911 p 14 N87-23614 INVISCID FLOW Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] p 6 N87-27622 Supersonic aerodynamics of delta wings p 7 N88-17615 [NASA-TP-2771] calculating An approximate method for three-dimensional inviscid hypersonic flow fields [NASA-TP-3018] p 39 N90-27066 ION BEAMS Benchmark solutions for the galactic ion transport equations: Energy and spatially dependent problems [NASA-TP-2878] p 79 N89-16714 ION PLATING Secondary electron emission characteristics of untreated and ion-textured titanium [NASA-TP-2902] p 30 N89-17650 IONIC COLLISIONS Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 IONIC MOBILITY Benchmark solutions for the galactic ion transport equations: Energy and spatially dependent problems [NASA-TP-2878] p 79 N89-16714 IONS Investigation of the effects of cobalt ions on epoxy properties [NASA-TP-2639] p 31 N87-12680 Cosmic ray heavy ion LET mapping for aluminum, silicon, and tissue targets p 79 N87-25984 [NASA-RP-1180] WE International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203] p 76 N88-28 p 76 N88-28843 J

# JET AIRCRAFT

Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation {NASA-TP-2567} p 12 N87-29469

Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds [NASA-TP-2753] p 6 N88-10771

Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks [NASA-TP-2962] p 20 N90-11757

# JET AIRCRAFT NOISE

JET AIRCRAFT NOISE

- Shock structure and noise of supersonic jets in simulated flight to Mach 0.4
- [NASA-TP-2785] p 67 N88-16510 Annoyance caused by advanced turboprop aircraft flyover noise: Single-rotating propeller configuration [NASA-TP-2782] p 67 N88-17441
- JET ENGINES Jet model for slot film cooling with effect of free-stream
- and coolant turbulence [NASA-TP-2655] p 36 N87-18034 Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds [NASA-TP-2753] p.6 N88-10771
- JET EXHAUST Multiscale turbulence effects in supersonic jets
- exhausting into still air [NASA-TP-2707] p 36 N87-24672 Influence of base modifications on in-flight base drag
- in the presence of jet exhaust for Mach numbers from 0.7 to 1.5
- p 37 N88-18881 [NASA-TP-2802] JET FLOW
- Hot-jet simulation in cryogenic wind tunnels [NASA-RP-1220] p 15 N89-23448
- JET VANES Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional
- characteristics of the F-14 airplane [NASA-TP-2769] p 6 N88-12455 JOINTS (JUNCTIONS)
- The 20th Aerospace Mechanics Symposium
- p 43 N87-16321 (NASA-CP-2423-REV) Modeling of joints for the dynamic analysis of truss structures
- [NASA-TP-2661] p 43 N87-20567 Structural Dynamics and Control Interaction of Flexible Structures
- [NASA-CP-2467-PT-2] p 23 N87-22729 Effects of variables upon pyrotechnically induced shock response spectra, part 2
- [NASA-TP-2872] p 45 N89-13814 JUPITER ATMOSPHERE The Jovian Atmospheres
- [NASA-CP-2441] p 77 N87-17598 Time-Variable Phenomena in the Jovian System
- INASA-SP-494] p 78 N89-28474 JUPITER RINGS
- Time-Variable Phenomena in the Jovian System [NASA.SP.494] p 78 N89-28474
- JUPITER SATELLITES Time-Variable Phenomena in the Jovian System [NASA-SP-494] p 78 N89-28474
  - Κ
- K STARS

A-28

- FGK stars and T Tauri stars: Monograph series on nonthermal phenomena in stellar atmospheres p 77 N90-18344 [NASA-SP-502] KALMAN FILTERS Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid [NASA-TP-2625] p 51 N87-13022 KAONS Kaon-nucleus scattering (NASA-TP-2920) p 80 N89-25103 KAPTON (TRADEMARK) Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimides [NASA-TP-2663] p 27 N87-18611 KEPLER LAWS Forbidden tangential orbit transfers between intersecting Kepterian orbits [NASA-TP-3031] p 23 N90-26028 KEROSENE High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N85 o 27 N89-15979 KINEMATICS Theory of gearing [NASA-RP-1212] p 42 N90-19593 KINETIC THEORY A second-order accurate kinetic-theory-based method for inviscid compressible flows [NASA-TP-2613] p 36 N87-18783 KNOWLEDGE Third Conference on Artificial Intelligence for Space Applications, part 1 INASA-CP-2492-Pt-11 p 62 N88-16360 KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE) Second Annual Workshop on Space Operations
- Automation and Robotics (SOAR 1988) p 61 N89-19817 [NASA-CP-3019]

- A knowledge-based tool for multilevel decomposition of a complex design problem p 63 N89-23181 [NASA-TP-2903]
- Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) [NASA-CP-3059] p 62 N90-25503
- Fifth Conference on Artificial Intelligence for Space Applications
- [NASA-CP-3073] p 63 N90-27275

- LABORATORY EQUIPMENT Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module [NASA-CP-2479] p 60 N88-13852 LABYRINTH SEALS Three-step labyrinth seal for high-performance
- turbomachines p 36 N87-23921 [NASA-TP-1848] LAMINAR BOUNDARY LAYER Aerothermal tests of spherical dome protuberances on
- a flat plate at a Mach number of 6.5 p 35 N87-13664 [NASA-TP-2631]
- The NASA Langley Laminar-Flow-Control (LFC) experiment on a swept, supercritical airfoil: Design [NASA-TP-2809] D8 N88-21117
- Aerothermal tests of guilted dome models on a flat plate at a Mach number of 6.5 p 37 N88-22325 [NASA-TP-2804]
- A review of high-speed, convective, heat-transfer computation methods
- p 38 N89-27116 [NASA-TP-2914] Research in Natural Laminar Flow and Laminar-Flow Control, part 1
- [NASA-CP-2487-PT-1] p 10 N90-12503 Research in Natural Laminar Flow and Laminar-Flow Control, part 2
- [NASA-CP-2487-PT-2] p 10 N90-12519 Experimental and theoretical aerodynamic characteristics of a high-lift semispan wing model
- [NASA-TP-2990] p 11 N90-20046 LAMINAR FLOW
- Velocity profiles in laminar diffusion flames [NASA-TP-2596] p 36 N87-18035 The NASA Langley Laminar-Flow-Control (LFC)
- experiment on a swept, supercritical airfoil: Design overview
- p 8 N88-21117 [NASA-TP-2809] Laminar Flow Aircraft Certification
- [NASA-CP-2413] p 8 N88-23737 Mixing and Demixing Processes in Multiphase Flows With Application to Propulsion Systems
- [NASA-CP-3006] p 37 N89-11153 Drag measurements on a laminar-flow body of revolution
- in the 13-inch magnetic suspension and balance system [NASA-TP-2895] p 9 N89-19232 Research in Natural Laminar Flow and Laminar-Flow Control, part 1
- p 10 N90-12503 [NASA-CP-2487-PT-1] Research in Natural Laminar Flow and Laminar-Flow Control, part 2
- [NASA-CP-2487-PT-2] p 10 N90-12519 Research in Natural Laminar Flow and Laminar-Flow Control, part 3
- p 10 N90-12539 [NASA-CP-2487-PT-3] Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system
- p 16 N90-17627 NASA-TP-29661 LAMINAR FLOW AIRFOILS
- Wind-tunnel investigation of a full-scale general aviation airplane equipped with an advanced natural laminar flow wina p 6 N88-10009
- [NASA-TP-2772] Laminar Flow Aircraft Certification p 8 N88-23737 [NASA-CP-2413]
- Research in Natural Laminar Flow and Laminar-Flow Control, part 1 [NASA-CP-2487-PT-1] p 10 N90-12503
- Research in Natural Laminar Flow and Laminar-Flow Control, part 2 [NASA-CP-2487-PT-2] p 10 N90-12519 Research in Natural Laminar Flow and Laminar-Flow
- Control, part 3 [NASA-CP-2487-PT-3] p 10 N90-12539 LAMINATES
- Three-dimensional analysis of a postbuckled embedded delamination
- p 44 N88-26684 [NASA-TP-2823] Evaluation of energy absorption of new concepts of
- aircraft composite subfloor intersections p 16 N90-26823 [NASA-TP-2951]

SUBJECT INDEX

- LANDFORMS
- Geomorphology from space: A global overview of regional landforms (NASA-SP-486) p 47 N87-18139
- LANDING
- Effect of motion cues during complex curved approach and landing tasks: A piloted simulation study
- [NASA-TP-2773] p 14 N88-12480 LANDING GEAR

  - Langley Aircraft Landing Dynamics Facility NASA-RP-1189] p 21` N87-29544 [NASA-RP-1189] Cornering characteristics of the main-gear tire of the space shuttle orbiter
- [NASA-TP-2790] p 14 N88-18583 Modeling and analysis of the space shuttle nose-gear
- tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595 LANDING SITES
- Mars landing site catalog
- [NASA-RP-1238] p 78 N90-27607 LANDSAT 4
- LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal
- (NASA-TP-2595-REV) p 49 N89-12114 LANDSAT 5
- LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal [NASA-TP-2595-REV] p 49 N89-12114
- LARGE DEPLOYABLE REFLECTOR
- Workshop on Technology Development Issues for the Large Deployable Reflector (LDR) [NASA-CP-2407]
- p 75 N88-20235 LARGE SPACE STRUCTURES
- Solar array flight dynamic experiment
- [NASA TP 2598] p 23 N87-12581 NASA/DOD Control/Structures Interaction Technology,
- p 24 N87-16014 [NASA-CP-2447-PT-1] Solar array flight experiment/dynamic augmentation experiment
- p 26 N87-20380 [NASA-TP-2690] Modeling of joints for the dynamic analysis of truss structures
- p 43 N87-20567 [NASA-TP-26611 Space station structures and dynamics test program
- [NASA-TP-2710] p 43 N87-20568 Structural Dynamics and Control Interaction of Flexible

Structures [NASA-CP-2467-PT-1] p 23 N87-22702

- Structural Dynamics and Control Interaction of Flexible Structures
- [NASA-CP-2467-PT-2] p 23 N87-22729 Technology for large space systems: A bibliography with indexes (supplement 17) [NASA-SP-7046(17)] p 22 N87-29576
- The 21st Aerospace Mechanisms Symposium
- (NASA-CP-2470) n 43 N87-29858 Workshop on Technology Development Issues for the
- Large Deployable Reflector (LDR) [NASA-CP-2407] p 75 N88-20235 Technology for large space systems: A bibliography with
- indexes (supplement 18) [NASA-SP-7046(18)] p 22 N88-27214
- Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201
- Technology for large space systems: A bibliography with indexes (supplement 20)
- [NASA-SP-7046(20)] p 26 N89-26037 NASA Workshop on Computational Structural Mechanics 1987, part 3
- [NASA-CP-10012-PT-3] p 46 N89-29799
- Earth Science Geostationary Platform Technology INASA-CP-30401 p 24 N90-19249
- NASA/DOD Controls-Structures Interaction Technology [NASA-CP-3041] p 26 N90-21062
- The 24th Aerospace Mechanisms Symposium [NASA-CP-3062] p 47 N90-22079
- Technology for large space systems: A bibliography with indexes (supplement 22)
- [NASA-SP-7046(22)] p 26 N90-26056 LASER ANEMOMETERS

(NASA-TP-2846)

axial-flow fan rotor

LASER APPLICATIONS

[NASA-TP-2879]

[NASA-CP-2431]

[NASA-TP-2598]

Three component laser anemometer measurements in an annular cascade of core turbine vanes with contoured end wall

Thirteenth International Laser Radar Conference

Solar array flight dynamic experiment

Laser anemometer measurements in a transonic

p 8 N89-10844

p 38 N90-11245

p 39 N87-10263

p 23 N87-12581

LASER BEAMS	LIFE (DURABILITY)
NASA Laser Light Scattering Advanced Technology Development Workshop, 1988	Turbine Engine Hot Section Technology, [NASA-CP-23391 n 43
[NASA-CP-10033] p 40 N90-17085	Predicted effect of dynamic load on pitti
Mode-medium instability and its correction with a	for low-contact-ratio spur gears
Gaussian reflectivity mirror (NASA-TP-3023) D 68 NO0.25672	[NASA-TP-2610] • p 41
LASER DOPPLER VELOCIMETERS	strain version of strainrange partitionin
Frequency domain laser velocimeter signal processor:	proposal
A new signal processing scheme	[NASA-TP-2779] p 44 Thermal Barrier Coatinos Abstracts and t
[NASA-1F-2735] p 40 N87-27994 Laser-velocimeter-measured flow field around an	[NASA-CP-10019] p 31
advanced, swept, eight-blade propeller at Mach 0.8	Proceedings of the LDEF Materials (
[NASA-TP-2462] p 2 N90-20942	(NASA-CP-10046) 0.28
LASER OUTPUTS	LIFT
cinematography in a flutter cascade	Low-speed, high-lift aerodynamic chara
[NASA-TP-2593] p 39 N87-13731	INASA-TP-29451 n 10
LASER PLASMA INTERACTIONS	Powered-lift aircraft technology
Laser-powered MHU generators for space application	[NASA-SP-501] p 15
LASER POWER BEAMING	LIFT AUGMENTATION
Second Beamed Space-Power Workshop	circulation-control-wing concepts applied
[NASA-CP-3037] p 27 N90-10140	surface-blowing aircraft
Diode laser satellite systems for bearned power transmission	[NASA-TP-2684] p 13
[NASA-TP-2992] p 40 N90-24585	A closed-form trim solution yielding minin
LASER PROPULSION	for airplanes with multiple longitudinal-con
Second Beamed Space-Power Workshop	[NASA-TP-2907] p 20
(NASA-CP-3037) p 27 N90-10140	Effect of milling machine roughness and
Mode-medium instability and its correction with a	on the supersonic aerodynamic characterist
Gaussian reflectivity mirror	swept wing
[NASA-TP-3023] p 68 N90-25673 LASERS	LIGHT AIRCRAFT
Thirteenth International Laser Radar Conference	Piloted simulation study of the effects of
[NASA-CP-2431] p 39 N87-10263	trim system on flight characteristics of a ligh
LASING Mode-medium instability and its correction with a	(NASA-TP-2633)
Gaussian reflectivity mirror	LIGHT SCATTERING
[NASA-TP-3023] p 68 N90-25673	NASA Laser Light Scattering Advance
LATERAL CONTROL	INASA-CP-100331 p.40
characteristics of a forward-swept-wing fighter	LIGHTNING
configuration at angles of attack up to 47 deg	New methods and results for qua
[NASA-TP-2727] p 6 N87-26874	lightning-aircraft electrodynamics
Subsonic longitudinal and lateral-directional	LINB DARKENING
characteristics of a forward-swept-wing fighter	Summary of along-track data from the e
configuration at angles of attack up to 47 deg	budget satellite for several representative of
Effects of the installation and operation of iet-exhaust	[NASA-HP-1206] p 56
yaw vanes on the longitudinal and lateral-directional	operation of the ERBE scanning radiometer
characteristics of the F-14 airplane	1985
[NASA-1P-2709] p 6 N88-12455	[NASA-RP-1214] p 56
Continuum modeling of large lattice structures: Status	Angular radiation models for earth-atmos
and projections	[NASA-RP-1184-VOL-2] p 57
[NASA-1P-2767] p 25 N88-14115 LAUNCHING	LINE SPECTRA
A synchronous data analyzer for the Minimum Delay	Atlas of absorption lines from 0 to 1790
Data Format (MDDF) and Launch Trajectory Acquisition	INFAR ENERGY TRANSFER (I ET)
System (LTAS) (NASA-TP-2743) D 34 N87-24590	Cosmic ray heavy ion LET mapping for alun
LEADING EDGE ELAPS	
	and tissue targets
Investigation of leading-edge flap performance on delta	and tissue targets [NASA-RP-1180] p 79
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA_TP_2656] p.4 N87-20233	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 LEADING EDGES	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 LEADING EDGES Flight investigation of the effects of an outboard	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: /
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 LEADING EDGES Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP 9295]
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Interrated tools for control-evetem analysis
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 LEADING EDGES Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 LEADING EDGES Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra {NASA-RP-1207] p 19 User's manual for interactive LINEAR: <i>A</i> program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys {NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2826] p 23 UNEAETTY P 20
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra {NASA-RP-1207] p 19 User's manual for interactive LINEAR: <i>A</i> program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys {NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached-
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: <i>A</i> program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at loc
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-226] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lot thin swept wings with sharp leading edges
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines	and tissue targets       p 79         [NASA-RP-1180]       p 79         LINEAR SYSTEMS       Derivation and definition of a linear aircra         [NASA-RP-1207]       p 19         User's manual for interactive LINEAR: / program to derive linear aircraft models       [NASA-TP-2835]         [NASA-TP-2835]       p 65         Integrated tools for control-system analyse       [NASA-TP-2865]         [NASA-TP-2865]       p 20         A transient response method for lin substructures       [NASA-TP-2826]         [NASA-TP-2826]       p 23         LINEARITY       Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges         [NASA-TP-2853]       p 3
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639	and tissue targets         [NASA-RP-1180]       p 79         LINEAR SYSTEMS         Derivation and definition of a linear aircra         [NASA-RP-1207]       p 19         User's manual for interactive LINEAR: /         program to derive linear aircraft models         [NASA-TP-2835]       p 65         Integrated tools for control-system analyse         [NASA-TP-2835]       p 20         A transient response method for lin         substructures       [NASA-TP-2926]         [NASA-TP-2926]       p 23         LINEARITY       Applicability of linearized-theory attached-         to design and analysis of flap systems at lo       thin swept wings with sharp leading edges         [NASA-TP-2653]       p 3         LINEARIZATION       User's manual for LINEAR. a FORTRAM
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 <b>LEE WAVES</b>	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2865] p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 [EADING EDGES Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 [EAKAGE Three-step cylindrical seat for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 [EE WAVES Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2768] p 65
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2866] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 <b>LEE WAVES</b> Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2768] p 65 LININGS Turbing Engine Hot Section Tachneters
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 <b>LEE WAVES</b> Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597 <b>LIBRATION</b>	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys (NASA-TP-2885) p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2768] p 65 LININGS Turbine Engine Hot Section Technology, [NASA-CP-2339] p 43
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-2660-PT-1] p 5 N87-23597 <b>LIERATION</b> A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys (NASA-TP-2885) p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2768] p 65 LININGS Turbine Engine Hot Section Technology, [NASA-CP-2339] p 43 Conventionally cast and forged copp
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-2660-PT-1] p 5 N87-23597 <b>LIBRATION</b> A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805 <b>LICENSING</b>	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: // program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys (NASA-TP-2885) p 20 A transient response method for lin substructures [NASA-TP-2926] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lo thin swept wings with sharp leading edges [NASA-TP-2653] p 3 LINEARIZATION User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2768] p 65 LININGS Turbine Engine Hot Section Technology, [NASA-TP-239] p 43 Conventionally cast and forged copp high-heat-flux thrust chambers [NASA-TP-241]
Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 <b>LEADING EDGES</b> Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760 Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 <b>LEAKAGE</b> Three-step cylindrical seal for high-performance turbomachines [NASA-TP-2869] p 36 N87-24639 <b>LEE WAVES</b> Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597 <b>LIBRATION</b> A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805 <b>LICENSING</b>	and tissue targets [NASA-RP-1180] p 79 LINEAR SYSTEMS Derivation and definition of a linear aircra [NASA-RP-1207] p 19 User's manual for interactive LINEAR: / program to derive linear aircraft models [NASA-TP-2835] p 65 Integrated tools for control-system analys [NASA-TP-2885] p 20 A transient response method for lin substructures [NASA-TP-2865] p 23 LINEARITY Applicability of linearized-theory attached- to design and analysis of flap systems at lot thin swept wings with sharp leading edges [NASA-TP-2853] p 3 LINEARITY User's manual for LINEAR, a FORTRAM derive linear aircraft models [NASA-TP-2653] p 65 LININGS Turbine Engine Hot Section Technology, [NASA-TP-2394] p 30 Conventionally cast and forged copp high-heat-flux thrust chambers [NASA-TP-2894] p 30 Turbine Engine Hot Section Technology, [NASA-TP-2894] p 30

# LONGITUDINAL STABILITY

lot Section Technology, 1984	Contamination of liquid oxygen by pressurized gaseous
p 43 N87-11180	nitrogen
or oynamic load on pitting fatigue life o spur gears	[NASA-1P-2894] p 38 N89-19499 LIQUID OXYGEN
p 41 N87-18095	High-pressure calorimeter chamber tests for liquid
strainrange partitioning (SRP): A	[NASA-TP-2862] p 27 N89-15979
5 44 NRS 15262	Contamination of liquid oxygen by pressurized gaseous
Coatings. Abstracts and figures	nitrogen (NASA_TP_2894) 0.38 N89-19499
p 31 N89-13642	LIQUID PROPELLANT ROCKET ENGINES
The LDEF Materials Data Analysis	Preliminary design of turbopumps and related
p 28 N90-26075	[NASA-RP-1170] p 3 N87-17665
lift aerodynamic characteristics of	Advanced Earth-to-Orbit Propulsion Technology 1988,
accelerator-type configurations	volume 1 [NASA-CP-3012-VOL-1] 0.27 N90-28611
p 10 N90-10830	LIQUID ROCKET PROPELLANTS
p 15 N90-12589	Advanced Earth-to-Orbit Propulsion Technology 1988,
ON static investigation of	[NASA-CP-3012-VOL-1] p 27 N90-28611
wing concepts applied to upper	LIQUID-VAPOR INTERFACES
craft 0.12 N97 15050	Workshop on Two-Phase Fluid Behavior in a Space Environment
P 13 1107-13334	[NASA-CP-3043] p 38 N89-26184
m solution yielding minimum trim drag	LIQUIDS
p 20 N89-23468	microstructure and mechanical processing on the
	Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials
machine roughness and wing dihedral aerodynamic characteristics of a highly	[NASA-1P-2677] p 30 N87-18644
	The 1985 Goddard Space Flight Center Battery
p 10 N89-25117	Workshop
n study of the effects of an automated	The 1986 Goddard Space Flight Center Battery
ht characteristics of a light twin-engine	Workshop
p 3 N87-10843	[NASA-CP-2486] p 35 N88-11021
3	Cyclic loads tests of carbon involute solid rocket motor
shop, 1988	outer boot ring segments
p 40 N90-17085	Evaluation of a strain-gage load calibration on a
and results for quantification of	low-aspect-ratio wing structure at elevated temperature
ectrodynamics	[NASA-TP-2921] p 46 N89-28034
p 4 N87-21871	Application of Newton's method to the postbuckling of
ng-track data from the earth radiation	rings under pressure loadings
several representative ocean regions	A transient response method for linear coupled
p 56 N89-14634 functions as derived from along-track	substructures
RBE scanning radiometer for January	[NASA-TP-2926] p 23 N90-13444
o 56 N89-17374	for finite element analysis
models for earth-atmosphere system.	[NASA-TP-2937] ρ 47 N90-18081
ve radiation	[NASA-RP-1228] p 42 N90-18740
DC-21 p 5/ 105-2056/	LOGISTICS
ion lines from 0 to 17900 cm (sup)-1	First Annual Workshop on Space Operations Automation and Bobotics (SOAB 87)
p 49 N87-28955	[NASA-CP-2491] p 61 N88-17206
ion LET mapping for aluminum, silicon,	LONG DURATION EXPOSURE FACILITY
- 70 NP7 25094	Workshop
p / a 110/-20004	[NASA-CP-10046] p 28 N90-26075
efinition of a linear aircraft model	LONG TERM EFFECTS
	Five year global dataset: NMC operational analyses
p 19 N89-15123 or interactive LINEAR: A EOBTRAN	Five year global dataset: NMC operational analyses (1978 to 1982)
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models	Five year global dataset: NMC operational analyses (1978 to 1982) (NASA-RP-1194) p 55 N87-29996 (LONG WAVE PARIATION
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, lith 1975 to line 1978
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         N87-26489
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Angular radiation models for earth-atmosphere system.
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         NBASA-RP-1185]       p 55         Nagular radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 mearized-theory attached-flow methods visi of flan systems at low spects for	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         NBASA-RP-1185]       p 55         Nagular radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57         N89-20587
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 hearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587 LONGITUDINAL CONTROL Steady and unsteady transonic pressure measurements on a clipped delta wing for bitching and control-surface
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587 LONGITUDINAL CONTROL Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587 LONGITUDINAL CONTROL Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895 Longituding stebility and control characteristics of the
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         INASA-RP-1194]       p 55         NRSA-RP-1194]       p 55         NRSA-RP-1194]       p 55         NRSA-RP-1195]       p 55         NRSA-RP-1185]       p 55         NRSA-RP-1185]       p 55         NRSA-RP-1185]       p 57         NOUME 2: Longwave radiation       p 57         Volume 2: Longwave radiation       p 57         N8A-RP-1184-VOL-2]       p 57         N89-20587       LONGITUDINAL CONTROL         Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations       p 8         NASA-TP-2594]       p 8       N88-28895         Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA)
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740	Five year global dataset: NMC operational analyses (1978 to 1982) [NASA-RP-1194] p 55 N87-29996 LONG WAVE RADIATION Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185] p 55 N87-26489 Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587 LONGITUDINAL CONTROL Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895 Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA) [NASA-TP-265] p 20 N90-17639
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740 Hot Section Technology, 1984	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         IONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         NBSA-RP-1185]       p 55         Nagular radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57         N89-20587         LONGITUDINAL CONTROL         Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations         [NASA-TP-2594]       p 8         Longitudinal stability and control characteristics of the Quait Short-Haul Research Aircraft (QSRA)         [NASA-TP-2655]       p 20         N90-17639         LONGITUDINAL STABILITY
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740 fot Section Technology, 1984 p 43 N87-11180 cest and forced screars cilicar	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         NBSA-RP-1185]       p 55         Naguar radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57         N89-20587         LONGITUDINAL CONTROL         Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations         [NASA-TP-2594]       p 8         Longitudinal stability and control characteristics of the Quait Short-Haul Research Aircraft (QSRA)         [NASA-TP-2655]       p 20         N90-17639         LONGITUDINAL STABILITY         Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740 hot Section Technology, 1984 p 43 N87-11180 cast and forged copper alloy for t chambers	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         INASA-RP-1194]       p 55         NRSA-RP-1194]       p 55         NRSA-RP-1184]       p 55         NRSA-RP-1185]       p 55         NRSA-RP-1185]       p 55         NRSA-RP-1185]       p 57         NBSA-RP-1185]       p 57         NBSA-RP-1184-VOL-2]       p 57         NBSA-RP-1184-VOL-2]       p 57         NASA-RP-1184-VOL-2]       p 57         NASA-RP-26594]       p 8         NASA-RP-26594]       p 8         NASA-RP-2655]       p 20         N90-17639       LONGITUDINAL CONTROL         Stady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations         [NASA-TP-2594]       p 8         N88-28895       Longitudinal stability and control characteristics of the Cuait Short-Haul Research Aircraft (OSRA)         [NASA-TP-2655]       p 20       N90-17639         LONGITUDINAL STAB
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-19309 sponse method for linear coupled p 23 N90-13444 nearized-theory attached-flow methods ysis of flap systems at low speeds for ith sharp leading edges p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740 Not Section Technology, 1984 p 43 N87-11180 cast and forged copper alloy for t chambers p 30 N87-16902	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         N87-26489         Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57         N89-20587         LONGITUDINAL CONTROL         Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations         [NASA-TP-2594]       p 8         N88-28895         Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA)         [NASA-TP-2766]       p 20         N90-17639         LONGITUDINAL STABILITY         Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional characteristics of the F-14 airplane         [NASA-TP-2768]       p 6         N88-12455       Longitudinal stability and control characteristics of the
p 19 N89-15123 or interactive LINEAR: A FORTRAN inear aircraft models p 65 N89-16437 for control-system analysis p 20 N89-16437 for control-system analysis p 20 N89-16437 for control-system analysis p 20 N89-16437 p 23 N90-13444 p 23 N90-13444 p 23 N90-13444 p 23 N90-13444 p 23 N90-13444 p 23 N90-13444 p 3 N87-15174 or LINEAR, a FORTRAN program to t models p 65 N88-21740 hot Section Technology, 1984 p 43 N87-11180 cast and forged copper alloy for t chambers p 30 N87-16902 tot Section Technology, 1985 p 30 N87-16902	Five year global dataset: NMC operational analyses (1978 to 1982)         [NASA-RP-1194]       p 55         LONG WAVE RADIATION         Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978         [NASA-RP-1185]       p 55         NBASA-RP-1185]       p 55         Nagular radiation models for earth-atmosphere system. Volume 2: Longwave radiation         [NASA-RP-1184-VOL-2]       p 57         N89-20587         LONGITUDINAL CONTROL         Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations         [NASA-TP-2594]       p 8         Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA)         [NASA-TP-2768]       p 0         N90-17639       p 6         LONGITUDINAL STABILITY       p 6         Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional characteristics of the Cuiet Short-Haul Research Aircraft (QSRA)         [NASA-TP-2768]       p 6         N86-12455       Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA)

# LOW ASPECT RATIO WINGS

LOW ASPECT RATIO WINGS Evaluation of a strain-gage load calibration on a low-aspect-ratio wing structure at elevated temperature M STARS p 46 N89-28034 [NASA TP 2921] The M-type stars [NASA-SP-492] LOW SPEED Applicability of linearized-theory attached-flow methods to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges рЗ N87-15174 [NASA-TP-2653] Piloted simulator study of allowable time delays in large-airplane response [NASA-TP-2652] p 19 N87-16849 Flight characteristics of the AD-1 oblique-wing research aircraft {NASA-TP-2223} p 19 N87-18570 Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel p 7 N88-20264 [NASA-TP-2796] Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90p 29 N90-25198 LOW SPEED WIND TUNNELS Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed wind tunnel acoustic treatment NASA-TP-29961 p 22 N90-19242 LOW TEMPERATURE Low-Temperature CO-Oxidation Catalysts for Long-Life CO2 Lasers [NASA-CP-3076] p 40 N90-24586 LOWER BODY NEGATIVE PRESSURE Joint US/USSR study: Comparison of effects of horizontal and head-down bed rest [NASA-TP-3037] p 60 N90-28965 LUBRICANTS The 23rd Aerospace Mechanisms Symposium [NASA-CP-3032] p 46 N89-23892 Influence of the deposition conditions on radiofrequency magnetron sputtered MoS2 films [NASA-TP-2994] p 33 N90-21210 LUBRICATING OILS Liquid lubrication in space [NASA-RP-1240] p 42 N90-28063 LUBRICATION Liquid lubrication in space [NASA-RP-1240] p 42 N90-28063 LUBRICATION SYSTEMS Liquid lubrication in space [NASA-RP-1240] p 42 N90-28063 LUNAR BASES Status and future of lunar geoscience [NASA-SP-484] p 77 N87-19322 Solar-flare shielding with Regolith at a lunar-base site [NASA-TP-2869] p 79 N89-14210 Future Astronomical Observatories on the Moon p 74 N89-15810 [NASA-CP-2489] Second Bearned Space-Power Workshop p 27 N90-10140 [NASA-CP-30371 A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805 Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration [NASA-CP-3070] p 78 N90-25030 LUNAR ECLIPSES Fifty year canon of lunar eclipses: 1986-2035 [NASA-RP-1216] p 75 NS p 75 N90-18342 LUNAR EXPLORATION OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 Report of the In Situ Resources Utilization Workshop [NASA-CP-3017] p 72 N89-14188 Where no man has gone before: A history of Apollo lunar exploration missions [NASA-SP-4214] p 81 N89-25946 Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration [NASA-CP-3070] p 78 N90-25030 LUNAR OBSERVATORIES Future Astronomical Observatories on the Moon [NASA-CP-2489] p 74 N89p 74 N89-15810 LUNAR SOIL Lunar Helium-3 and Fusion Power [NASA-CP-10018] p 69 N89-14842 LUNAR SURFACE

Solar-flare shielding with Regolith at a lunar-base site [NASA-TP-2869] p 79 N89-14210

A-30

MACH NUMBER Experimental evaluation of wall Mach NASA Lewis Research Center's altitude wind tunnel [NASA-TP-2666] p 21 N87-17717 Mach 6 experimental and theoretical stability and up to 65 degrees [NASA-TP-2733] p 5 N87-23592 supersonic fighter aircraft model at Mach 0.20 to 2.47 p 5 N87-24433 [NASA-TP-2712] Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 p 5 N87-26031 [NASA-TP-2728] Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as occurs for a real gas p 37 N87-29778 (NASA-TP-23841 Shock structure and noise of supersonic jets in simulated flight to Mach 0.4 [NASA-TP-2785] p 67 N88-16510 Influence of base modifications on in-flight base drag in the presence of jet exhaust for Mach numbers from 0.7 to 15 p 37 N88-18881 [NASA-TP-2802] Galileo probe parachute test program: Wake properties of the Galileo probe at Mach numbers from 0.25 to 0.95 [NASA-RP-1130] p 37 N88-18884 Aeropropulsive characteristics of isolated combined turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p 8 N88-23757 Fluctuating pressures measured beneath high-temperature, turbulent boundary layer on a flat plate at Mach number of 5 p 67 N90-10680 [NASA-TP-2947] Fuselage design for a specified Mach-sliced area distribution [NASA-TP-2975] p 16 N90-18385 MACHINING Performance of a multistage depressed collector with machined titanium electrodes p 35 N89-15337 [NASA-TP-2891] Secondary electron emission characteristics of untreated and ion-textured titanium [NASA-TP-2902] p 30 N89-17650 MAGNETIC FIELD CONFIGURATIONS Coronal and Prominence Plasmas [NASA-CP-2442] p 79 N87-20871 MAGNETIC FLUX Theoretical Problems in High Resolution Solar Physics, [NASA-CP-2483] p 79 N88-11609 MAGNETIC SUSPENSION The 22nd Aerospace Mechanisms Symposium [NASA-CP-2506] p 44 N88-21468 Drag measurements on a laminar-flow body of revolution in the 13-inch magnetic suspension and balance system [NASA-TP-2895] p 9 N89-19232 MAGNETIC TAPES User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape [NASA-RP-1210] p 56 N89-14648 MAGNETOHYDRODYNAMIC GENERATORS Laser-powered MHD generators for space application p 68 N87-10764 [NASA-TP-2621] Laser production and heating of plasma for MHD application MAGNETCHYDRODYNAMIC STABILITY Energatic Diagonau Control Contr Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings [NASA-CP-2439] p 79 N87-19328 Coronal and Prominence Plasmas p 79 N87-20871 [NASA-CP.2442] MAGNETOHYDRODYNAMICS O stars and Wolf-Rayet stars [NASA-SP-497] p 74 N89-11657 MAGNETOSTATICS Coronal and Prominence Plasmas [NASA-CP-2442] p 79 N87-20871 MAGNETRON SPUTTERING Influence of the deposition conditions on radiofrequency

magnetron sputtered MoS2 films [NASA-TP-2994] o 33 N90-21210 MAN MACHINE SYSTEMS A simulation evaluation of a pilot interface with an automatic terminal approach system

[NASA-TP-2669] p 16 N87-19393

SUBJECT INDEX Third Conference on Artificial Intelligence for Space

Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 First Annual Workshop on Space Operations Automation

and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206 Graphics Technology in Space Applications (GTSA 1989)

[NASA-CP-30451 p 62 N90-20651 MAN-COMPUTER INTERFACE

Sixth Annual Users' Conference --- Transportable Applications Executive (TAE)

[NASA-CP-2463] p 62 N87-23156 Flight deck automation: Promises and realities [NASA-CP-10036] p 17 N9 p 17 N90-13384

MANAGEMENT Management: A bibliography for NASA managers

(supplement 21) [NASA-SP-7500(21)] p 69 N87-20833

Management: A bibliography for NASA managers {NASA-SP-7500(22)} p 69 N88-21867

Management: A bibliography for NASA managers [NASA-SP-7500(23)] p 69 N89-2 p 69 N89-26766

Management: A bibliography for NASA managers [NASA-ŠP-7500(24)] p 69 N90-24174 MANAGEMENT METHODS

Management: A bibliography for NASA managers (supplement 21)

[NASA-SP-7500(21)] p 69 N87-20833 Management: A bibliography for NASA managers

[NASA-SP-7500(22)] p 69 N88-21867 Practices in adequate structural design

[NASA-TP-2893] p 24 N89-18504

Management: A bibliography for NASA managers [NASA-SP-7500(23)] p 69 N89-26766 (ssues in NASA program and project management [NASA-SP-6101(02)] p 69 N90-13277

Sensor performance analysis [NASA-RP-1241] p 50 N90-23780

Management: A bibliography for NASA managers [NASA-SP-7500(24)] p 69 N90-2 p 69 N90-24174

MANAGEMENT PLANNING Management: A bibliography for NASA managers

(supplement 21) (NASA-SP-7500(21)) p 69 N87-20833

Space Construction p 25 N88-10870

[NASA-CP-2490] p 25 N88-1 Management: A bibliography for NASA managers [NASA-SP-7500(22)] p 69 N88-21867

Simulation evaluation of TIMER, a time-based, terminal air traffic, flow-management concept

[NASA-TP-2870] p 13 N89-15901 Management: A bibliography for NASA managers [NASA-SP-7500(23)] p 69 N89-26766

Management: A bibliography for NASA managers [NASA-SP-7500(24)] p 69 N90-2 p 69 N90-24174

MANEUVERS Subsonic maneuver capability of a supersonic cruise

fighter wing concept [NASA-TP-2642] p 3 N87-15184 MANIPULATORS

The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REV] p 43 M p 43 N87-16321 The 21st Aerospace Mechanisms Symposium

[NASA-CP-2470] p 43 N87-29858 The 23rd Aerospace Mechanisms Symposium

p 46 N89-23892 [NASA-CP-3032] resolved Optimized rate control seven-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional

graphics simulation NASA-TP-29381 p 64 N90-10618 Third Annual Workshop on Space Operations

Automation and Robotics (SOAR 1989) p 62 N90-25503 [NASA-CP-30591 MANNED MARS MISSIONS

Radiation exposure for manned Mars surface missions [NASA-TP-2979] p 80 N90-18357 The effect of interplanetary trajectory options on a

manned Mars aerobrake configuration p 24 N90-26036 [NASA-TP-3019]

MANNED SPACE FLIGHT Proceedings of a conference on Cardiovascular

Bioinstrumentation [NASA-CP-10022] p 59 N89-17997

Where no man has gone before: A history of Apollo lunar exploration missions [NASA-SP-4214]

p 81 N89-25946 Orders of magnitude: A history of the NACA and NASA,

1915-1990 [NASA-SP-4406] p 81 N89-26805 Cells in Space

[NASA-CP-10034] p 61 N90-13939 MANUALS

Fastener design manual [NASA-RP-1228] p 42 N90-18740

distributions of the octagonal test section proposed for

p 75 N88-11592

М

performance of a cruciform missile at angles of attack

Multiaxis control power from thrust vectoring for a

# SUBJECT INDEX MANUFACTURING

National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology (NASA-CP-3074) p 28 N90-24350 MANY BODY PROBLEM Computational Methods for Structural Mechanics and **Dvnamics** [NASA-CP-3034-PT-2] p 46 N89-24654 MAPPING Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NÁSA-RP-1185] p 55 N87-26489 Scientific and Operational Requirements for TOMS Data [NASA-CP-2497] p 47 N88-13774 Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide [NASA-TP-2761] p 56 N88-14572 The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714 MAPS The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-12271 p 57 N89-27302 Atlas of albedo and absorbed solar radiation derived from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985 [NASA-RP-1231] p 57 N90-17233 MARINE METEOROLOGY FIRE Science Results 1989 [NASA-CP-3079] p 58 N90-28224 MARINE RESOURCES Nimbus-7 data product summary NASA-RP-1215] p 48 N89-22152 MARKOV PROCESSES SURE reliability analysis: Program and mathematics [NASA-TP-2764] p 65 N88-17380 Analysis and testing of the SURE program [NASA-TP-2817] p 65 p 65 N88-22653 MÀRS (PLANET) Proceedings of the Polar Processes on Mars Workshop [NASA-CP-10021] p 78 N89-18373 Mars landing site catalog [NASA-RP-1238] p 78 N90-27607 MARS ATMOSPHERE Proceedings of the Polar Processes on Mars Workshop [NASA-CP-10021] p 78 N89-18373 Radiation exposure for manned Mars surface missions p 80 N90-18357 [NASA-TP-2979] MARS LANDING OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 Mars landing site catalog [NASA-RP-1238] p 78 N90-27607 MARS SAMPLE RETURN MISSIONS Exobiology and Future Mars Missions [NASA-CP-10027] p p 59 N89-26334 MARS SURFACE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 Radiation exposure for manned Mars surface missions [NASA-TP-2979] p 80 N90-18357 MASS DISTRIBUTION Effect of control surface mass unbalance on the stability of a closed-loop active control system [NASA-TP-2952] p 47 N90-12042 [NASA-TP-2952] p 47 Nov-7 MASSIVELY PARALLEL PROCESSORS Computer Sciences and Data Systems, volume 2 Frontiers of Massively Parallel Scientific Computation [NASA-CP-2478] MATERIALS HANDLING Nuclear techniques in studies of condensed matter [NASA-RP-1195] p 68 N88-13015 MATHEMATICAL MODELS Turbine Engine Hot Section Technology, 1984 p 43 N87-11180 [NASA-CP-2339] Exploiting symmetries in the modeling and analysis of [NASA-TP-2649] p 13 N87-17690 **Double Layers in Astrophysics** p 72 N87-23313 [NASA-CP-2469] Probabilistic risk analysis of flying the space shuttle with and without fuel turbine discharge temperature redline protection [NASA-TP-2759] p 65 N87-27474 Space Electrochemical Research and Technology (SERT)

p 50 N87-29914 [NASA-CP-2484]

Turbine Engine Hot Section Technology, 1985 [NASA-CP-2405] p 43 N88-11140 Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 SURE reliability analysis: Program and mathematics NASA-TP-2764] p 65 N88-17380 [NASA-TP-2764] Nonlinear Constitutive Relations for High Temperature Applications, 1986 [NASA-CP-10010] p 44 N88-21498 Analysis and testing of the SURE program p 65 N88-22653 [NASA-TP-2817] Integrated Technology Rotor Methodology Assessment Workshop [NASA-CP-10007] p 2 N88-27148 Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-27677 Thermal Barrier Coatings. Abstracts and figures VASA-CP-10019] p 31 N89-13642 [NASA-CP-10019] Derivation and definition of a linear aircraft model [NASA-RP-1207] p 19 N89-15123 Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium [NASA-TP-2867] p 38 N89-16115 Rotordynamic Instability Problems in High-Performance Turbomachinery, 1988 [NASA-CP-3026] p 41 N89-22891 Research in structures, structural dynamics and materials, 1989 [NASA-CP-10024] p 46 N89-24626 Derivation of a tappered p-version beam finite element [NASA-TP-2931] p 46 N89-26255 A procedure for computing surface wave trajectories on an inhomogeneous surface [NASA-TP-2929] p 10 N89-26811 Constitutive Relationships and Models in Continuum Theories of Multiphase Flows --- conferences [NASA-CP-3047] p 38 N90-10385 A transient response method for linear coupled substructures [NASA-TP-2926] p 23 N90-13444 Rotor induced-inflow-ratio measurements and CAMRAD calculations [NASA-TP-2946] p 11 N90-15882 Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595 Discrete-vortex model for the symmetric-vortex flow on cones [NASA-TP-2989] p 11 N90-20946 NASA/DOD Controls-Structures Interaction Technology 1989 [NASA-CP-3041] p 26 N90-21062 Improved model for solar cosmic ray exposure in manned Earth orbital flights [NASA-TP-2987] p 80 N90-25031 Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments [NASA-TP-3028] p 47 N90-25366 Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model [NASA-TP-3017] p 42 N90-28066 The effects of structural flap-lag and pitch-lag coupling on soft inplane hingeless rotor stability in hover [NASA-TP-3002] p 12 N p 12 N90-28503 Gas-jet and tangent-slot film cooling tests of a 12.5 deg cone at Mach number of 6.7 [NASA-TP-2786] p 39 N90-28806 MATRICES (MATHEMATICS) The estimation error covariance matrix for the ideal state reconstructor with measurement noise [NASA-TP-2881] p 63 N89-13994 Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 MAXWELL-BOLTZMANN DENSITY FUNCTION On the Maxwellian distribution, symmetric form, and entropy conservation for the Euler equations [NASA-TP-2583] p 35 N87-11963

MEASUREMENT Foundations of measurement and instrumentation p 40 N90-21351

[NASA-RP-1222] MEASURING INSTRUMENTS On requirements for a satellite mission to measure

tropical rainfall [NASA-RP-1183] p 55 N87-20701

Earth resources: A continuing bibliography with indexes (issue 54)

[NASA-SP-7041(54)] p 49 N87-27315 Aeropropulsion '87. Session 4: Instrumentation and **Controls Research** 

[NASA-CP-10003-SESS-4] p 18 N88-15794 Into the thermosphere: The atmosphere explorers [NASA-SP-490] p 52 N88 18084

Turbine Engine Hot Section Technology 1986 [NASA-CP-2444] p 45 N89-12876 Foundations of measurement and instrumentation [NASA-RP-1222] p 40 N90-21351 MECHANICAL DRIVES The 22nd Aerospace Mechanisms Symposium NASA-CP-2506] p 44 N88-21468 [NASA-CP-2506] Comparison study of gear dynamic computer programs at NASA Lewis Research Center [NASA-TP-2901] p 41 N89-21243 MECHANICAL PROPERTIES Investigation of the effects of cobalt ions on epoxy [NASA-TP-2639] p 31 N87-12680 Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6Al-2Sn-4Zr-2Mo titanium foil-gauge materials p 30 N87-18644 [NASA-TP-2677] Static mechanical properties of 30 x 11.5 - 14.5, type 8 aircraft tires of bias ply and radial-belted design [NASA-TP-2810] p 15 N88-21157 MECHANICAL SHOCK The 58th Shock and Vibration Symposium, volume 1 [NASA-CP-2488-VOL-1] p 43 N88-13609 MENTAL PERFORMANCE Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370 MERCURY CADMIUM TELLURIDES Growth of solid solution single crystals p 32 N88-14212 [NASA-TP-2787] MESON-NUCLEON INTERACTIONS Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103 MESOSCALE PHENOMENA NASA/MSFC FY-85 Atmospheric Processes Research [NASA-CP-2402] p 55 N87-13043 MESOSPHERE Nimbus-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide [NASA-RP-1221] p 53 N89-26304 A high-resolution atlas of the infrared spectrum of the

sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1 p 53 N89-28969 [NASA-RP-1224-VOL-2]

MESSAGE PROCESSING A piloted simulation study of data link ATC message

exchange [NASA-TP-2859] p 13 N89-15900 METAL FATIGUE

Turbine Engine Hot Section Technology, 1985 [NASA-CP-2405] p 43 N8 p 43 N88-11140

Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-22408

Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626

METAL MATRIX COMPOSITES

Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum [NASA TP-2612] p 28 N87-10184

Aeropropulsion '87. Session 1: Aeropropulsion Materials Research

[NASA-CP-10003-SESS-1] p 18 N88-16697 Tungsten fiber reinforced copper matrix composites: A

review [NASA-TP-2924]

p 29 N89-27796 Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites p 28 N88-70029 [NASA-TP-1063]

METAL PLATES

properties

Review

Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular cutouts

p 29 N90-26077 [NASA-TP-3007] Buckling and postbuckling behavior of compression-loaded isotropic plates with cutouts p 47 N90-28859 (NASA-TP-30241

METAL SURFACES Ester oxidation on an aluminum surface using

chemiluminescence p 31 N87-18666 [NASA-TP-2611]

An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance

and dc methods [NASA-TP-2820] p 30 N89-19406 METALS

Life prediction of thermomechanical fatigue using total strain version of strainrange partitioning (SRP): A proposal [NASA-TP-2779]

p 44 N88-15263

# METEORITES

METEORITES

	MICROWAVE RADIOMETERS	Moda
p 48 N89-26274	User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape INASA-RP-12101 p 56 N89-14648	[NASA- MODELS Power
p 73 N90-27562	Polar microwave brightness temperatures from Nimbus-7 SMMR: Time series of daily and monthly maps	helicopt [NASA-
lequirements for a	from 1978 to 1987 [NASA-RP-1223] D 48 N89-26275	structure
mospheric Research	MICROWAVE SENSORS	(NASA-
p 16 N90-14220	Earth Science Geostationary Platform Technology [NASA-CP-3040] p 24 N90-19249	model fe
ar Conference	MICROWAVE SOUNDING	[NASA-
p 39 N87-10263 e passive-microwave	Thermal-distortion analysis of an antenna strongback for deostationary bigh-frequency microwave applications	coupled
	[NASA-TP-3016] p 26 N90-27738	[NASA-
p 58 N87-24670 operational analyses	MICROWAVE TRANSMISSION Analytical and experimental procedures for determining	heat tra
p 55 N87-29996	propagation characteristics of millimeter-wave gallium arsenide microstrip lines	[NASA- Them
nission to measure	[NASA-TP-2899] p 35 N89-21169 MICROWAVES	MODULA
p 55 N87-20701	Theory for computing the field scattered from a smooth inflected surface	Dynar variatior
arm Technology	[NASA-TP-2632] p 68 N87-13264	[NASA-
p 24 N90-19249	(NASA-CP-2449) p 79 N87-21785	for micro
Chaor	Atlas of absorption lines from 0 to 17900 cm (sup)-1	[NASA-
p 12 N87-10054	[NASA-RP-1188] p 49 N87-28955 Pronagation effects on satellite systems at frequencies	Senso
the aerodynamic	below 10 GHz: A handbook for satellite systems design	[NASA-
0.12 NRR.26344	[NASA-RP-1108/2] p 34 N88-14226	MODULUS
escape guidance for	Thirteenth International Laser Radar Conference	outer bo
	[NASA-CP-2431] p 39 N87-10263	[NASA-
p 17 N89-16820	MILKY WAY GALAXY Carbon in the Galaxy: Studies from Earth and Space	Star F
storage and analysis	[NASA-CP-3061] p 73 N90-27562	[NASA-
p 33 N87-12718	MILLIMETER WAVES Universal test fixture for monolithic mm-wave integrated	MOLECUL A higi
ock tridiagonal matrix	circuits calibrated with an augmented TRD algorithm	Sun and
p 64 N89-17422	[NASA-TP-2875] p 34 N89-17767	of ATM (2.3 to 1
p	Effect of milling machine roughness and wing dihedral	(NASA-
n 42 N87-27204	on the supersonic aerodynamic characteristics of a highly	MOLECUL
p 12 1101 21204	(NASA-TP-2918) p 10 N89-25117	interim r
crystal growth in	MINING	[NASA-]
p 58 N87-20727	[NASA-CP-10018] p 69 N89-14842	Secor
Effects on Materials	Mode-medium instability and its correction with a	[NASA-
p 27 N89-23528	Gaussian reflectivity mirror [NASA-TP-3023] p 68 N90-25673	Simul
Effects on Materials	MISSILE CONFIGURATIONS	Perform
p 28 N89-23547	remote-controlled canard missile with a free-rolling-tail	Nimbi
luras for datermining	brake torque system	products
neter-wave gallium	[NASA-17-2401] p 4 N87-17668 MISSILES	MONTE C
- 26 NO0 21160	Atmospheric Turbulence Relative to Aviation, Missile,	Comp
p 33 1489-21109	and Space Programs [NASA-CP-2468] p 55 N87-22341	Monte C
rocessing on the	Mach 6 experimental and theoretical stability and	[NASA-
rties of Ti-6Al-4V and	performance of a cruciform missile at angles of attack	Status
p 30 N87-18644	[NASA-TP-2733] p 5 N87-23592	[NASA-
	MISSION PLANNING	Fifty y
nicrowave amplifiers	[NASA-SP-484] p 77 N87-19322	A luna
p 34 N87-17991	Space Construction	(NASA-
entenne etrencheele	[NASA-CP-2490] p 25 N88-10870 Space station systems: A bibliography with indexes	Influe
provide applications	[NASA-SP-7056(05)] p 25 N88-13382	magnetr
p 26 N90-27738	The 1987 Get Away Special Experimenter's Symposium	INASA-
mm-wave integrated	[NASA-CP-2500] p 22 N88-17691	Effect
TRD algorithm	The 1988 Goddard Conference on Space Applications of Artificial Intelligence	and land
p 34 N89-17767	[NASA-CP-3009] p 64 N88-30330	MOUNTIN
for satellite systems	OEXP Analysis Tools Workshop	Drag r
npairments on 10 to	The 1989 Goddard Conference on Space Applications	[NASA-
iniques for system	of Artificial Intelligence	MULTIPH
p 34 N89-17060	[NASA-CP-3033] p 64 N89-26578 Solar-Terrestrial Science Strategy Workshop	With Ap
easurement evelow	[NASA-CP-3048] p 73 N90-18329	[NASA-
Susarement system	MIXING Mixing and Demixing Processes in Multiphase Flows	Theories
p 23 N89-28545	With Application to Propulsion Systems	[NASA-
lex curved approach	[NASA-CP-3006] p 37 N89-11153 MODAL RESPONSE	Partiti
on study	Sensitivity Analysis in Engineering	dynamic
p14 N88-12480	[NASA-CP-2457] p 43 N87-18855 Dynamic characteristics of a vibrating beam with periodic	[NASA-` Parall
rkshop	variation in bending stiffness	using m
a 27 NOO 10140	[NASA_TP.2607] D.44 N88-23988	INASA.

control of an oblique wing aircraft TP-28981 p 20 N89-16845

cepstrum technique with application to model er acoustic data

TP-25861 p 66 N87-17479 ling of joints for the dynamic analysis of truss

TP-26611 p 43 N87-20567 imental validation of a two-dimensional shear-flow

or determining acoustic impedance p 66 N87-20798 TP-26791 ed NASA axially symmetric ring model for

cavity traveling-wave tubes TP-26751 p 35 N87-22923

ation of turbulence modeling to predict surface nsfer in stagnation flow region of circular cylinder TP-2758] p 37 N87-27161

noviscoplastic model with application to copper p 45 N89-16183 TP-28451 TION

nic characteristics of a vibrating beam with periodic in bending stiffness

- TP-2697] p 44 N88-23988 lly modulated bit error rate measurement system wave component evaluation
- p 23 N89-28545 P-29121 ION TRANSFER FUNCTION
- r performance analysis RP-1241) p 50 N90-23780

S OF ELASTICITY loads tests of carbon involute solid rocket motor

- ot ring segments
- [P-2884] p 45 N89-16192 AR CLOUDS
- ormation in Galaxies p 73 N87-24266 CP-24661 AR SPECTRA

h-resolution atlas of the infrared spectrum of the the Earth atmosphere from space: A compilation OS spectra of the region from 650 to 4800 cm

6 micron). Volume 1: The Sun RP-1224-VOL-1] p 53 N90-13893

ES gravity crystallization of macromolecules: An

- eport and proposal for continued research TP-2671] p 31 N87-20423
- ENUM
- ndary electron emission characteristics of num-masked, ion-textured OFHC copper
- p 31 N90-15211 TP-29671
- ator evaluation of a display for a Takeoff ance Monitoring System
- TP-2908] p 20 N89-23469 us 7 solar backscatter ultraviolet (SBUV) ozone s user's quide
- P-1234 p 53 N90-17227 ARLO METHOD
- arison of dose estimates using the buildup-factor and a Baryon transport code (BRYNTRN) with
- arlo results TP-30211 p 80 N90-29290
- and future of lunar geoscience SP-4841
- P-1178-REV] p 73 N87-25906
- CP-3039) p 75 N90-10805 LOGY
- nce of the deposition conditions on radiofrequency on sputtered MoS2 films
- of motion cues during complex curved approach ling tasks: A piloted simulation study
- p 14 N88-12480 [P-2773] G
- neasurements of blunt stores tangentially mounted plate at supersonic speeds
- p 6 N87-27626 P-27421 ASE FLÓW
- and Demixing Processes in Multiphase Flows plication to Propulsion Systems p 37 N89-11153 CP-30061
- itutive Relationships and Models in Continuum of Multiphase Flows --- conferences
- p 38 N90-10385 CP-30471 OCESSING (COMPUTERS)
- oning strategy for efficient nonlinear finite element analysis on multiprocessor computers p 45 N89-16170 P-2850)

el Gaussían elimination of a block tridiagonal matrix ltiple microcomputers o 64 N89-17422 [NASA-TP-2892]

Planetary geosciences, 1988 [NASA-SP-498] METEORITIC DIAMONDS Carbon in the Galaxy: Studies fro [NASA-CP-3061] MÉTEOROLOGICAL FLIGHT Global stratospheric change: F

- Very-High-Altitude Aircraft for Atr [NASA-CP-10041] METEOROLOGICAL PARAMETERS
- Thirteenth International Laser Rad [NASA-CP-2431]
- Arctic Sea ice, 1973-1976: Satellite observations [NASA-SP-4891
- Five year global dataset: NMC of (1978 to 1982) [NASA-RP-1194]
- METEOROLOGICAL SATELLITES On requirements for a satellite m
- tropical rainfall [NASA-RP-1183]
- METROLOGY Earth Science Geostationary Platto [NASA-CP-3040]
- MICROBURSTS (METEOROLOGY) Doppler Radar Detection of Wind S
- [NASA-CP-2435] Influence of wind shear on characteristics of airplanes
- [NASA-TP-2827] Piloted-simulation evaluation of e microburst wind shear encounters
- [NASA-TP-2886] MICROCOMPUTERS
- Pulse Code Modulation (PCM) data using a microcomputer [NASA-TP-2629]
- Parallel Gaussian elimination of a blo using multiple microcomputers [NASA-TP-2892]
- MICROELECTRONICS
- Electronics reliability and meas [NASA-CP-2472] MICROGRAVITY APPLICATIONS
- Liquid drop stability for protein microgravity [NASA-TP-2724]
- MICROMETEOROIDS NASA/SDIO Space Environmental
- Workshop, part 1 [NASA-CP-3035-PT-1]
- NASA/SDIO Space Environmental Workshop, part 2 [NASA-CP-3035-PT-2]
- MICROSTRIP TRANSMISSION LINES Analytical and experimental proced
- propagation characteristics of millin arsenide microstrip lines [NASA-TP-2899]
- MICROSTRUCTURE
- Effect of LID (Registered) p microstructure and mechanical proper Ti-6AI-2Sn-4Zr-2Mo titanium foil-gaug [NASA-TP-2677]
- MICROWAVE AMPLIFIERS Calculation of secondary elect

multistage depressed collectors for r [NASA-TP-2664]

MICROWAVE ANTENNAS

Thermal-distortion analysis of an for geostationary high-frequency mic [NASA-TP-3016] MICROWAVE CIRCUITS

- Universal test fixture for monolithic circuits calibrated with an augmented [NASA-TP-2875]
- MICROWAVE EMISSION
- Propagation effects handbook design. A summary of propagation in 100 GHz satellite links with tech design
- [NASA-RP-1082(04)] **MICROWAVE EQUIPMENT**
- Digitally modulated bit error rate m for microwave component evaluation
- [NASA-TP-2912] MICROWAVE LANDING SYSTEMS

Effect of motion cues during comp and landing tasks: A piloted simulation [NASA-TP-2773]

**MICROWAVE POWER BEAMING** 

cond Beamed Space-Po er Wo

[NASA-CP-3037]	p 27	N90-10140

- p 77 N87-19322 ear canon of solar eclipses: 1986 - 2035
- ar far-side very low frequency array
- TP-29941 p 33 N90-21210

NASA Workshop on Computational Structural Mechanics 1987, part 1

[NASA-CP-10012-PT-1] p 46 N89-29773 MULTISPECTRAL BAND SCANNERS

LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal

p 49 N89-12114 (NASA-TP-2595-REV) User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape

[NASA-RP-1210] p 56 N89-14648 Ν

# NACELLES

Integration effects of pylon geometry on a high-wing transport airplane p 9 N89-15888

[NASA-TP-2877] NASA PROGRAMS

Management: A bibliography for NASA managers (supplement 21)

[NASA-SP-7500(21)] p 69 N87-20833 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 31)

p 70 NB7-25023 [NASA-SP-7039(31)-Sect-1] p 70 N87-25023 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 31)

[NASA-SP-7039(31)-SECT-2] p 70 N87-26689 NASA Thesaurus Supplement: A four part cumulative supplement to the 1985 edition of the NASA Thesaurus (supplement 3)

[NASA-SP-7053-SUPPL-3] p 70 N87-27557 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 32)

p 70 N88-15732 [NASA-SP-7039(32)-SECT-1] Into the thermosphere: The atmosphere explorers p 52 N88-18084 [NASA-SP-490]

NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 32)

- [NASA-SP-7039(32)-SECT-2] p 70 N88-18511 NASA historical data book. Volume 1: NASA resources 1958-1968
- [NASA-SP-4012-VOL-1] p 80 N88-25428 NASA historical data book. Volume 2: Programs and projects 1958-1968

p 80 N88-25429 [NASA-SP-4012-VOL-2] NASA historical data book. Volume 3: Programs and projects 1969-1978

[NASA-SP-4012-VOL-3] p 81 N88-25430 Technology for Future NASA Missions: Civil Space

- Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 p 22 N89-11760 Issues in NASA program and project management
- [NASA-SP-6101] p 69 N89-12479 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 35)

NASA-SP-7039(35)-SECT-1 p 71 N89-25775 Orders of magnitude: A history of the NACA and NASA, [NASA-SP-7039(35)-SECT-1] 1915-1990

p 81 N89-26805 [NASA-SP-4406] NASA Patent Abstracts Bibliography: A continuing

bibliography. Section 2: Indexes (supplement 35) [NASA-SP-7039(35)-SECT-2] p 71 N89-29264 Issues in NASA program and project management [NASA-SP-6101(02)] p 69 N90-13 p 69 N90-13277

Solar-Terrestrial Science Strategy Workshop NASA-CP-3048] p 73 N90-18329 National Educators' Workshop: Update 1989 Standard (NASA-CP-3048)

Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350

- FAA/NASA En Route Noise Symposium p 67 N90-24853 [NASA-CP-3067]
- NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 37)

[NASA-SP-7039(37)-SECT-1] p 71 N90-25698 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 37)

p 71 N90-26700 [NASA-SP-7039(37)-SECT-2] The MSFC/UAH Data Management Symposium p 62 N78-74659 [NASA-CP-2040]

NASTRAN

Fifteenth NASTRAN (R) Users' Colloquium p 43 N87-27231 [NASA-CP-2481]

Sixteenth NASTRAN (R) Users' Colloquium [NASA-CP-2505] p 44 N88-20652

Lewis Structures Technology, 1988. Volume 1: Structural Dynamics p 44 N88-23226 [NASA-CP-3003-VOL-1] p 44 NBI Seventeenth NASTRAN (R) Users' Colloquium

[NASA-CP-3029] p 45 N89-22940

Eighteenth NASTRAN (R) Users' Colloquium p 47 N90-24637 [NAŠA-CP-3069] Ceramics Analysis and Reliability Evaluation of

Structures (CARES). Users and programmers manual p 47 N90-28099 [NASA-TP-2916]

The NASTRAN demonstration problem manual, level 17.5

[NASA-SP-224(05)] p 42 N81-71592 The NASTRAN programmers manual, level 17.5

- [NASA-SP-223(05)] p 42 N81-71594 NATURAL GAS
- A simplified method for determining heat of combustion of natural gas (NASA-TP-2682) p 39 N87-20514
- NAVIER-STOKES EQUATION
- Multiscale turbulence effects in supersonic jets exhausting into still air [NASA-TP-2707] p 36 N87-24672
- Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998
- Numerical simulation of scramjet inlet flow fields p 8 N88-23735 [NASA-TP-2517] Surface flow and heating distributions on a cylinder in near wake of Aeroassist Flight Experiment (AFE)
- configuration at incidence in Mach 10 Air p 38 N90-14493 [NASA-TP-2954]
- NEAR WAKES Surface flow and heating distributions on a cylinder in
- near wake of Aeroassist Flight Experiment (AFE) configuration at incidence in Mach 10 Air [NASA-TP-2954] p 38 N90-14493
- NEODYMIUM LASERS Analysis of Nd3+:glass, solar-pumped, high-powr laser
- systems [NASA-TP-2905] p 40 N89-17855
- NEPTUNE ATMOSPHERE
- The Jovian Atmospheres [NASA-CP-2441] p 77 N87-17598
- NEURAL NETS First Annual Workshop on Space Operations Automation
- and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206
- NEWTON METHODS Application of Newton's method to the postbuckling of
- rings under pressure loadings [NASA-TP-2941] p 46 N89-29811
- NICKEL CADMIUM BATTERIES The 1985 Goddard Space Flight Center Battery Workshop
- [NASA-CP-2434] p 34 N87-11072 The 1986 Goddard Space Flight Center Battery Workshop
- [NASA-CP-2486] p 35 N88-11021 NICKEL HYDROGEN BATTERIES
- The 1985 Goddard Space Flight Center Battery Workshop
- [NASA-CP-2434] p 34 N87-11072 The 1986 Goddard Space Flight Center Battery

p 35 N88-11021

- Workshop [NASA-CP-2486]
- Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454
- NIMBUS 6 SATELLITE
- Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978 [NASA-RP-1185]
- p 55 N87-26489 NIMBUS 7 SATELLITE
- Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid p 51 N87-13022
- [NASA-TP-2625]
- Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide
- [NASA-TP-2761] p 56 N88-14572 Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's
- [NASA-RP-1199] p 48 N88-17096
- The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714
- User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape
- p 56 N89-14648 [NASA-RP-1210] Nimbus-7 data product summary
- [NASA-RP-1215] p 48 N89-22152 Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide
- [NASA-RP-1234] p 53 N90-17227 Atlas of albedo and absorbed solar radiation derived from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985
- [NASA-RP-1231] p 57 N90-17233 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237]
- p 58 N90-23837 **NIOBIUM ALLOYS**
- Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb [NASA-TP-2955]
  - p 31 N90-10248

# NONLINEAR SYSTEMS

Oxidation characteristics of Ti-14AI-21Nb ingot alloy [NASA-TP-3012] p 31 N90-25206 NITRIC ACID Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid [NASA-TP-2625] p 51 N87-13022 NOISE INTENSITY Effects of background noise on total noise annoyance p 66 N87-14120 [NASA-TP-2630] Annoyance caused by advanced turboprop aircraft flyover noise: Single-rotating propeller configuration [NASA-TP-2782] p 67 N88-17441 [NASA-TP-2782] Annoyance caused by advanced turboprop aircraft flyover noise: Counter-rotating-propeller configuration [NASA-TP-3027] p 67 N90-29166 p 67 N90-29166 NOISE POLLUTION Effects of background noise on total noise annoyance [NASA-TP-2630] p 66 N87-14120 FAA/NASA En Route Noise Symposium p 67 N90-24853 [NASA-CP-3067] NOISE PREDICTION (AIRCRAFT) Status of sonic boom methodology and understanding [NASA-CP-3027] p 9 N89-23415 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 **NOISE REDUCTION** Measured and calculated acoustic attenuation rates of tuned resonator arrays for two surface impedance distribution models with flow [NASA-TP-2766] p 67 N88-17440 LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal [NASA-TP-2595-REV] p 49 p 49 N89-12114 Fuselage design for a specified Mach-sliced area distribution [NASA-TP-2975] p 16 N90-18385 NOISE TOLERANCE Effects of background noise on total noise annoyance NASA-TP-2630 p 66 N87-14120 [NASA-TP-2630] Annoyance caused by advanced turboprop aircraft flyover noise: Single-rotating propeller configuration [NASA-TP-2782] p 67 N88-17441 Evaluation of the ride quality of a light twin engine airplane using a ride quality meter [NASA-TP-2913] p 2 N89-22568 FAA/NASA En Route Noise Symposium (INDA-UP-3067) p 67 N90-24853 Annoyance caused by advanced turboprop aircraft flyover noise: Counter-rotating-propeller configuration [NASA-TP-3027] p 67 Neo configuration NONDESTRUCTIVE TESTS Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-TP-2746] p 17 N87-24481 Electronics reliability and measurement technology p 42 N87-27204 [NASA-CP-2472] Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-22408 Structural Ceramics [NASA-CP-2427] p 31 N88-23872 Thermal Barrier Coatings. Abstracts and figures IASA-CP-10019] p 31 N89-13642 [NASA-CP-10019] NONEQUILIBRIUM FLOW Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium [NASA-TP-2867] p 38 N89-16115 A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 Conservation constitution Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium [NASA-TP-2867] p 38 N89-16115 A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 [NASA-RP-1232] p 38 N90-27064 NONLINEAR EQUATIONS Some path-following techniques for solution of nonlinear equations and comparison with parametric differentiation [NASA-TP-2654] p 64 N87-14054 NONLINEAR PROGRAMMING Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces [NASA-TP-2776] p 15 N88-24623 NONLINEAR SYSTEMS

Interactions of Tollmien-Schlichting waves and Dean vortices. Comparison of direct numerical simulation and a weakly nonlinear theory [NASA-TP-2919]

p 10 N89-25118

# NORMAL SHOCK WAVES

#### NORMAL SHOCK WAVES Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration

(NASA-TP-2956) p 11 N90-14185 NORMALITY

A general formalism for phase space calculations [NASA-TP-2843] p 66 N89-14053 NOSE WHEELS

Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements

[NASA-TP-2977] p 42 N90-19595 NOZZLE DESIGN

Static investigation of a two-dimensional convergent-divergent exhaust nozzle with multiaxis thrust-vectoring capability

- [NASA-TP-2973] p 11 N90-19193 NOZZLE EFFICIENCY
- Aeropropulsive characteristics of isolated combined turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 (NASA-TP-2814) p8 N88-23757 Static investigation of a two-dimensional convergent-divergent exhaust nozzle with multiaxis
- thrust-vectoring capability [NASA-TP-2973] p 11 N90-19193 Internal performance of two nozzles utilizing gimbal
- concepts for thrust vectoring [NASA-TP-2991] p 11 N90-19200
- NOZZLE FLOW Static internal performance of single-expansion-ramp nozzles with thrust-vectoring capability up to 60 deg [NASA-TP-2364] p.3 N87-10839
- Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle [NASA-TP-2726] p 27 N87-25424
- Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with a secondary-nozzle thrust reverser
- [NASA-TP-2834] p 8 N88-29752 Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles

(NASA-TP-3036) p 11 N90-25938 NOZZLE GEOMETRY

- Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser [NASA-TP-2624] p 3 N87-12541
- Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles [NASA-TP-2392] p 14 N87-17693
- Experimental thrust performance of a high-area-ratio rocket nozzle
- [NASA-TP-2720] p 26 N87-20381 Effect of a trade between boattail angle and wedge size on the performance of a nonaxisymmetric wedge nozzle [NASA-TP-2717] p 5 N87-23593
- Aeropropulsive characteristics of isolated combined turbojet/ramjet nozzles at Mach numbers from 0 to 1.20
- [NASA-TP-2814] p 8 N88-23757 Internal performance of two nozzles utilizing gimbal concepts for thrust vectoring [NASA-TP-2991] p 11 N90-19200
- Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles (NASA-TP-3036) 0 11 N90-25938

NOZZLE THRUST COEFFICIENTS

- Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds [NASA-TP-2588] p 6 N88-10765
- NOZZLES Effects of afterbody boattail design and empendage
- arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds
- [NASA-TP-2704] p 4 N87-21873 Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds [NASA-TP-2753] p 6 N88-10771
- Aeropropulsion '87. Session 3: Internal Fluid Mechanics Research [NASA-CP-10003-SESS-3] p 18 N88-15790
- NUCLEAR FUSION

A-34

- Lunar Helium-3 and Fusion Power
- [NASA-CP-10018]
   p 69
   N89-14842

   NUCLEAR PHYSICS
   Nuclear techniques in studies of condensed matter

   [NASA-RP-1195]
   p 68
   N88-13015

   NUCLEAR SCATTERING
   Eikonal solutions to optical model coupled-channel
- equations (NASA-TP-2830) p 68 N88-30402 Kaon-nucleus scattering
- [NASA-TP-2920] p 80 N89-25103

NUCLEATION

- Finite-rate water condensation in combustion-heated wind tunnels [NASA-TP-2833] p 22 N88-28075
- Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022
- NUCLEI (NUCLEAR PHYSICS) Possible complementary cosmic-ray systems: Nuclei and antinuclei [NASA-TP-2741] p 68 N87-24977 NUCLEONS Kaon-nucleus scattering
- [NASA-TP-2920] p 80 N89-25103 NUMERICAL ANALYSIS Jet model for stot film cooling with effect of free-stream and coolant turbulence [NASA-TP-2655] p 36 N87-18034 A second-order accurate kinetic-theory-based method
- for inviscid compressible flows (NASA-TP-2613) p 36 N87-18783 On minimizing the number of calculations in
- On minimizing the number of calculations in design-by-analysis codes [NASA-TP-2706] p 5 N87-23586
- NUMERICAL INTEGRATION
  - A transient response method for linear coupled substructures [NASA-TP-2926] p 23 N90-13444

# 0

- OBLIQUE WINGS
  - In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane
  - [NASA-TP-2224] p 19 N87-10103 Flight-determined aerodynamic derivatives of the AD-1 oblique-wing research airplane
  - [NASA-TP-2222] p 19 N87-10871 Flight characteristics of the AD-1 oblique-wing research
  - aircraft [NASA-TP-2223] p 19 N87-18570 A piloted evaluation of an oblique-wing research aircraft
  - motion simulation with decoupling control laws [NASA-TP-2874] p 20 N89-15930
  - Modal control of an oblique wing aircraft [NASA-TP-2898] p 20 N89-16845
- OCEAN SURFACE Summary of along-track data from the earth radiation
- budget satellite for several representative ocean regions [NASA.RP-1206] p 56 N89-14634 OCEANOGRAPHIC PARAMETERS
- Arctic Sea ice, 1973-1976: Satellite passive-microwave observations [NASA-SP-489] p 58 N87-24870
- [NASA-SP-489] p 58 N87-2487 OCTANES
- Velocity profiles in laminar diffusion flames [NASA-TP-2596] p 36 N87-18035 OILS
- In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data [NASA-TP-2395] p 4 N87-20966
- OPEN CLUSTERS Catalog of open clusters and associated interstellar matter
- [NASA-RP-1202] p 76 N88-29652 Commentary on interstellar matter associated with 18 open clusters
- [NASA-RP-1229] p 77 N89-27612 OPENINGS
- Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular cutouts
- [NASA-TP-3007] p 29 N90-26077 Buckling and postbuckling behavior of compression-loaded isotropic plates with cutouts [NASA-TP-3024] p 47 N90-28859 OPERATING SYSTEMS (COMPUTERS) Sixth Annual Users' Conference --- Transportable Applications Executive (TAE)
- Applications Executive (TAE) [NASA-CP-2463] p 62 N87-23156 OPERATING TEMPERATURE Comparison of predicted and measured temperatures
- Comparison of predicted and measured temperatures of UH-60A helicopter transmission
- [NASA-TP-2911] p 41 N89-24607 Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24585 OPERATOR PERFORMANCE
- Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370
- OPTICAL DATA PROCESSING Computer Sciences and Data Systems, volume 2
  - [NASA-CP-2459-VOL-2] p 62 N87-19932

# OPTICAL MEASUREMENT

Optical measurement of propeller blade deflections [NASA-TP-2841] p 39 N88-28286 OPTICAL PROPERTIES

SUBJECT INDEX

- FIRE Science Results 1989 [NASA-CP-3079] p 58 N90-28224
- OPTICAL PYROMETERS Noncontact Temperature Measurement
- [NASA-CP-2503] p 32 N88-23895 OPTICAL RADAR
- Thirteenth International Laser Radar Conference
- [NASA-CP-2431] p 39 N87-10263 Airborne lidar measurements of El Chichon stratospheric aerosols, May 1983
- [NASA-RP-1172] p 51 N87-11358 NASA/MSFC FY-85 Atmospheric Processes Research Beview
- [NASA-CP-2402] p 55 N87-13043 Airborne lidar measurements of El Chichon stratospheric
- aerosols, January 1984 [NASA-RP-1175] p 51 N87-20663
- Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' Conference
- [NASA-CP-10006] p 12 N88-17616 Forty-eight-inch lidar aerosol measurements taken at the Langley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234
- [NAŠA-RP-1209] p 52 N88-29234 OPTIMAL CONTROL Singular perturbations and time scales in the design of
- digital flight control systems [NASA-TP-2844] p 19 N89-12569
- Optimized resolved rate control of seven-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional
- graphics simulation [NASA-TP-2938] p 64 N90-10618 OPTIMIZATION
- Recent Experiences in Multidisciplinary Analysis and Optimization, part 1 [NASA-CP-2327-PT-1] p 13 N87-11717
- [NASA-CP-2327-PT-1] p 13 N87-11717 Recent Experiences in Multidisciplinary Analysis and Optimization, part 2
- [NASA-CP-2327-PT-2] p 13 N87-11750 Sensitivity Analysis in Engineering
- [NASA-CP-2457] p 43 N87-18855 A study to evaluate STS heads-up ascent trajectory
- performance employing a minimum-Hamiltonian optimization strategy
- [NASA-TP-2793] p 23 N88-15820 Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces
- [NASA-TP-2776] p 15 N88-24623 Validation of a pair of computer codes for estimation
- and optimization of subsonic aerodynamic performance of simple hinged-flap systems for thin swept wings [NASA-TP-2828] p 8 N89-10024
- A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effectors
- [NASA-TP-2907] p 20 N89-23468 Recent Advances in Multidisciplinary Analysis and
- Optimization, part 1 [NASA-CP-3031-PT-1] p 15 N89-25146 Recent Advances in Multidisciplinary Analysis and
- Optimization, part 2 [NASA-CP-3031-PT-2] p 15 N89-25173 Recent Advances in Multidisciplinary Analysis and
- Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201
- [NASA-CP-3031-PT-3] p 15 N89-25201 ORBIT CALCULATION
- An economical semi-analytical orbit theory for micro-computer applications
- [NASA-TP-2811] p 66 N89-14052 Flight Mechanics/Estimation Theory Symposium [NASA-CP-2002] p 22 N78-76855

Technology for Future NASA Missions: Civil Space

Interactive orbital proximity operations planning

Compilation of methods in orbital mechanics and solar

Flight Mechanics/Estimation Theory Symposium 1988

Flight Mechanics/Estimation Theory Symposium, 1989

orbit theory for

p 66 N89-14052

p 22 N89-11760

o 61 N89-18039

p 52 N89-10420

o 23 N89-15934

p 23 N90-13413

ORBIT PERTURBATION

[NASA-TP-28111]

ORBITAL MANEUVERS

[NASA-TP-2839]

NASA-RP-12041

[NASA-CP-3011]

[NASA-CP-3050]

**ORBITAL MECHANICS** 

system

eometry

micro-computer applications

**ORBIT TRANSFER VEHICLES** 

An economical semi-analytical

Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 **ORBITAL POSITION ESTIMATION** 

Flight Mechanics/Estimation Theory Symposium [NASA-CP-2002] p 22 N78-76855 ORGANS Improved model for solar cosmic ray exposure in manned Earth orbital flights [NASA-TP-2987] p 80 N90-25031 ORIFICE FLOW Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack [NASA-TP-2716] p 14 p 14 N87-29497 ORTHOTROPIC PLATES Buckling and postbuckling behavior of square compression-loaded graphite-epoxy plates with circular cutouts [NASA-TP-3007] p 29 N90-26077 OSCILLATIONS Rapid Fluctuations in Solar Flares p 79 N87-21785 [NASA-CP-2449] Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] p 6 N87-27622 Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895 OSCILLATORS Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-TP-2746] p 17 N87-24481 OUTGASSING Outgassing data for selecting spacecraft materials [NASA-RP-1124] p 28 N88-10 p 28 N88-10117 OXIDATION Ester oxidation on an aluminum surface using chemiluminescence [NASA-TP-2611] p 31 N87-18666 Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb [NASA-TP-2955] n 31 N90-10248 Heat treatment study of the SiC/Ti-15-3 composite system [NASA-TP-2970] p 29 N90-19302 Low-Temperature CO-Oxidation Catalysts for Long-Life CO2 Lasers [NASA-CP-3076] p 40 N90-24586 Oxidation characteristics of Ti-14Al-21Nb ingot alloy p 31 N90-25206 [NASA-TP-3012] **OXIDATION RESISTANCE** Emittance, catalysis, and dynamic oxidation of Ti-14AI-21Nb [NASA-TP-2955] p 31 N90-10248 OXYGEN Electron stimulated desorption of atomic oxygen from silver [NASA-TP-2668] p 29 N87-18629 Permeation of oxygen through high purity, large grain silver [NASA-TP-2755] p 30 N87-27024 OXYGEN ATOMS NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 NASA/SDIO Space Environmental Effects on Materials Workshop, part 2 [NASA-CP-3035-PT-2] p 28 N89-23547 **OXYGEN RECOMBINATION** Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver p 67 N89-30022 [NASA-TP-2930] **OXYGEN SUPPLY EQUIPMENT** A simplified method for determining heat of combustion of natural gas INASA-TP-26821 p 39 N87-20514 **OXYGEN-HYDROCARBON ROCKET ENGINES** High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N85 p 27 N89-15979 Advanced Earth-to-Orbit Propulsion Technology 1988, volume 1 p 27 N90-28611 [NASA-CP-3012-VOL-1] OZONE Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid p 51 N87-13022 [NASA-TP-2625] Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite p 55 N87-26491 [NASA-TP-2723] Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503 Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide p 53 N90-17227 [NASA-RP-1234] Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 p 58 N90-23837 [NASA-RP-1237]

#### Present state of knowledge of the upper atmosphere 1990: An assessment report [NASA-RP-1242] p 54 N90-28929 **OZONE DEPLETION** Scientific and Operational Requirements for TOMS Data [NASA-CP-2497] p 47 N88-13774 The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714 Present state of knowledge of the upper atmosphere 1988: An assessment report (NASA-RP-1208) p 52 N88-29233 Polar Ozone Workshop. Abstracts p 51 N89-14503 [NASA-CP-10014] The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-23837 Present state of knowledge of the upper atmosphere 1990: An assessment report [NASA-RP-1242] p 54 N90-28929 OZONOMETRY Scientific and Operational Requirements for TOMS Data p 47 N88-13774 [NASA-CP-2497] Polar Ozone Workshop. Abstracts [NASA-CP-10014] p 51 N89-14503 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide [NASA-RP-1234] p 53 N90-17227 OZONOSPHERE Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152

# P

PANEL METHOD (FLUID DYNAMICS)

Steady and unsteady aerodynamic forces from the SOUSSA surface-panel method for a fighter wing with tip missile and comparison with experiment and PANAIR [NASA-TP-2736] p 5 N87-26032

theoretical Experimental and aerodynamic characteristics of a high-lift semispan wing model [NASA-TP-2990] p 11 N90-20046 PANELS

Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed wind tunnel acoustic treatment

(NASA-TP-29961 p 22 N90-19242 PARACHUTE DESCENT

Galileo probe parachute test program: Wake properties of the Galileo probe at Mach numbers from 0.25 to 0.95 [NASA-RP-1130] p 37 N88-18884 PARALLEL PROCESSING (COMPUTERS)

Computer Sciences and Data Systems, volume 2 [NASA-CP-2459-VOL-2] p 62 N87p 62 N87-19932 Frontiers of Massively Parallel Scientific Computation [NASA-CP-2478] p 62 N87-26531

First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) p 61 N88-17206 [NASA-CP-2491]

Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST [NASA-CP-3003-VOL-3] p 44 N88-2 p 44 N88-22408

Lewis Structures Technology, 1988. Volume 1: Structural Dynamics

INASA-CP-3003-VOL-11 p 44 N88-23226 Partitioning strategy for efficient nonlinear finite element dynamic analysis on multiprocessor computers

[NASA-TP-2850] p 45 N89-16170 NASA Workshop on Computational Structural Mechanics 1987, part 1 INASA-CP-10012-PT-11

p 46 N89-29773 PARALLEL PROGRAMMING Parallel Gaussian elimination of a block tridiagonal matrix

using multiple microcomputers [NASA-TP-2892] p 64 N89-17422

PARAMETER IDENTIFICATION Some path-following techniques for solution of nonlinear

equations and comparison with parametric differentiation [NASA-TP-2654] p 64 N87-14054 Application of parameter estimation to aircraft stability

and control: The output-error approach [NASA-RP-1168] p 14 N87-29499 Method for experimental determination of flutter speed

by parameter identification [NASA-TP-2923] p 15 N89-26844

# PATENT POLICY

The effectiveness of vane-aileron excitation in the experimental determination of flutter speed by parameter identification p 16 N90-15100 [NASA-TP-2971] PARTIAL DIFFERENTIAL EQUATIONS Solution of elliptic partial differential equations by fast Poisson solvers using a local relaxation factor. 2: Two-step method [NASA-TP-2530] p 64 N87-14918 PARTICLE COLLISIONS Doubly differential cross sections for galactic heavy-ion fragmentation [NASA-TP-2659] p 68 N87-17487 Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103 Calculation of two-neutron multiplicity in photonuclear reactions [NASA-TP-2968] p 68 N90-14890 PARTICLE EMISSION Calculation of two-neutron multiplicity in photonuclear reactions [NASA-TP-2968] p 68 N90-14890 PARTICLE INTERACTIONS Experiments in Planetary and Related Sciences and the Space Station [NASA-CP-2494] p 72 N89-14998 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 59 p 59 N89-24023 Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103 First International Conference on Laboratory Research for Planetary Atmospheres [NASA-CP-3077] p 78 N90-26744 PARTICLE SIZE DISTRIBUTION Automated Reduction of Data from Images and Holograms [NASA-CP-2477] p 6 N87-29432 PARTICLE TRAJECTORIES Calculation of secondary electron trajectories in multistage depressed collectors for microwave amplifiers [NASA-TP-2664] p 34 N87-17991 PARTICLES Microgravity Particle Research on the Space Station [NASA-CP-2496] p 58 N88-15354 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study p 59 N89-24023 [NASA-CP-10026-VOL-2] PARTICULATES Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts. candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 55 p 59 N89-24023 PARTITIONS (MATHEMATICS) Partitioning strategy for efficient nonlinear finite element dynamic analysis on multiprocessor computers [NASA-TP-2850] p 45 M p 45 N89-16170 PATENT POLICY NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 31) [NASA-SP-7039(31)-Sect-1] p 70 N87-25023 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 31) [NASA-SP-7039(31)-SECT-2] p 70 N8 p 70 N87-26689 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 32) [NASA-SP-7039(32)-SECT-1] p 70 N88p 70 N88-15732 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 32) [NASA-SP-7039(32)-SECT-2] p 70 N8 p 70 N88-18511 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 1: Abstracts (supplement 35) [NASA-SP-7039(35)-SECT-1] p 71 N89-25775 NASA Patent Abstracts Bibliography: A continuing bibliography. Section 2: Indexes (supplement 35) [NASA-SP-7039(35)-SECT-2] p 71 N8 p 71 N89-29264 NASA Patent Abstracts Bibliography: A continuing

bibliography. Section 1: Abstracts (supplement 37) (NASA-SP-7039(37)-SECT-1) p 71 N90-25698 NASA Patent Abstracts Bibliography: A continuing

bibliography. Section 2: Indexes (supplement 37) [NASA-SP-7039(37)-SECT-2] p 71 N90-26700

# PATENTS

PATENTS	Two-Dimensional Intercomparison of Stra
foreign countries	Models . (NASA-CP-3042) p 53 N
[NASA-SP-7038(04)] p 72 N87-70425	PHOTODIODES
PAYLOAD INTEGRATION Payload crew utilization for spacelab missions	NASA Laser Light Scattering Advanced Tec
[NASA-TP-2976] p 24 N90-14256	. (NASA-CP-10033) p 40 N
PAYLOADS Development and approach to low-frequency	PHOTOELECTRON SPECTROSCOPY
microgravity isolation systems	Degradation and crosslinking of perfi
[NASA-TP-2984] ρ 33 N90-28754	[NASA-TP-2910] p 31 N
Surface catalytic degradation study of two linear	PHOTOGEOLOGY
perfluoropolyalkylethers at 345 C	regional landforms
[NASA-TP-2774] p 27 N88-12543 Reaction of cerfluoroalkylpolyethers (PEPE) with 440C	[NASA-SP-486] p 47 N
steel in vacuum under sliding conditions at room	PHOTOGRAPHIC PROCESSING
temperature	[NASA-TP-2770] D 62 Ni
PERFORATED PLATES	PHOTOGRAPHY
Comparison between design and installed acoustic	In-flight surface oil-flow photographs with con
characteristics of NASA Lewis 9- by 15-toot low-speed wind tunnel acoustic treatment	[NASA-TP-2395] p 4 No
[NASA-TP-2996] p 22 N90-19242	Atlas of Comet Halley 1910 II
PERFORATION Simulated airline service flight tests of laminar flow	[NASA-SP-488] p 75 Ni
control with perforated-surface suction system	Second Workshop on Improvements to Ph
[NASA-TP-2966] p 16 N90-17627	[NASA-CP-10015] p 74 NB
Evaluation of various thrust calculation techniques on	PHOTONS First International Conference on Laboratory F
an F404 engine	for Planetary Atmospheres
[NASA-TP-3001] p 16 N90-25134	[NASA-CP-3077] p 78 NS
Development and evaluation of an airplane electronic	PHOTONUCLEAR REACTIONS Calculation of two-neutron multiplicity in photon
display format aligned with the inertial velocity vector	reactions
Design of 9.271-pressure-ratio 5-stage core compressor	[NASA-TP-2968] p 68 NS
and overall performance for first 3 stages	Space Photovoltaic Research and Technolog
[NASA-TP-2597] p 17 N87-17699 Bit-error-rate testing of bigh-power 30-GHz traveling	High Efficiency, Space Environment, and
wave tubes for ground-terminal applications	I echnology (NASA-CP-2475) n 50 N
[NASA-TP-2635] p 33 N87-17971 Effect of a trade between boattail angle and wedge size	PHOTOVOLTAIC EFFECT
on the performance of a nonaxisymmetric wedge nozzle	Space Photovoltaic Research and Technolog
[NASA-TP-2717] p 5 N87-23593	Technology
Laboratory, 1917-1958	[NASA-CP-3030] p 50 N8
[NASA-SP-4305] p 80 N87-24390	PHYSICAL EXERCISE
A performance index approach to aerodynamic design with the use of analysis codes only	horizontal and head-down bed rest
[NASA-TP-2805] p 7 N88-18552	[NASA-TP-3037] p 60 NS
SRM propellant and polymer materials structural test	Joint US/USSB study: Comparison of ef
[NASA-TP-2821] p 44 N88-25013	horizontal and head-down bed rest
Performance of a multistage depressed collector with machined titanium electrodes	[NASA-TP-3037] p 60 NS
[NASA-TP-2891] p 35 N89-15337	Fluctuating pressures measured bene
Technique for temperature compensation of	high-temperature, turbulent boundary layer on a
[NASA-TP-2880] probes	INASA-TP-2947) p 67 NS
Comparison of predicted and measured temperatures	PILOT PERFORMANCE
of UH-60A helicopter transmission [NASA-TP-2911] 0 0 41 N89-24607	Wind Shear/Turbulence Inputs to Flight Simula Systems Cartification
PERIODIC VARIATIONS	[NASA-CP-2474] p 1 N8
Dynamic characteristics of a vibrating beam with periodic variation in bonding stiffness	Effect of motion cues during complex curved a
[NASA-TP-2697] p 44 N88-23988	and landing tasks: A piloted simulation study (NASA-TP-2773) 0.14 No.
PERMEATING	A simulator investigation of the use of digital
silver	for pilot/ATC communications in a single pilot of
[NASA-TP-2755] p 30 N87-27024	A piloted evaluation of an oblique-wing researc
PERSONNEL Engineer in charge: A history of the Langley Aeronautical	motion simulation with decoupling control laws
Laboratory, 1917-1958	[NASA-TP-2874] p 20 NE
[NASA-SP-4305] p 80 N87-24390 PERSONNEL MANAGEMENT	microburst wind shear encounters
Cockpit Resource Management Training	[NASA-TP-2886] p 17 N8
(NASA-CP-2455) p 12 N87-22634	Delivery performance of conventional aird terminal area, time based air traffic control: A
Singular perturbations and time scales in the design of	simulation evaluation
digital flight control systems	[NASA-TP-2978] p 13 N9
[NASA-TP-2844] p 19 N89-12569 PHASE-SPACE INTEGR∆L	Stereopsis cueing effects on hover-in-tu performance in a simulated rotorcraft
A general formalism for phase space calculations	[NASA-TP-2980] p 17 N9
(NASA-TP-2843) p 66 N89-14053	PILOTS (PERSONNEL)
An examination of impact damage in glass-phenolic and	Ground-based time-guidance algorithm for ca airplanes in a time-metered air traffic control envir
aluminum honeycomb core composite panels	A piloted simulation study
[NASA-17-3042] p 29 N90-27876 PHOTOCHEMICAL OXIDANTS	[NASA-TP-2616] p 16 N8 Piloted-simulation study of effects of vortex
An assessment model for atmospheric composition	low-speed handling qualities of a Delta-wing
[NASA-CP-3023] p 57 N89-20588	[NASA-TP-2747] p 19 N8
Scientific and Operational Requirements for TOMS	Propagation of sound waves in tubes of noncircu
Date:	anation

osition 20588	low-speed handling qualities of [NASA-TP-2747]	of a	Delta-v	wing airplane N87-26922
	PIPES (TUBES)		•	
TOMS	Propagation of sound waves in	tube	es of none	circular cross
	section		•	
13774	[NASA-TP-2601]		р 3	N87-14284

p 47 N88-

	SUBJECT INDEX
Wo-Dimensional Intercomparison of Stratospheric dels	PISTON ENGINES Investigation of the misfueling of reciprocating piston
ASA-CP-3042} p 53 N90-11405 FODIODES	aircraft engines [NASA-TP-2803] p 12 N88-21144
VASA Laser Light Scattering Advanced Technology velopment Workshop, 1988	PITCH (INCLINATION) Measurement of velocity and vorticity fields in the wake
ASA-CP-10033] p 40 N90-17085 FOELECTRON SPECTROSCOPY Degradation and crosslinking of perfluoroalky	[NASA-TP-2780] p 66 N88-13002 [NASA-TP-2780] p 66 N88-13002 Handling qualities of a wide-body transport airplane
yethers under X-ray irradiation in ultrahigh vacuum ASA-TP-2910] p 31 N89-21103	utilizing Pitch Active Control Systems (PACS) for relaxed static stability application (NASA-TP-242) p. 19 N88-14987
FOGEOLOGY Seomorphology from space: A global overview of	PITOT TUBES
ional landforms ASA-SP-486 ] p 47 N87-18139	transonic speeds and high angles of attack
TOGRAPHIC PROCESSING	PITTING
ASA-TP-2770) p 62 N88-20833	for low-contact-ratio spur gears
n-flight surface oil-flow photographs with comparisons	[NASA-1P-2610] p 41 N87-18095 PLANAR STRUCTURES
ASA-TP-2395] p 4 N87-20966	Forbidden tangential orbit transfers between intersecting Keplerian orbits
Atlas of Comet Halley 1910 II ASA-SP-488] p 75 N87-30235	[NASA-TP-3031] p 23 N90-26028 PLANET EPHEMERIDES
FOMETERS Second Workshop on Improvements to Photometry	Ten year planetary ephemeris: 1986-1995 [NASA-RP-1176] p 73 N87-14219
ASA-CP-10015} p 74 N89-13310	PLANETARY ATMOSPHERES The Cassini mission: Infrared and microwave
First International Conference on Laboratory Research	spectroscopic measurements
ASA-CP-3077] p 78 N90-26744	First International Conference on Laboratory Research
FONUCLEAR REACTIONS Calculation of two-neutron multiplicity in photonuclear	[NASA-CP-3077] p 78 N90-26744
ctions ASA-TP-2968] p 68 N90-14890	Planetary Geology: Goals, Future Directions, and
OVOLTAIC CONVERSION	[NASA-CP-3005] p 78 N88-26279
h Efficiency, Space Environment, and Array	PLANETARY NEBULAE International ultraviolet explorer spectral atlas of
ASA-CP-2475) p 50 N87-26413	planetary nebulae, central stars, and related objects (NASA-RP-1203) p 76 N88-28843
OVOLTAIC EFFECT pace Photovoltaic Research and Technology, 1988.	PLANETARY ORBITS
h Efficiency, Space Environment, and Array chnology	[NASA-RP-1176] p 73 N87-14219 PLANETARY SUBFACES
ASA-CP-3030) p 50 N89-24704 SICAL EXERCISE	Planetary geosciences, 1988
oint US/USSR study: Comparison of effects of izontal and head-down bed rest	PLANETOLOGY Before another and the second se
ASA-TP-3037] p 60 N90-28965	and strategy for the future
oint US/USSR study: Comparison of effects of	Planetary Geology: Goals, Future Directions, and
ASA-TP-3037] p 60 N90-28965	[NASA-CP-3005] p 78 N88-26279
DRESISTIVE TRANSDUCERS	Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274
h-temperature, turbulent boundary layer on a flat plate Mach number of 5	PLANFORMS Planform effects on the supersonic aerodynamics of
ASA-TP-2947) p 67 N90-10680	multibody configurations [NASA-TP-2762] p 6 N88-12454
tems Cartification	PLANNING The 1990 Goddard Conference on Space Applications
ASA-CP-2474] p 1 N87-25267	of Artificial Intelligence (NASA-CP-3058) p 64 N90-22294
I landing tasks: A piloted simulation study	PLANT DESIGN
ASA-TP-2773] p 14 N88-12480 A simulator investigation of the use of digital data link	control systems
pilot/ATC communications in a single pilot operation ASA-TP-2837] p 13 N89-11726	PLANTS (BOTANY)
piloted evaluation of an oblique-wing research aircraft tion simulation with decoupling control laws	Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module
ASA-TP-2874] p 20 N89-15930 Viloted-simulation evaluation of escape guidance for	[NASA-CP-2479] p 60 N88-13852
roburst wind shear encounters ASA-TP-2886] p 17 N89-16820	Experimentation
Delivery performance of conventional aircraft by ninal-area time-based air traffic control. A real-time	PLASMA HEATING
ulation evaluation SA-TP-20781	Laser production and heating of plasma for MHD application
tereopsis cueing effects on hover-in-turbulence	[NASA-TP-2798] p 68 N88-18443 PLASMA LAYERS
rormance in a simulated rotorcraft SA-TP-2980] p 17 N90-21004	Double Layers in Astrophysics [NASA-CP-2469] n 72 N87-23313
TS (PERSONNEL) Bround-based time-guidance algorithm for control of	PLASMA PHYSICS
lanes in a time-metered air traffic control environment: iloted simulation study	[NASA-CP-2449] p 79 N87-21785
NSA-TP-2616 p 16 N87-10864	Double Layers in Astrophysics [NASA-CP-2469] p 72 N87-23313
-speed handling qualities of a Delta-wing airplane	PLASMA SPRAYING Thermal Barrier Coatinos, Abstracts and figures
S (TUBES)	[NASA-CP-10019] p 31 N89-13642

PLASMAS (PHYSICS)

Coronal and Prominence Plasmas		
[NASA-CP-2442]	p 79	N87-20871

[NASA-CP-2497]

PLASTIC PROPERTIES			POLYMER CHEMISTRY	
Indentation plasticity and fracture in si	licon	NO0 10000	Microgravity crystallization of macro	mc
Cyclic loads tests of carbon involute s	olid m	nog-10990	INASA-TP-26711 0 3	esi i1
outer boot ring segments			Structural Ceramics	
{NASA-TP-2684}	45	N89-16192	[NASA-CP-2427] p 3	1
PLASTICS			POLTMER MATRIX COMPOSITES	dei
Experiments in Engineering Material	e 198 s Sc	ience and	Research	11.51
Technology	5 00	active and	[NASA-CP-10003-SESS-1] p 1	8
[NASA-CP-3074] p	28	N90-24350	POLYMERIC FILMS	_
PLATEAUS			materials structural modeling	ar
Sapping features of the Colorado Plates	au: A c	comparative	(NASA-TP-2824) p 4	5
[NASA-SP-491]	49	N89-10401	PORTS (OPENINGS)	
PLATES (STRUCTURAL MEMBERS)			Effect of port corner geometry on	i t
Modal interaction in postbuckled plate	s. The	eory	(NASA-TP-2624)	3
[NASA-TP-2943]	5 47	N90-27121	POSITION (LOCATION)	-
Compatability of dispersion-strengther	ned ni	atinum with	Calculation and accuracy of EF	186
resistojet propellants	,00 p.		INASA-TP-26701	12
[NASA-TP-2765] p	27	N88-12538	POSITION ERRORS	-
PLENUM CHAMBERS			Effect of ephemeris errors on the a	ссі
Experimental evaluation of blockage	ratio a	and plenum	computation of the tangent point altitu	de
for bodies of revolution in 0.1 scale m	odel 1	test section	instruments	GE
of NASA Lewis Research Center's propo	sed a	Ititude wind	[NASA-TP-2866] p 6	35
tunnel		No	POSITION INDICATORS	
[NASA-1P-2702] point sources	21	N87-22694	Effects of combining vertical and horizon	ntal
Infrared astronomical satellite (IRA	NS) ca	atalogs and	(NASA-TP-2783) 0.1	17
atlases. Volume 4: The point source ca	italog	declination	POSITRONIUM	
range 0 deg greater than delta greater t	han 🔾	30 deg	Annihilation in Gases and Galaxies	
[NASA-RP-1190-VOL-4] [	5 76	N89-14196	[NASA-CP-3058] p 6	<i>i</i> 6
atlases Volume 6: The point source ca	s) cai	declination	Analysis of positron lifetime spectra in p	olv
range -50 deg greater than delta grea	ter th	an -90 deg	[NASA-TP-2853] p 6	33
[NASA-RP-1190-VOL-6] p	76	N89-14198	Annihilation in Gases and Galaxies	
POINTING CONTROL SYSTEMS			[NASA-CP-3058] pt	jb
A general-purpose balloon-borne po	inting	system for	Spacelab 3 Mission Science Review	
[NASA-TP-3013]	o 33	N90-21219	[NASA-CP-2429] p 3	36
Rotating-unbalanced-mass devices	for	scanning	POTENTIAL FLOW	
balloon-borne experiments, free-flying	space	ecraft, and	Discrete-vortex model for the symmetric	:-VC
space shuttle/space station experiment	S an		[NASA-TP-2989] p 1	11
	5 33	N90-20200	POWER EFFICIENCY	
Polar Ozone Workshop. Abstracts			Efficiency testing of a helicopter transmi	ssi
[NASA-CP-10014]	51	N89-14503	[NASA-TP-2795] n 4	11
POLAR REGIONS	_		POWER TRANSMISSION	
The 1987 Airborne Antarctic Ozone	Expe	riment: The	Free-Space Power Transmission	_
(NASA-RP-1201)	o 49	N88-20714	[NASA-CP-10016] p 2	27
SAM 2 data user's guide			Proceedings of the 1985 NASA Arres Res	sea
[NASA-RP-1200]	52	N88-25094	Ground-Effects Workshop	
Proceedings of the Polar Proce	sses	on Mars	[NASA-CP-2462] p	5
(NASA-CP-10021)	78	N89-18373	A perspective on 15 years of proof-of-o	,00 . Mi
Polar microwave brightness terr	perat	ures from	Rotorcraft and Powered-Lift Flight Pro	oje
Nimbus-7 SMMR: Time series of daily a	nd mo	onthly maps	1970-1985	
from 1978 to 1987			[NASA-RP-1187] p 1	4
[NASA-HP-1223] SeaBISE: A Multidisciplinary Rese	948 Parch	N89-20275	(NASA-SP-501) p 1	15
Predict Rapid Changes in Global Sea	Level	Caused by	PRECIPITATION HARDENING	-
Collapse of Marine Ice Sheets			Compatability of dispersion-strengthener	d p
[NASA-CP-3075]	o 48	N90-22824	INASA-TP-27651	27
Remote Sensing in Polarized Light			PRECISION	.,
[NASA-CP-3014]	72	N89-14189	Foundations of measurement and instru	me
POLLUTION TRANSPORT			[NASA-RP-1222] p 4	10
Airborne lidar measurements of El Chic	hon s	tratosphenc	Turbine Engine Hot Section Technology	11
[NASA-RP-1175]	51	N87-20663	[NASA-CP-2339] p 4	i3
POLYCRYSTALS			Aerothermal tests of spherical dome pro	otul
Auger electron intensity variations in	oxyg	en-exposed	a flat plate at a Mach number of 6.5	
large grain polycrystalline silver	. 67	NR0 20022	Effects of winglet on transonic flutter ch	ją jąra
POLYETHER RESINS		1105-30022	a cantilevered twin-engine-transport wing	mo
Degradation and crosslinking c	nt pe	erfluoroalkyl	[NASA-TP-2627] p 4	13
polyethers under X-ray irradiation in	ultrah	igh vacuum	Aeropropulsion '87. Session 3: Internal F	Tui
Absorbed does thresholds and she	o 31 orhed	dose rete	[NASA-CP-10003-SESS-31 n 1	8
limitations for studies of electron rac	liation	effects on	PREDICTIONS	_
polyetherimides			Aerothermal evaluation of a spherically	/ b
[NASA-TP-2928]	31	N89-25332	with a trapezoidal cross section in the L	.an
steel in vacuum under sliding con	ditions	s at room	(NASA-TP-2641) D 3	6
temperature			Development of confidence limits by pi	vol
[NASA-TP-2883]	o 31	N89-26091	for estimating software reliability	
POLYIMIDE RESINS	wheel	doee rato	Comparison of theoretical and area	))) 
Imitations for studies of electron rac	liation	effects on	performance of a 1030:1 area ratio rock	ant et
polyetherimides			chamber pressure of 2413 kN/m2 (350 ps	ia)
[NASA-TP-2928]	5 31	N89-25332	[NASA-TP-2725] p 2	6

STRY			_	Life
crystallization of ma id proposal for continu	acromo ied res	earch	in .	propos
	p 31	N87-2042	23	[NASA
amics	p 31	N88-2387	2	App Revise
X COMPOSITES			14	(NASA
n 67. Session 1: Aerop	ropuis	ion Materia	IS F	REMIX
3-SESS-1]	p 18	N88-1669	97	infrare
locket Motor) propel	lant a	nd polym	er	(NASA
iral modeling	n 45	N99 292/	<b>F</b>	REPRC
SS)	p 45	1100-2034	5	Astron
ort corner geometry a rotating-vape-type th	0n nustre	the intern	al	[NAS/
	p 3	N87-1254	n <b>'</b>	n-fii
TION)	EBB	E cconn	or	to pres
cations	21.0	E Journ		Fro
) RS	p 72	N87-2847	71	speed
hemeris errors on th	ne acc	uracy of th	ne	[NASA
the tangent point a	iltitude SAGI	e of a sola F 1 and	ar 2	desigr
	0/10		-	(NASA
TORS	p 65	N89-1641	15	config
nbining vertical and ho	rizonta	I informatio	n	Lewis
ght display	n 17	N88-1248	17	Aer
· - · · · ·	<b>P</b>			at a M
Gases and Galaxies	n 66	N90-189	57 1	(NASA PRESSI
				Con
sitron lifetime spectra	in poly	ymers N89-1223	37	nitroge INAS/
Gases and Galaxies				PRESSL
ALYSIS	p 66	N90-189	57	Aero with a
ission Science Review	v			high-te
vi W	p 36	N87-2210	33	[NAS/ Prod
ex model for the symm	etric-v	ortex flow o	n	twiste
9	p 11	N90-2094	46	(NAS/
NCY				ona
ing of a nelicopter trar	nsmiss	ion planeta	ry	oscilla
	p 41	N88-1522	24	Intro
ower Transmission				in vac
6]	p 27	N90-2179	95	Fluc
of the 1985 NASA Arnes	Resea	arch Center	's	high-te
Workshop	n 6	N87.2441	10	At Mac
on 15 years of proof	-of-cor	ncept aircra	aft	Mea
d flight research at A	mes-M	loffett by th	ne n	of an attitud
		013 2111010	•••	(NASA
'] ircraft technology	p 14	N88-1946	67	Gas cone a
	p 15	N90-1258	39	(NAS/
of dispersion-strength	ened o	olatinum wi	th I	PRIMER The
lants				alumin
J	p 27	N88-125	38	[NAS/
of measurement and in	strum	entation		primer
LYSIS TECHNIQUES	p 40 3	N90-213		and do
e Hot Section Techno	logy, 1	984	, F	ROBA
ests of spherical dome	p 43 e protu	iberances d	on N	The
Mach number of 6.5	- 2F	N07 1386	2.4	[NAS/
J glet on transonic flutte	p 35 er char	acteristics	of	Cera
vin-engine-transport w	ing mo	N97-1379	10	[NAS/
n '87. Session 3: Interr	nal Flui	id Mechanic	cs P	ROBE
3-SESS-31	0 1A	N88-1570	90	eddy-c
	P 10	100-101	-	[NAS
evaluation of a spheri	ically t	olunted boo	dy F ot	robli Solu
e tunnel				Poisso
J of confidence limits h	р 36 ховол	N87-1878 Ital function	52 15	(NAS/
oftware reliability	.,		-	Effic
J of theoretical and r	p 65	N87-2324 nental thro	14 st	flow w
a 1030:1 area ratio	rocket	nozzie at	a	The

p 26 N87-25423

[NASA-SP-224(05)]

**PROBLEM SOLVING** 

version of strainrange partitioning (SRP): A ai A-TP-2779] p 44 N88-15263 lications of the hybrid automated reliability predictor: d edition A-TP-2760-REV] p 63 N90-11454 ED FLAMES ermination of combustion gas temperatures by d radiometry in sooting and nonsooting flame p 38 N89-25409 A-TP-29001 DCESSING comatic classification of spectra from the Infrared nomical Satellite (IRAS) p 75 N90-10807 -RP-1217] IRE DISTRIBUTION ight surface oil-flow photographs with comparisons ssure distribution and boundary-layer data p 4 N87-20966 A-TP-2395] erimental cavity pressure distributions at supersonic A-TP-2683] p 5 N87-22626 the number of calculations in minimizing -by-analysis codes A-TP-2706) p 5 N87-23586 erimental evaluation of honeycomb/screen urations and short contraction section for NASA Research Center's altitude wind tunnel A-TP-2692 ] p 21 N87-23662 othermal tests of quilted dome models on a flat plate lach number of 6.5 A-TP-2804] p 37 N88-22325 JRE EFFECTS tamination of liquid oxygen by pressurized gaseous A-TP-2894] p 38 N89-19499 JRE MEASUREMENT othermal evaluation of a spherically blunted body a trapezoidal cross section in the Langley 8-foot emperature tunnel A-TP-2641] p 36 N87-18782 ssure measurements on a thick cambered and d 58 deg delta wing at high subsonic speeds A-TP-2713] p6 N87-27643 ady and unsteady transonic pressure measurements clipped delta wing for pitching and control-surface tions A-TP-25941 p 8 N88-28895 oduction to total- and partial-pressure measurements uum systems A-RP-1219] p 40 N90-10412 ctuating pressures measured beneath emperature, turbulent boundary layer on a flat plate ch number of 5 A-TP-2947] p 67 N90-10680 asurements of pressures on the tail and aft fuselage airplane model during rotary motions at spin A-TP-2939] p 10 N90-10829 -jet and tangent-slot film cooling tests of a 12.5 deg at Mach number of 6.7 A-TP-27861 p 39 N90-28806 IS (COATINGS) corrosion mechanisms for primer coated 2219-T87 านทา A-TP-2715) p 30 N87-21076 electrochemical study of corrosion protection by -topcoat systems on 4130 steel with ac impedance c methods A-TP-2820) p 30 N89-19406 BILITY THEORY Fault Tree Compiler (FTC): Program and matics p 64 N89-24815 A-TP-2915] amics Analysis and Reliability Evaluation of ures (CARES). Users and programmers manual p 47 N90-28099 A-TP-2916] for temperature compensation of hnique current proximity probes p 39 N89-15380 A-TP-28801 EM SOLVING ition of elliptic partial differential equations by fast on solvers using a local relaxation factor. 2: Two-step d p 64 N87-14918 A-TP-25301 cient solutions to the Euler equations for supersonic ith embedded subsonic regions A-TP-2523] p 3 N87-15183 The NASTRAN demonstration problem manual, level 17.5

p 42 N81-71592

# **PROCESS CONTROL (INDUSTRY)**

PROCESS CONTROL (INDUSTRY) National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and rechnology

INASA-CP-30741 p 28 N90-24350 PRODUCTIVITY

Working with people to improve productivity and guality: A bibliography with indexes, 1984-1988 [NASA-SP-7078] p 69 N90-12385

**PROGRAM VERIFICATION (COMPUTERS)** 

A generalized method for automatic downhand and wirefeed control of a welding robot and positioner p 32 N88-17869 INASA-TP-28071 Validation of a computer code for analysis of subsonic

aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187

PROJECT MANAGEMENT Issues in NASA program and project management [NASA-SP-6101] p 69 N89-12479

Practices in adequate structural design p 24 N89-18504 [NASA-TP-2893] Orders of magnitude: A history of the NACA and NASA,

1915-1990 [NASA-SP-44061 p 81 N89-26805

Issues in NASA program and project management (NASA-SP-6101(02)) n 69 N90-13277 Supercritical wing technology: A report on flight

evaluations [NASA-SP-3011 p 2 N77-85474

PROJECT PLANNING The 1987 Get Away Special Experimenter's

Symposium [NASA-CP-2500] p 22 N88-17691

SeaRISE: A Multidisciplinary Research Initiative to Predict Rapid Changes in Global Sea Level Caused by Collapse of Marine Ice Sheets

- [NASA-CP-3075] p 48 N90-22824 **PROP-FAN TECHNOLOGY**
- Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport [NASA-TP-2678] p 14 N87-20990
- Aeropropulsion '87. Session 5: Subsonic Propulsion Technology [NASA-CP-10003-SESS-5] p 18 N88-15800

Advanced turboprop project [NASA-SP-495] p 18 N89-12565

PROPELLANT COMBUSTION Turbine Engine Hot Section Technology 1986

[NASA-CP-2444] p 45 N89-12876 PROPELL ANTS

SRM (Solid Rocket Motor) propellant and polymer materials structural modeling [NASA-TP-28241 p 45 N88-28343

PROPELLER BLADES

Optical measurement of propeller blade deflections [NASA-TP-2841] p 39 N88-28286 PROPELLER FANS

Annoyance caused by advanced turboprop aircraft flyover noise: Single-rotating propeller configuration p 67 N88-17441 [NASA-TP-2782] PROPELLER NOISE

Annoyance caused by advanced turboprop aircraft Counter-rotating-propeller configuration p 67 N90-29166 noise flyover [NASA-TP-3027] PROPELLERS

Evaluation of installed performance wing-tip-mounted pusher turboprop on a semispan wir [NASA-TP-2739] p 14 N87-26041

Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted ousher propellers [NASA-TP-2763] p 6 N87-29462

Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8

[NASA-TP-2462] p 2 N90-20942 FAA/NASA En Route Noise Symposium [NASA-CP-3067] p 67 N90-24853

PROPULSION Aeropropulsion '87. Session 3: Internal Fluid Mechanics

Research [NASA-CP-10003-SESS-3] p 18 N88-15790

- Aeropropulsion '87. Session 4: Instrumentation and Controls Research
- p 18 N88-15794 [NASA-CP-10003-SESS-4] Aeropropulsion '87. Session 5: Subsonic Propulsion

Technology [NASA-CP-10003-SESS-5] p 18 N88-15800 Mixing and Demixing Processes in Multiphase Flows

With Application to Propulsion Systems p 37 N89-11153 [NASA-CP-3006]

A-38

**PROPULSION SYSTEM CONFIGURATIONS** Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers p 6 N87-29462 [NASA-TP-2763] Aeropropulsion '87. Session 2: Aeropropulsion Structures Research

[NASA-CP-10003-SESS-2] p 18 N88-15785 Aeropropulsion '87. Session 6: High-Speed Propulsion

Technology [NASA-CP-10003-SESS-6] p 18 N88-15807 Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2

[NASA-CP-2437-VOL-2] n 27 N89-12626 Exhaust nozzles for propulsion systems with emphasis

on supersonic cruise aircraft [NASA-RP-1235] p 18 N90-21037 **PROPULSION SYSTEM PERFORMANCE** 

Aeronautical facilities assessment

[NASA-RP-1146] p 21 N87-10876 Exhaust nozzles for propulsion systems with emphasis on supersonic cruise aircraft

[NASA-RP-1235] p 18 N90-21037 The effect of interplanetary trajectory options on a manned Mars aerobrake configuration

p 24 N90-26036 [NASA-TP-3019] Advanced Earth-to-Orbit Propulsion Technology 1988,

volume 1 p 27 N90-28611 [NASA-CP-3012-VOL-1]

PROPULSIVE EFFICIENCY

Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds [NASA-TP-2704] p 4 N87-21873

Rotorcraft flight-propulsion control integration: An eclectic design concept [NASA-TP-2815] p 19 N88-19475

- PROTECTION
- A Protection And Detection Surface (PADS) for damage tolerance [NASA-TP-3011] p 29 N90-27788

**PROTECTIVE COATINGS** Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials

p 30 N87-18644 [NASA-TP-2677] The corrosion mechanisms for primer coated 2219-T87 aluminum

- [NASA-TP-2715] p 30 N87-21076 An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods
- [NASA-TP-2820] p 30 N89-19406 **PROTEIN CRYSTAL GROWTH**
- Liquid drop stability for protein crystal growth in microgravity p 58 N87-20727
- (NASA-TP-2724) **PROTEIN SYNTHESIS**
- Liquid drop stability for protein crystal growth in microgravity p 58 N87-20727
- (NASA-TP-2724) PROTON SCATTERING Kaon-nucleus scattering p.80 N89-25103

(NASA-TP-2920) PROTUBERANCES

Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5

[NASA-TP-2631] p 35 N87-13664 PROVING A perspective on 15 years of proof-of-concept aircraft

development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985

- [NASA-RP-1187] p 14 N88-19467 PROXIMITY
- Technique for temperature compensation of eddy-current proximity probes
- [NASA TP-2880] p 39 N89-15380 Interactive orbital proximity operations planning
- system [NASA-TP-2839] p 61 N89-18039 PSYCHOACOUSTICS
- Annoyance caused by advanced turboprop aircraft noise: Counter-rotating-propeller configuration flyover (NASA-TP-3027) p 67 N90-29166
- PSYCHOLOGICAL EFFECTS Annoyance response to simulated advanced turboprop
- aircraft interior noise containing tonal beats p 66 N87-24161 [NASA-TP-2689]
- PSYCHOLOGY Joint University Program for Air Transportation
- Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921
- **PSYCHOMOTOR PERFORMANCE** Mental-State Estimation, 1987
- [NASA-CP-2504] p 60 N88-23370

[NASA-RP-1171] p 33 N87-11916 Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 PUMP SEALS Three-step cylindrical seal for high-performance turbomachines (NASA-TP-1849) p 36 N87-24639 PURITY Permeation of oxygen through high purity, large grain silver [NASA-TP-2755] p 30 N87-27024 **PYLON MOUNTING** Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted

Pulse Code Modulation (PCM) encoder handbook for

PULSE CODE MODULATION

Aydin Vector MMP-600 series system

SUBJECT INDEX

- pusher propellers [NASA-TP-2763] p 6 N87-29462
- PYLONS Integration effects of pylon geometry on a high-wing
- transport airplane [NASA TP-2877] p 9 N89-15888 PYROLYTIC GRAPHITE
- Design, fabrication and performance of small, graphite electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes
- [NASA-TP-2693] p 35 N87-20474 PYROTECHNICS
- Effects of variables upon pyrotechnically induced shock response spectra
- p 43 N87-12921 [NASA-TP-2603] Effects of variables upon pyrotechnically induced shock

response spectra, part 2 [NASA-TP-2872] p 45 N89-13814

# Q

# QUALITY CONTROL

- Electronics reliability and measurement technology [NASA-CP-2472] p 42 N87-27204 Working with people to improve productivity and quality:
- A bibliography with indexes, 1984-1988 [NASA-SP-7078] p 69 N90-12385
- QUANTITATIVE ANALYSIS
- Quantitative analysis of the reconstruction performance of interpolants [NASA-TP-2688]
  - p 65 N87-22441

# R

### RADAR

MARA (Multimode Airborne Radar Altimeter) system documentation. Volume 1: MARA system requirements document

- [NASA-RP-1226] p 39 N89-26209 RADAR EQUIPMENT
- Thirteenth International Laser Radar Conference p 39 N87-10263 [NASA-CP-2431]
- RADAR MEASUREMENT Doppler Radar Detection of Wind Shear

[NASA-CP-2435] p 12 N87-10054 RADIANCE

- Summary of along-track data from the earth radiation budget satellite for several representative ocean regions [NASA-RP-1206] p 56 N89-14634
- Sensor performance analysis [NASA-RP-1241] p 50 N90-23780

Absorbed dose thresholds and absorbed dose rate

Atlas of albedo and absorbed solar radiation derived

Spectroscopic comparison of effects of electron

Fifteenth Space Simulation Conference: Support the

Solar-flare shielding with Regolith at a lunar-base site

radiation on mechanical properties of two polyimides

from Nimbus 6 earth radiation budget data set, July 1975

p 31 N89-25332

absorption from

p 66 N90-12282

o 57 N90-14741

p 27 N87-18611

p 25 N89-12582

p 79 N89-14210

limitations for studies of electron radiation effects on

RADIATION ABSORPTION

Parametric study of power

Highway to Space Through Testing

electromagnetic waves by small ferrite spheres

polyetherimides

[NASA-TP-2928]

[NASA-TP-29491

[NASA-RP-1230]

[NASA-TP-2663]

INASA-CP-30151

RADIATION DOSAGE

[NASA-TP-2869]

RADIATION DAMAGE

to May 1978

Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polyetherimides INASA-TP-29281

p 31 N89-25332 Radiation exposure for manned Mars surface missions (NASA-TP-2979) p 80 N90-18357 Improved model for solar cosmic ray exposure in manned

Earth orbital flights p 80 N90-25031 [NASA-TP-2987] Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results

[NASA-TP-3021] p 80 N90-29290 **RADIATION EFFECTS** 

The effects of simulated space environmental parameters on six commercially available composite materials

p 29 N89-19385 [NASA-TP-2906] Degradation and crosslinking of perfluoroalkyl polyethers under X-ray irradiation in ultrahigh vacuum [NASA-TP-2910] p 31 N89-21103 NASA/SDIO Space Environmental Effects on Materials

Workshop, part 1 [NASA-CP-3035-PT-11 p 27 N89-23528

NASA/SDIO Space Environmental Effects on Materials Workshop, part 2 [NASA-CP-3035-PT-2] p 28 N89-23547

Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polyetherimides p 31 N89-25332 NASA-TP-29281

**BADIATION HAZARDS** 

Benchmark solutions for the galactic ion transport equations: Energy and spatially dependent problems p 79 N89-16714 [NASA-TP-2878]

RADIATION MEASUREMENT

Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-27677

RADIATION PYROMETERS

Noncontact Temperature Measurement [NASA-CP-2503] p 32 N88-23895 Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flames [NASA-TP-2900] p 38 N89-25409

RADIATION SHIELDING

Solar-flare shielding with Regolith at a lunar-base site [NASA-TP-2869] p 79 N89-14210 Improved model for solar cosmic ray exposure in manned Farth orbital flights

[NASA-TP-2987] p 80 N90-25031 Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results

[NASA-1	P-30	)21 J			p 80	)	N90-29290	
RADIATIO	N SF	PECTF	A					

Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-12237 RADIATION TRANSPORT

Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results [NASA-TP-3021] p 80 N90-29290

RADIATIVE TRANSFER Remote Sensing in Polarized Light p 72 N89-14189 [NASA-CP-3014]

Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-30421 p 53 N90-11405

RADIO ALTIMETERS MARA (Multimode Airborne Radar Altimeter) system

documentation. Volume 1: MARA system requirements document [NASA-RP-1226] p 39 N89-26209

Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland

[NASA-RP-1233-VOL-1] p 54 N90-20562 Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat

p 54 N90-20563 [NASA-RP-1233-VOL-2] Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat [NASA-RP-1233-VOL-4] p 5

p 54 N90-20564 RADIO ASTRONOMY Coronal and Prominence Plasmas

[NASA-GP-2442]	р / 9	N87-20871
Star Formation in Galaxies		
[NASA-CP-2466]	p 73	N87-24266

Future Astronomical Observatories on the Moon p 74 N89-15810 [NASA-CP-2489] A lunar far-side very low frequency array

p 75 N90-10805 [NASA-CP-3039] RADIO COMMUNICATION

A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation p 13 N89-11726 [NASA-TP-2837]

RADIO FREQUENCIES

Influence of the deposition conditions on radiofrequency magnetron sputtered MoS2 films [NASA-TP-2994] p 33 N90-21210

RADIO TELESCOPES

Future Astronomical Observatories on the Moon [NASA-CP-2489] p 74 N89-15810 RADIO WAVES

Rapid Fluctuations in Solar Flares NASA-CP 2449] p 79 N87-21785 RADIOBIOLOGY

Cosmic ray heavy ion LET mapping for aluminum, silicon, and tissue targets

[NASA-RP-1180] p 79 N87-25984 BADIOMETERS

Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985

[NASA-RP-1214] p 56 N89-17374 RADIOSONDES

Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 RÁIN

Propagation effects handbook for satellite systems design. A summary of propagation impairments on 10 to 100 GHz satellite links with techniques for system design [NASA-RP-1082(04)]

p 34 N89-17060 Steady-state and transitional aerodvnamic characteristics of a wing in simulated heavy rain [NASA-TP-2932] p 10 N89-25951

RAIN GAGES

On requirements for a satellite mission to measure tropical rainfall

[NASA-RP-1183] p 55 N87-20701 RAMAN SPECTRA

Raman intensity as a probe of concentration near a crystal growing in solution

[NASA-TP-2865] p 39 N89-16139 RAMAN SPECTROSCOPY

Raman intensity as a probe of concentration near a crystal growing in solution p 39 N89-16139

RAMJET ENGINES

Aeropropulsive characteristics of isolated combined turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p8 N88-23757 RÁTINGS

Simulator evaluation of a display for a Takeoff Performance Monitoring System

[NASA-TP-2908] p 20 N89-23469 RATIONAL FUNCTIONS

An algorithm for surface smoothing with rational splines

[NASA-TP-2708] p 65 N87-22447 REACTION KINETICS

An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion [NASA-TP-2791] n 30 N88-15846

Oxidation characteristics of Ti-14AI-21Nb ingot alloy [NASA-TP-3012] p 31 N90-25206 First International Conference on Laboratory Research for Planetary Atmospheres

p 78 N90-26744 [NASA-CP-3077] A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000

[NASA-RP-1232] p 38 N90-27064 AMSAHTS 1990: Advances in Materials Science and Applications of High Temperature Superconductors [NASA-CP-10043] p 29 N90-27792

REAL GASES Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as

occurs for a real gas [NASA-TP-2384] p 37 N87-29778 REAL TIME OPERATION

Applications and requirements for real-time simulators ground-test facilities

p 64 N87-23202 [NASA-TP-26721 The 1987 Airborne Antarctic Ozone Experiment: The

Nimbus-7 TOMS data atlas p 49 N88-20714 [NASA-RP-1201] Optimized resolved rate control of

even-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional graphics simulation p 64 N90-10618 [NASA-TP-2938]

Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation [NASA-TP-2978] p 13 N90-18378

Evaluation of various thrust calculation techniques on an F404 engine [NASA-TP-3001]

p 16 N90-25134

Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140 **REATTACHED FLOW** Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation p 3 N87-10042 [NASA-TP-2336] RECONSTRUCTION Quantitative analysis of the reconstruction performance of interpolants [NASA-TP-2688] p 65 N87-22441 Further developments in exact state reconstruction in deterministic digital control systems n 32 N88-18751 [NASA-TP-2812] More on exact state reconstruction in deterministic digital control systems p 33 N88-28177 [NASA-TP-2847] The estimation error covariance matrix for the ideal state reconstructor with measurement noise [NASA-TP-2881] A new state reconstructor for digital controls systems using weighted-average measurements [NASA-TP-2936] p 33 N89-27039 RECRYSTALLIZATION Microgravity crystallization of macromolecules: An interim report and proposal for continued research [NASA-TP-2671] p 31 N87p 31 N87-20423 RECTANGULAR PLATES Buckling postbuckling Buckling and postbuckling behavio compression-loaded isotropic plates with cutouts behavior of [NASA-TP-3024] p 47 N90-28859 **RED DWARF STARS** The M-type stars [NASA-SP-492] p 75 N88-11592 REDUCED GRAVITY Microgravity crystallization of macromolecules: An interim report and proposal for continued research p 31 N87-20423 [NASA-TP-2671] Spacelab 3 Mission Science Review [NASA-CP-2429] p 36 N87-22103 Microgravity Particle Research on the Space Station [NASA-CP-2496] p 58 N88-15354 Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion p 37 N88-15924 [NASA-CP-10001] Space Bioreactor Science Workshop [NASA-CP-2485] p 58 N88-17168 Microgravity Combustion Diagnostics Workshop [NASA-CP-10017] p 32 N89 p 32 N89-17682 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study p 59 N89-24023 [NASA-CP-10026-VOL-2] NASA Laser Light Scattering Advanced Technology Development Workshop, 1988 p 40 N90-17085 [NASA-CP-10033] Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754 REDUNDANCY A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effector [NASA-TP-2907] p 20 N89-23468 Space shuttle avionics system INASA-SP.5041 p 24 N90-25160 REDUNDANCY ENCODING Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation p 19 N87-25331 (NASA-TP-2740) REENTRY SHIELDING Finite-element reentry heat-transfer analysis of space shuttle Orbiter [NASA-TP-2657] p 37 N87-29795 REFLECTANCE Theory for computing the field scattered from a smooth inflected surface [NASA-TP-2632] p 68 N87-13264 Analytical and experimental procedures for determining propagation characteristics of millimeter-wave gallium arsenide microstrip lines [NASA-TP-2899] p 35 N89-21169 Mode-medium instability and its correction with a Gaussian reflectivity mirror INASA-TP-30231 p 68 N90-25673 REFLECTOR ANTENNAS

A simplified approach to axisymmetric dual-reflector antenna design [NASA-TP-2797] p 7 N88-16662

REFLECTORS A simplified approach to axisymmetric dual-reflector

antenna design [NASA-TP-2797] p 7 N88-16662

# REFLECTORS

**REFRACTORY MATERIALS** Workshop on Technology Development issues for the Large Deployable Reflector (LDR) [NASA-CP-2407] p 75 N88-20235 Measured and predicted root-mean-square errors in square and triangular antenna mesh facets p 45 N89-17892 INASA-TP-28961 REFRACTORY MATERIALS Nonlinear Constitutive Relations for High Temperature Applications, 1986 [NASA-CP-10010] p 44 N88-21498 REFUELING Investigation of the misfueling of reciprocating piston aircraft engines [NASA-TP-2803] p 12 N88-21144 REGENERATIVE FUEL CELLS Space Electrochemical Research and Technology (SERT) [NASA-CP-2484] p 50 N87-29914 REGIONS Geomorphology from space: A global overview of regional landforms [NASA-SP-486] p 47 N87-18139 REGOLITH Lunar Helium-3 and Fusion Power [NASA-CP-10018] p 69 N89-14842 REGRESSION ANALYSIS Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 REINFORCING FIBERS Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum [NASA-TP-2612] p 28 N87-10184 Properties of two composite materials made of toughened epoxy resin and high-strain graphite fiber [NASA-TP-2826] p 28 N88-25480 RELATIVITY Relativistic Gravitational Experiments in Space p 77 N90-19940 [NASA-CP-30461 **RELAXATION METHOD (MATHEMATICS)** An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows [NASA-TP-2953] p p 38 N90-17042 RELIABILITY Applications of the hybrid automated reliability predictor: Revised edition [NASA-TP-2760-REV] p 63 N90-11454 RELIABILITY ANALYSIS Development of confidence limits by pivotal functions for estimating software reliability [NASA-TP-2709] p 65 N87-23244 SURE reliability analysis: Program and mathematics [NASA-TP-2764] p 65 N88-17380 CARE 3 User's Workshop [NASA-CP-10011] p 61 N88-21646 Analysis and testing of the SURE program (NASA-TP-2817) p 65 N88-22653 The Fault Tree Compiler (FTC): Program and mathematics [NASA-TP-2915] p 64 N89-24815 Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 RELIABILITY ENGINEERING Electronics reliability and measurement technology [NASA-CP-2472] p 42 N87-27204 RELIEF MAPS Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat p 54 N90-20564 [NASA-RP-1233-VOL-4] REMOTE CONTROL

Wind-tunnel investigation at supersonic speeds of a emote-controlled canard missile with a free-rolling-tail brake torque system

[NASA-TP-2401] p 4 N87-17668 REMOTE SENSING

- SAGE aerosol measurements. Volume 3: January 1, 1981 to November 18, 1981 [NASA-RP-1173] p 51 N87-17417
- Geomorphology from space: A global overview of regional landforms

[NASA-SP-486] o 47 N87-18139 Space Opportunities for Tropospheric Chemistry Research

[NASA-CP-2450] p 51 N87-18248 System study of the carbon dioxide observational platform system (CO-OPS): Project overview

[NASA-TP-2696] p 23 N87-18588 Earth resources: A continuing bibliography with indexes (issue 54)

[NASA-SP-7041(54)] p 49 N87-27315

Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts p 49 N87-28162 [NASA-TP-2756]

[NASA-TP-2670] p 72 N87-28471 Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 Wind shear detection. Forward-looking sensor technology [NASA-CP-10004] p 12 N88-14970 Summary of along-track data from the Earth radiation budget satellite for several major desert regions p 56 N88-20772 [NASA-RP-1197] Earth resources: A continuing bibliography with indexes (issue 57) [NASA-SP-7041(57)] p 49 N88-23314 Reflectance spectroscopy in planetary science: Review and strategy for the future p 78 N88-24564 [NASA-SP-493] Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 Earth resources: A continuing bibliography with indexes (issue 62) [NASA-SP-7041(62)] p 50 N89-29825 Earth resources: A continuing bibliography with indexes (issue 63) [NASA-SP-7041(63)] p 50 N90-12091 Global stratospheric change: Requirements for a Very-High-Altitude. Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 Earth Science Geostationary Platform Technology [NASA-CP-3040] p 24 N90-19249 FIRE Science Results 1989 [NASA-CP-3079] p 58 N90-28224 REMOTE SENSORS Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation p 19 N87-25331 [NASA-TP-2740] Earth resources: A continuing bibliography with indexes (issue 62) [NASA-SP-7041(62)] p 50 N89-29825 Earth resources: A continuing bibliography with indexes (issue 63) [NASA-SP-7041(63)] p 50 N90-12091 REMOTELY PILOTED VEHICLES Flight control systems development and flight test experience with the HiMAT research vehicles p 20 N89-15929 [NASA-TP-2822] REPORTS NASA scientific and technical publications: A catalog of special publications, reference publications, conference publications, and technical papers, 1988 [NASA-SP-7063(03)] p p 71 N90-10782 REQUIREMENTS Practices in adequate structural design p 24 N89-18504 [NASA-TP-2893] MARA (Multimode Airborne Radar Altimeter) system documentation. Volume 1: MARA system requirements document p 39 N89-26209 [NASA-RP-1226] RESEARCH NASA scientific and technical publications: A catalog Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1977-1986 [NASA-SP-7063(01)] p 70 N87-30218 NASA scientific and technical publications: A catalog Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1987 p 70 N88-22830 [NASA-SP-7063(02)] RESEARCH AIRCRAFT In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane p 19 N87-10103 [NASA-TP-2224] Flight-determined aerodynamic derivatives of the AD-1 oblique-wing research airplane [NASA-TP-2222] p 19 N87-10871 Flight investigation of the effect of tail configuration on stall, spin, and recovery characteristics of a low-wing general aviation research airplane [NASA-TP-2644] p 13 N87-16815 Flight characteristics of the AD-1 oblique-wing research aircraft [NASA-TP-2223] p 19 N87-18570 New methods and results for quantification of lightning-aircraft electrodynamics [NASA-TP-2737] p 4 N87-21871 A perspective on 15 years of proof-of-concept aircraft development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985 p 14 N88-19467 [NASA-RP-1187] Flight control systems development and flight test experience with the HiMAT research vehicles

Calculation and accuracy of ERBE scanner

neasurement locations

[NASA-TP-2822] p 20 N89-15929

Modal control of an oblique wing aircraft p 20 N89-16845 [NASA-TP-2898] Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA) p 20 N90-17639 [NASA-TP-2965] RESEARCH AND DEVELOPMENT National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 RESEARCH FACILITIES Engineer in charge: A history of the Langley Aeronautical Laboratory, 1917-1958 [NASA-SP-4305] p 80 N87-24390 The ACEE program and basic composites research at Langley Research Center (1975 to 1986): Summary and bibliography [NASA-RP-1177] p 28 N87-29612 A perspective on 15 years of proof-of-concept aircraft development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985 INASA-RP-11871 p 14 N88-19467 A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel [NASA-TP-2796] p 7 N88-20264 RESEARCH MANAGEMENT Closed-Cycle, Frequency-Stable CO2 Laser Technology [NASA-CP-2456] p 40 N87-20522 Nuclear techniques in studies of condensed matter [NASA-RP-1195] p 68 N88-13015 NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-11 p 80 N88-25428 NASA historical data book. Volume 2: Programs and ojects 1958-1968 [NASA-SP-4012-VOL-2] p 80 N88-25429 NASA historical data book. Volume 3: Programs and projects 1969-1978 p 81 N88-25430 [NASA-SP-4012-VOL-3] **RESIN MATRIX COMPOSITES** Cyclic loads tests of carbon involute solid rocket motor outer boot ring segments [NASA-TP-2884] p 45 N89-16192 RÉSISTOJET ENGINES Compatability of dispersion-strengthened platinum with resistojet propellants [NASA-TP-2765] p 27 N88-12538 RESOURCES MANAGEMENT Issues in NASA program and project management [NASA-SP-6101] p 69 N89-12479 Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration p 78 N90-25030 INASA-CP-30701 Information resources management, 1984-1989: A bibliography with indexes [NASA-SP-7079] p 71 N90-27548 RESPONSES Annoyance response to simulated advanced turboprop aircraft interior noise containing tonal beats p 66 N87-24161 [NASA-TP-2689] RETROFITTING Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings [NASA-TP-2816] p 41 N88-18933 **REVERSED FLOW** Thrust-reverser flow investigation on a twin-engine transport [NASA-TP-2856] p 9 N89-14213 REVISIONS Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane [NASA-TP-2691] p 14 N87-23614 Influence of base modifications on in-flight base drag in the presence of jet exhaust for Mach numbers from 0.7 to 1.5 [NASA-TP-2802] p 37 N88-18881 Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings [NASA-TP-2816] p 41 N88-18933 REYNOLDS NUMBER Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031

CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-CP-3052] p 22 N90-17647 RIGID ROTORS

An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter rotor in hover [NASA-TP-2546]

p 7 N88-20257

A-40

The effects of structural flap-lag and pitch-lag coupling on soft inplane hingeless rotor stability in hove [NASA-TP-30021 p 12 N90-28503 RING STRUCTURES

Application of Newton's method to the postbuckling of rings under pressure loadings

[NASA-TP-2941] p 46 N89-29811 RINGS

Revised NASA axially symmetric ring model for coupled-cavity traveling-wave tubes

[NASA-TP-2675] p 35 N87-22923 RIVERS

- Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401
- RIVETS
- Fastener design manual INASA-RP-12281 p 42 N90-18740
- ROBOT CONTROL A generalized method for automatic downhand and wirefeed control of a welding robot and positione
- p 32 N88-17869 [NASA-TP-2807] Optimized resolved rate control of seven-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional
- graphics simulation [NASA-TP-2938] p 64 N90-10618
- ROBOTICS The 21st Aerospace Mechanisms Symposium [NASA-CP-2470] p 43 N8 p 43 N87-29858
- Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360
- First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206
- A generalized method for automatic downhand and wirefeed control of a welding robot and positioner p 32 N88-17869 [NASA-TP-2807]
- Second Conference on Artificial Intelligence for Space Applications
- [NASA-CP-3007] p 63 N88-29351 Experiments in Planetary and Related Sciences and the Space Station
- [NASA-CP-2494] p 72 N89-14998 Fourth Conference on Artificial Intelligence for Space Applications
- [NASA-CP-3013] p 63 N89-15549 Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988)
- p 61 N89-19817 rate cont-[NASA-CP-3019] p 61 N89-Optimized resolved rate control seven-degree-of-freedom Laboratory Telero Telerobotic Manipulator (LTM) with application to three-dimensional graphics simulation
- [NASA-TP-2938] p 64 N90-10618 Visual Information Processing for Television and Telerobotics
- Teleropoucs
   p 40
   N90-16204

   [NASA-CP-3053]
   p 40
   N90-16204

   Third
   Annual
   Workshop
   on

   Automation
   and Robotics (SOAR 1989)
   p 62
   N90-25503
- Fifth Conference on Artificial Intelligence for Space Applications
- [NASA-CP-3073] p 63 N90-27275 ROBOTS
- A generalized method for automatic downhand and wirefeed control of a welding robot and positioner p 32 N88-17869 [NASA-TP-2807]
- Visual Information Processing for Television and Telerobotics [NASA-CP-3053]
- NASA-CP-3053] p 40 N90-16204 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) p 62 N90-25503 [NASA-CP-3059]
- ROCKET ENGINE CASES Lightweight structural design of a bolted case joint for
- the space shuttle solid rocket motor [NASA-TP-2851] p 25 N89-12580
- ROCKET ENGINE DESIGN Preliminary design of turbopumps and related
- machinery [NASA-RP-1170] p 3 N87-17665 Advanced Earth-to-Orbit Propulsion Technology 1986,
- volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626
- ROCKET ENGINES Experimental evaluation of a tuned electromagnetic
- damper for vibration control of cryogenic turbopump rotors p 18 N90-23403 [NASA-TP-3005]
- ROCKET NOZZLES
- Experimental thrust performance of a high-area-ratio rocket nozzle [NASA-TP-2720] p 26 N87-20381

- Comparison of theoretical and experimental thrust performance of a 1030:1 area ratio rocket nozzle at a chamber pressure of 2413 kN/m2 (350 psia) [NASA-TP-2725] p 26 p 26 N87-25423
- Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle
- p 27 N87-25424 INASA-TP-27261 Aeropropulsive characteristics of isolated combined
- turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p.8 N88-23757 p 8 N88-23757 ROCKET PROPELLANTS
- Compatability of dispersion-strengthened platinum with resistoiet propellants
- [NASA-TP-2765] p 27 N88-12538 ROCKET THRUST
- Experimental thrust performance of a high-area-ratio rocket nozzle [NASA-TP-2720] p 26 N87-20381
- Comparison of theoretical and experimental thrust performance of a 1030:1 area ratio rocket nozzle at a chamber pressure of 2413 kN/m2 (350 psia)
- p 26 N87-25423 [NASA-TP-2725] ROLL
- Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with a secondary-nozzle thrust reverser
- [NASA-TP-2834] p 8 N88-29752 ROLLER BEARINGS
- Comparison of predicted and measured temperatures of UH-60A helicopter transmission
- (NASA-TP-2011) p 41 N89-24607 Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model n 42 N90-28066 p 42 N90-28066 **BOLLING MOMENTS**
- Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail hrake torque system
- [NASA-TP-2401] p 4 N87-17668 ROOT-MEAN-SQUARE ERRORS
- Measured and predicted root-mean-square errors in square and triangular antenna mesh facets
- [NASA-TP-2896] p 45 N89-17892 ROTARY WING AIRCRAFT
- NASA/Army Rotorcraft Technology. Volume 3: Systems Integration, Research Aircraft, and Industry [NASA-CP-2495-VOL-3] p 1
- p 1 N88-16650 A perspective on 15 years of proof-of-concept aircraft development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985
- [NASA-RP-1187] p 14 N88-19467 Rotorcraft flight-propulsion control integration: An
- eclectic design concept p 19 N88-19475 [NASA-TP-2815]
- Stereopsis cueing effects on hover-in-turbulence performance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004
- ROTARY WINGS
- Helicopter main-rotor noise: Determination of source contributions using scaled model data p 67 N88-26907
- [NASA-TP-2825] Effect of advanced rotorcraft airfoil sections on the hover erformance of a small-scale rotor model
- p 10 N89-24264 [NASA-TP-2832] Aerodynamic characteristics of two rotorcraft airfoils
- designed for application to the inboard region of a main rotor blade p 11 N90-24239 [NASA-TP-30091
- The effects of structural flap-lag and pitch-lag coupling on soft inplane hingeless rotor stability in hover p 12 N90-28503
- [NASA-TP-3002] ROTATING BODIES
  - Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser [NASA-TP-2624] p 3 N87-12541
- p 3 N87-12541 Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and
- space shuttle/space station experiments p 33 N90-25255 [NASA-TP-3030]
- ROTOR AERODYNAMICS Vibration characteristics of OH-58A helicopter main rotor
- transmission p 41 N87-20555 [NASA-TP-2705]
- Rotordynamic Instability Problems in High-Performance Turbomachinery, 1986
- [NASA-CP-2443] p 41 N87-22199 NASA/Army Rotorcraft Technology. Volume 1:
- Aerodynamics, and Dynamics and Aeroelasticity [NASA-CP-2495-VOL-1] p 1 N8 p 1 N88-16625
- NASA/Army Rotorcraft Technology. Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics
- [NASA-CP-2495-VOL-2] p 1 N88-16632

SALT SPRAY TESTS directivity and retreatino-side

- Advancing-side interactions of model rotor blade-vortex interaction noise [NASA-TP-2784] p 67 N88-22710 Integrated Technology Rotor Methodology Assessment
- Workshop [NASA-CP-10007] p 2 N88-27148
- Tip aerodynamics and acoustics test: A report and data
- [NASA-RP-1179] p 9 N89-17579 Rotordynamic Instability Problems in High-Performance
- Turbomachinery, 1988 [NASA-CP-3026] p 41 N89-22891 ROTOR BLADES (TURBOMACHINERY)
- Turbine Engine Hot Section Technology, 1984
- p 43 N87-11180 [NASA-CP-2339] Design of 9.271-pressure-ratio 5-stage core compressor and overall performance for first 3 stages [NASA-TP-2597] p 17 N87-17699
- Correlation of helicopter impulsive noise from blade-vortex interaction with rotor mean inflow
- p 66 N87-18399 [NASA-TP-2650] Low-cost FM oscillator for capacitance type of blade
- tip clearance measurement system [NASA-TP-2746] p 17 N87-24481
- Laser anemometer measurements in a transonic axial-flow fan rotor [NASA-TP-2879] p 38 N90-11245
- ROTOR BODY INTERACTIONS
- Integrated Technology Rotor Methodology Assessment Workshop [NASA-CP-10007]
- p 2 N88-27148 ROTOR SPEED
- Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump rotors
- [NASA-TP-3005] p 18 N90-23403 ROTORCRAFT AIRCRAFT
- Effect of advanced rotorcraft airfoil sections on the hover performance of a small-scale rotor model [NASA-TP-2832] p 10 N89-24264
- Aerodynamic characteristics of two rotorcraft airfoils designed for application to the inboard region of a main rotor blade
- [NASA-TP-3009] p 11 N90-24239 ROTORS
- Transonic flow analysis for rotors. Part 2: Three-dimensional, unsteady, full-potential calculation [NASA-TP-2375-PT-2] p3 N87-10841
- Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results [NASA-TP-2658] p 4 N87-18537
- Preliminary structural design of composite main rotor blades for minimum weight
- [NASA-TP-2730] p 28 N87-25435 Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump

High-pressure calorimeter chamber tests for liquid

(NASA-TP-2862) p 27 N89-15979 Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model [NASA-TP-3017] p 42 NR0 and

Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various

runway surface types and conditions. A summary of test

results from joint FAA/NASA Runway Friction Program

Langley Aircraft Landing Dynamics Facility [NASA-RP-1189] p 21 N87-29544

S

SAGE aerosol measurements. Volume 3: January 1,

Effect of ephemeris errors on the accuracy of the

Stress corrosion study of PH13-8Mo stainless steel using

computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2

FAA/NASA En Route Noise Symposium

oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N85

p 18 N90-23403

p 67 N90-24853

p 16 N90-15902

p 51 N87-17417

p 65 N89-16415

p 30 N89-26976

A-41

rotors

ROUTES

[NASA-TP-3005]

[NASA-CP-30671

RUNWAY CONDITIONS

[NASA-TP-2917]

SAGE SATELLITE

[NASA-RP-1173]

instruments

[NASA-TP-2866]

SALT SPRAY TESTS

[NASA-TP-2934]

1981 to November 18, 1981

the Slow Strain Rate Technique

RUNWAYS

**RP-1 ROCKET PROPELLANTS** 

# SAMPLING

SAMPLING	SCATTERING AMPLITUDE
A synchronous data analyzer for the Minimum Delay Data Format (MDDF) and Launch Trajectory Acquisition	Eikonal solutions to optical model coupled-channel
System (LTAS)	[NASA-TP-2830] p 68 N88-30402
[NASA-TP-2743] p 34 N87-24590	SCATTERING CROSS SECTIONS
SANDWICH STRUCTURES	Doubly differential cross sections for galactic heavy-ion
aluminum honeycomb core composite panels	(NASA,TP,2659) 0.68 N87-17487
[NASA-TP-3042] p 29 N90-27876	Kaon-nucleus scattering
SATELLITE ALTIMETRY	[NASA-TP-2920] p 80 N89-25103
Surface topography of the Greenland Ice Sheet from satellite radar altimetry	Annihilation in Gases and Galaxies
[NASA-SP-503] p 54 N90-22850	[NASA-CP-3058] p 66 N90-18957
SATELLITE ATTITUDE CONTROL	SCHEDULING Third Conference on Artificial Intelligence for Space
Flight Mechanics/Estimation Theory Symposium, 1989	Applications, part 1
[NASA-CP-3050] p 23 N90-13413 SATELLITE COMMUNICATION	[NASA-CP-2492-Pt-1] p 62 N88-16360
Unique bit-error-rate measurement system for satellite	Simulation evaluation of TIMER, a time-based, terminal
communication systems	air traffic, flow-management concept
[NASA-TP-2699] p 33 N87-20448	A knowledge-based tool for multilevel decomposition of
design. A summary of propagation impairments on 10 to	a complex design problem
100 GHz satellite links with techniques for system	[NASA-TP-2903] p 63 N89-23181
design	Payload crew utilization for spacelab missions
[NASA-RP-1082(04)] p 34 N89-17060	[NASA-TP-2976] p 24 N90-14256
Into the thermosphere: The atmosphere explorers	The 1990 Goddard Conterence on Space Applications of Additional Intelligence
[NASA-SP-490] p 52 N88-18084	[NASA-CP-3068] p 64 N90-22294
SATELLITE IMAGERY	SCHROEDINGER EQUATION
NASA/MSFC FY-85 Atmospheric Processes Research Review	Kaon-nucleus scattering
[NASA-CP-2402] p 55 N87-13043	[NASA-TP-2920] p 80 N89-25103
Arctic Sea ice, 1973-1976: Satellite passive-microwave	SCREEN EFFECT Sensitivity of E-106B leading-edge-vortex images to
observations	flight and vapor-screen parameters
[NASA-SP-489] p 58 N87-24870	[NASA-TP-2818] p 8 N88-23760
Into the thermosphere: The atmosphere explorers	SCREENS
[NASA-SP-490] p 52 N88-18084	Experimental evaluation of honeycomb/screen
SATELLITE OBSERVATION	Lewis Research Center's altitude wind tunnel
Limb-darkening functions as derived from along-track	[NASA-TP-2692] p 21 N87-23662
1985	SEA ICE
[NASA-RP-1214] p 56 N89-17374	Satellite radar altimetry over ice. Volume 1: Processing
Comparison of satellite-derived dynamical quantities for	INASA-RP-1233-VOL-11 p. 54 N90-20562
[NASA-CP-3044] n 53 N89-25540	SeaRISE: A Multidisciplinary Research Initiative to
SATELLITE POWER TRANSMISSION	Predict Rapid Changes in Global Sea Level Caused by
Second Beamed Space-Power Workshop	Collapse of Marine Ice Sheets
[NASA-CP-3037] p 27 N90-10140	[NASA-CP-3075] p 48 N90-22824
Scientific and Operational Requirements for TOMS	SeaRISE: A Multidisciplinary Research Initiative to
Data	Predict Rapid Changes in Global Sea Level Caused by
[NASA-CP-2497] p 47 N88-13774	Collapse of Marine Ice Sheets
NIMDUS-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide	[NASA-CP-3075] p 48 N90-22824
[NASA-RP-1221] p 53 N89-26304	Space shuttle main engine high pressure fuel pump aft
SATELLITE TRANSMISSION	platform seal cavity flow analysis
Propagation effects on satellite systems at frequencies	[NASA-TP-2685] p 36 N87-17000
[NASA-RP-1108/2] n 34 N88-14226	Straight cylindrical seal for high-performance
Diode laser satellite systems for beamed power	[NASA-TP-1850] p 36 N87-23936
transmission	Rotordynamic Instability Problems in High-Performance
[NASA-TP-2992] p 40 N90-24585	Turbomachinery, 1988
Geomorphology from space: A global overview of	SFASAT SATELLITES
regional landforms	Satellite radar altimetry over ice. Volume 1: Processing
(NASA-SP-486) p 47 N87-18139	and corrections of Seasat data over Greenland
SATURN	[NASA-RP-1233-VOL-1] p 54 N90-20562 Satollite radar altimotor over ice. Volume 2: Usere' duide
spectroscopic measurements	for Greenland elevation data from Seasat
[NASA-RP-1213] p 78 N89-16709	[NASA-RP-1233-VOL-2] p 54 N90-20563
SATURN ATMOSPHERE	Satellite radar altimetry over ice. Volume 4: Users' guide
The Jovian Atmospheres	INASA-RP-1233-VOI-41 p 54 N90-20564
[NASA-CP-2441] p // N8/-1/598	SECONDARY EMISSION
Evaluation of a scale-model experiment to investigate	Secondary electron emission characteristics of
long-range acoustic propagation	Untreated and ion-textured titanium
[NASA-TP-2748] p 66 N88-11450	[NA3A-17-2302] p 00 N00-17030
	Secondary electron emission characteristics of
Flight control systems development and flight test	Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] n 20 NR9.15929	Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS	Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Second features of the Colorado Plateau: A comparative
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping leatures of the Colorado Plateau: A comparative planetary geology field guide
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 SEMICONDUCTOR LASERS
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 SCANNING	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 SEMICONDUCTOR LASERS Diode laser satellite systems for beamed power transmission
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 SCANNING Calculation and accuracy of ERBE scanner	Secondary         electron         emission         characteristics         of           motybdenum-masked, ion-textured         OFHC copper         [NASA-TP-2967]         p 31         N90-15211           SEEPAGE         Sapping features of the Colorado Plateau:         A comparative planetary geology field guide         [NASA-SP-491]         p 49         N89-10401           SEMICONDUCTOR LASERS         Diode laser satellite systems for beamed power transmission         [NASA-TP-2992]         p 40         N90-24585
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 SCANNING Calculation and accuracy of ERBE scanner measurement locations	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 SEMICONDUCTOR LASERS Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24585 SEMISPAN MODELS
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 SCANNING Calculation and accuracy of ERBE scanner measurement locations [NASA-TP-2670] p 72 N87-28471 Effect of enhermetic across on the accuracy of the	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 SEMICONDUCTOR LASERS Diode laser satellite systems for beamed power transmission [NASA-TP-292] p 40 N90-24585 SEMISPAN MODELS Evaluation of installed performance of a winotipomounted nusber turborop on a semisena wino
Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 SCANNERS Limb-darkening functions as derived from along-track operation of the ERBE scanning radiometer for January 1985 [NASA-RP-1214] p 56 N89-17374 SCANNING Calculation and accuracy of ERBE scanner measurement locations [NASA-TP-2670] p 72 N87-28471 Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar	Secondary electron emission characteristics of motybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 SEEPAGE Sapping leatures of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 SEMICONDUCTOR LASERS Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24565 SEMISPAN MODELS Evaluation of installed performance of a wing-tip-mounted pusher turboprop on a semispan wing [NASA-TP-2739] p 14 N87-26041

p 65 N89-16415

features of the Colorado Plateau: A comparative eology field guide p 49 N89-10401 4911 CTOR LASERS aser satellite systems for beamed power חכ 2992] p 40 N90-24585 NODELS on of installed performance of а ounted pusher turboprop on a semispan wing -2739] p 14 N87-26041 and theoretical aerodynamic ental characteristics of a high-lift semispan wing model [NASA-TP-2990] p 11 N90-20046

# SENSITIVITY Sensitivity Analysis in Engineering [NASA-CP-2457] p 43 N87-18855 Shape sensitivity analysis of wing static aeroelastic characteristics [NASA-TP-2808] p 15 N88-22031 SEPARATED FLOW A review of high-speed, convective, heat-transfer computation methods [NASA-TP-2914] p 38 N89-27116 SERVICE LIFE omether aided decine analysis of 57-mm 9 S 5 \$ S S S S S p 36 N87-23936 \* S S S S S s S S

andular-contact chyodenic turbonu	mn hearings
INASA-TP-28161	n 41 N88-18933
Liquid lubrication in space	p
[NASA-RP-1240]	p 42 N90-28063
HADOWS	•
Effects of aerosols and sur	rface shadowing on
bidirectional reflectance measurem	ents of deserts
[NASA-TP-2756]	p 49 N87-28162
SHAFTS (MACHINE ELEMENTS)	
Experimental evaluation of a tu	ned electromagnetic
damper for vibration control of	cryogenic turbopump
rotors	
[NASA-TP-3005]	p 18 N90-23403
SHAPED CHARGES	
Effects of variables upon pyrotec	hnically induced shock
response spectra, part 2	
[NASA-TP-2872]	p 45 N89-13814
SHARP LEADING EDGES	
Applicability of linearized-theory a	attached-flow methods
to design and analysis of flap syst	ems at low speeds for
thin swept wings with sharp leading	g edges
[NASA-TP-2653]	p3 N87-15174
SHEAR FLOW	
Experimental validation of a two-	dimensional shear-flow
model for determining acoustic imp	bedance
[NASA-TP-2679]	p 66 N87-20798
Influence of wind shear o	n the aerodynamic
characteristics of airplanes	
[NASA-1P-2827]	p 12 N88-26344
A spectral collocation solution	to the compressible
stability eigenvalue problem	- 0 - 100 - 00 - 0
INASA-IP-2000	рэ мө <del>9</del> -12543
Medaling and analysis of the an	and abuttle race and
Modeling and analysis of the sp	ace snuttle nose-gear
the with semianarytic tinite element	15 - 10 NOO 10505
	p 42 N90-19595
Computational Mathada for Sta	otural Machanica and
Computational Methods for Siru	ictural mechanics and
INASA CD 2024 DT-11	0.46 N89-24638
ENCK HEATING	p 40 1803-24038
A review of high-speed conv	vective heat-transfer
computation methods	ective, near-dansie
INA3A-1F-29141	n 38 N89-27116
HOCK LAYERS	p38 N89-27116
Gas-iet and tangent-slot film coo	p 38 N89-27116
(INCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7	p 38 N89-27116 ling tests of a 12.5 deg
Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806
[NASA-TF-2314] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806
(NASA-TF-2314) SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TF-2786) SHOCK LOADS Effects of variables upon pyrotec	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock
INASA-TP-2314] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786) SHOCK LOADS Effects of variables upon pyrotec response spectra	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock
[NASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921
[NASA-TF-2314] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921
[INASA-IF-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra Effects of variables upon pyrotec response spectra	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock
[NASA-TP-2814] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921
[NASA-TF-2314] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK TESTS	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921
[INSA-IF-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1
[NASA-TP-2914] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609
[INASA-TP-2914] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [INASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [INASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609
INASA-TP-214] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786) SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a
[INASA-TP-2814] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020
INASA-TP-2814) SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-TP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid meti	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interaction	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical cion
[INSA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524
INASA-TP-2914] SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-TP-2804 >VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998] HOCK WAVE PROPAGATION	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524
INASA-TP-2814] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-298] SHOCK WAVE PROPAGATION A second-order accurate kinetic	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method
[INSA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [INSA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [INSA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [INSA-TP-2603] HOCK TESTS The 58th Shock and Vibration [INSA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [INSA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interat [INSA-TP-2988] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [INSA-TP-2513]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786) SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid mel simulation of a shock-vortex interat (NASA-TP-2898] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2613] HOCK WAVES	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interar {NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2613] HOCK WAVES Shock structure and noise of supe	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic [NASA-TP-2613] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated
INASA-TP-2786] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2613] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [NASA-TP-2785]	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786) SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interat [NASA-TP-298] SHOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2513] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [NASA-TP-2785] HORT HAUL AIRCRAFT	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical citon p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510
<ul> <li>[INSA-IP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INSA-IP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-IP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-IP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-IP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration</li> <li>[INASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION</li> <li>Weak-wave analysis of shocl slipstream</li> <li>[INASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2998]</li> <li>HOCK WAVE PROPAGATION</li> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-TP-2785]</li> <li>Shock Structure and noise of supe flight to Mach 0.4</li> <li>[INASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT</li> <li>Longitudinal stability and control</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N87-12921 induced shock p 43 N87-12921 symposium, volume 1 p 43 N87-12921 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the
<ul> <li>[INASA-TP-2914]</li> <li>SHOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [INASA-TP-2786]</li> <li>SHOCK LOADS Effects of variables upon pyrotec response spectra [INASA-TP-2603]</li> <li>SHOCK SPECTRA Effects of variables upon pyrotec response spectra [INASA-TP-2603]</li> <li>SHOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [INASA-TP-2988]</li> <li>A time-accurate adaptive grid mel simulation of a shock-vortex interat [INASA-TP-2988]</li> <li>SHOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [INASA-TP-2785]</li> <li>HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [INASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA)
<ul> <li>[INASA-TP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-TP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-TP-2603]</li> <li>SHOCK TESTS The 58th Shock and Vibration - [INASA-TP-2888-VOL-1]</li> <li>SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream</li> <li>[INASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interad [INASA-TP-2898]</li> <li>SHOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-TP-2613]</li> <li>HOCK WAVES</li> <li>Shock structure and noise of supe flight to Mach 0.4</li> <li>[INASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft [INASA-TP-2865]</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical citon p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-CP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact [NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2785] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [NASA-TP-2985] HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft [NASA-TP-2965] HORT HAUL AIRCRAFT	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639
<ul> <li>[INASA-IP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-IP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-IP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-IP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-IP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration</li> <li>[INASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION</li> <li>Weak-wave analysis of shocl slipstream</li> <li>[INASA-IP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-IP-2998]</li> <li>SHOCK WAVE PROPAGATION</li> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-IP-2785]</li> <li>SHOck WAVES</li> <li>Shock structure and noise of supe flight to Mach 0.4</li> <li>[INASA-IP-2785]</li> <li>HORT HAUL AIRCRAFT</li> <li>Longitudinal stability and control Quiet Short-Haul Research Aircraft</li> <li>[INASA-IP-2965]</li> <li>HORT TAKEOFF AIRCRAFT</li> <li>Large-scale</li> <li>static</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of
INASA-TP-2786] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 [NASA-TP-2786] SHOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] SHOCK SPECTRA [NASA-TP-2603] SHOCK TESTS The 58th Shock and Vibration [NASA-TP-2848-VOL-1] SHOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interat [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interat [NASA-TP-298] SHOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-2613] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [NASA-TP-2785] HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft [NASA-TP-2965] HORT TAKEOFF AIRCRAFT Large-scale static Circulation-control-wing concepts	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper
INASA-TP-2914] HOCK LAYERS Gas-jet and tangent-slot film coo cone at Mach number of 6.7 (NASA-TP-2786] HOCK LOADS Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA Effects of variables upon pyrotec response spectra [NASA-TP-2603] HOCK SPECTRA [NASA-TP-2603] HOCK TESTS The 58th Shock and Vibration [NASA-TP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2488-VOL-1] HOCK WAVE INTERACTION Weak-wave analysis of shocl slipstream [NASA-TP-2848] A time-accurate adaptive grid met simulation of a shock-vortex interact {NASA-TP-2998] HOCK WAVE PROPAGATION A second-order accurate kinetic for inviscid compressible flows [NASA-TP-265] HOCK WAVES Shock structure and noise of supe flight to Mach 0.4 [NASA-TP-2785] HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft [NASA-TP-2865] HORT TAKEOFF AIRCRAFT Large-scale static circulation-control-wing concepts surface-blowing aircraft	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N87-12921 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper
<ul> <li>[INASA-TP-2814]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-TP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration</li> <li>[INASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION</li> <li>Weak-wave analysis of shocl slipstream</li> <li>[INASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2848)</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2848)</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2848)</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2851)</li> <li>HOCK WAVE PROPAGATION</li> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-TP-285]</li> <li>HORT HAUL AIRCRAFT</li> <li>Longitudinal stability and control Quiet Short-Haul Research Aircraft (INASA-TP-2865)</li> <li>HORT TAKEOFF AIRCRAFT</li> <li>Large-scale static circulation-control-wing concepts surface-blowing aircraft (INASA-TP-2884)</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper p 13 N87-15959
<ul> <li>[INASA-TP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-TP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration [INASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION</li> <li>Weak-wave analysis of shocl slipstream</li> <li>[INASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interat (INASA-TP-298]</li> <li>SHOCK WAVE PROPAGATION</li> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-TP-2613]</li> <li>HOCK WAVES</li> <li>Shock structure and noise of supe flight to Mach 0.4</li> <li>[INASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT</li> <li>Longitudinal stability and control Quiet Short-Haul Research Aircraft [INASA-TP-2965]</li> <li>HORT TAKEOFF AIRCRAFT</li> <li>Large-scale static circulation-control-wing concepts surface-blowing aircraft [INASA-TP-2684]</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N87-12921 symposium, volume 1 p 43 N87-1573 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper p 13 N87-15959
<ul> <li>[INASA-TP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-TP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-TP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration         <ul> <li>[NASA-TP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration             <li>[NASA-TP-2488-VOL-1]</li> </li></ul> </li> <li>HOCK WAVE INTERACTION         <ul> <li>Weak-wave analysis of shocl slipstream</li> <li>[NASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (NASA-TP-2898]</li> <li>HOCK WAVE PROPAGATION             <ul> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[NASA-TP-2785]</li> <li>HOCK WAVES</li> <li>Shock structure and noise of supe flight to Mach 0.4</li> <li>[NASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT             <ul> <li>Longitudinal stability and control Quiet Short-Haul Research Aircraft</li> <li>[NASA-TP-2855]</li> <li>HORT TAKEOFF AIRCRAFT             <ul> <li>Large-scale static</li> <li>circulation-control-wing concepts</li> <li>surface-blowing aircraft</li> <li>[NASA-TP-2684]</li> </ul> </li> </ul></li></ul></li></ul></li></ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-12921 Symposium, volume 1 p 43 N88-13609 k interaction with a p 8 N89-10020 thod and the numerical ction p 61 N90-21524 -theory-based method p 36 N87-18783 risonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper p 13 N87-15959
<ul> <li>[INASA-TP-2914]</li> <li>SHOCK LAYERS</li> <li>Gas-jet and tangent-slot film coo cone at Mach number of 6.7</li> <li>[INASA-TP-2786]</li> <li>SHOCK LOADS</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>Effects of variables upon pyrotec response spectra</li> <li>[INASA-TP-2603]</li> <li>SHOCK SPECTRA</li> <li>[INASA-TP-2603]</li> <li>SHOCK TESTS</li> <li>The 58th Shock and Vibration</li> <li>[INASA-CP-2488-VOL-1]</li> <li>SHOCK WAVE INTERACTION</li> <li>Weak-wave analysis of shocl slipstream</li> <li>[INASA-TP-2848]</li> <li>A time-accurate adaptive grid met simulation of a shock-vortex interact (INASA-TP-2998]</li> <li>HOCK WAVE PROPAGATION</li> <li>A second-order accurate kinetic for inviscid compressible flows</li> <li>[INASA-TP-2785]</li> <li>HORT HAUL AIRCRAFT Longitudinal stability and control Quiet Short-Haul Research Aircraft (INASA-TP-2985)</li> <li>HORT HAUL AIRCRAFT Large-scale static circulation-control-wing concepts surface-blowing aircraft [INASA-TP-2684]</li> </ul>	p 38 N89-27116 ling tests of a 12.5 deg p 39 N90-28806 hnically induced shock p 43 N87-12921 hnically induced shock p 43 N87-12921 Symposium, volume 1 p 43 N87-18783 rsonic jets in simulated p 67 N88-16510 characteristics of the (QSRA) p 20 N90-17639 investigation of applied to upper p 13 N87-15959

instruments [NASA-TP-2866]

f	high-performance aircraft invoctigat	orlin t	speed nign
14	- x 22-foot subsonic tunnel	equinu	ne Langley
[N	IASA-TP-2796]	р7	N88-20264
	Aerodynamics in ground effect and	predic	ted landing
gre	ound roll of a fighter config	uration	n with a
se	condary-nozzle thrust reverser	_	
ĮN	IASA-1P-2834 j	p 8	N88-29752
C.N.	Ine 1987 Ground Vortex Workshop	- 0	NR0 10840
[IN	Roward lift sizeraft toobaology	þэ	1069-10649
ſN	ASA-SP-5011	n 15	NOD-12580
	Dynamic ground-effect measurements	sonthe	E-15 STOL
an	d Maneuver Technology Demor	strato	(S/MTD)
co	nfiguration		(
[N	ASA-TP-3000]	p 11	N90-22531
SHO	RT WAVE RADIATION		
	Angular radiation models for Earth-at	mosph	ere system.
	Sume 1: Shortwave radiation	- 50	N00 07677
ni) Nua	T DEENING	h 90	1100-27077
5110	Shot peening for Ti-6AI-4V allov c	ompre	ssor blades
[N	IASA-TP-2711]	p 43	N87-20566
SIDE	ESLIP		
	Effects of winglets on a first-generation	ation je	et transport
wi	ng. 7: Sideslip effects on winglet lo	ads ar	nd selected
WI	Ing loads at subsonic speeds for a ful	II-span	MODEI
eioi Ini		γï	1400-16301
5101	Frequency domain laser velocimeter	sional	processor:
A	new signal processing scheme	019110	p.0000000.
{N	IASA-TP-2735)	p 40	N87-27994
	Analog signal conditioning	for	flight-test
in	strumentation	- 47	NO7 00500
1 n	Representation of the Scientific D	p 1/	N87-29533
w	arkshop		ompression
- IN	ASA-CP-30251	p 63	N89-22332
	Fluctuating pressures measure	d b	eneath a
hi	gh-temperature, turbulent boundary la	iyer on	a flat plate
at	Mach number of 5		
	IASA-TP-2947	p 67	N90-10680
51G1	NAL REFLECTION	nlicatio	n to model
he	elicopter acoustic data	piloatio	
[N	IASA-TP-2586]	p 66	N87-17479
SILI	CON		
	Cosmic ray beaux ion LET manning for		
	Cosmic ray neavy ion LET mapping to	ralumii	num, silicon,
an	d tissue targets	ratumii	NR7 25094
an [N	ind tissue targets IASA-RP-1180] Indentation plasticity and fracture in t	r alumir p 79 silicon	num, silicon, N87-25984
an {N	Indentation plasticity and fracture in IASA-RP-1180] Indentation plasticity and fracture in IASA-TP-2863]	p 79 silicon p 30	num, silicon, N87-25984 · N89-10996
an (N (N SILI	Identical frequencies (ASA-RP-1180) Indentation plasticity and fracture in (ASA-TP-2663) CON CARBIDES	p 79 silicon p 30	num, silicon, N87-25984 · N89-10996
an (N (N SILI	Indentation plasticity and fracture in IASA-RP-1180] Indentation plasticity and fracture in IASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti	r alumii p 79 silicon p 30 -15-3	num, silicon, N87-25984 · N89-10996 composite
an {N [N SILI Sy	Cosmic Tay nearly for E2 + mapping for dissue targets IASA-RP-1180] Indentation plasticity and fracture in : IASA-TP-2863] <b>CON CARBIDES</b> Heat treatment study of the SiC/Ti stem	p 79 silicon p 30 -15-3	num, silicon, N87-25984 · N89-10996 composite
an (N (N SILI SY [N	Indentation plasticity and fracture in IASA-RP-1180] Indentation plasticity and fracture in IASA-TP-2863] <b>CON CARBIDES</b> Heat treatment study of the SiC/Ti stem IASA-TP-2970] <b>/FB</b>	p 79 silicon p 30 -15-3 p 29	num, silicon, N87-25984 · N89-10996 composite N90-19302
an (N SILI SILI SILI SILN	A since a provide the second s	r alumir p 79 silicon p 30 -15-3 p 29 pmic o	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from
an (N SILI SILI SJLN SILN	A structure transfer with the transfer of the second structure in the second s	r alumii p 79 silicon p 30 -15-3 p 29 omic o	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from
an [N SILI SILI SILN SILN	Cosmic Tay Teachy for L2 - Inapping for dissue targets IASA-RP-1180] Indentation plasticity and fracture in IASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti istem IASA-TP-2970] /ER Electron stimulated desorption of at ver IASA-TP-2668]	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629
an (N SILI SILI SILN SILN SIL	Cosmic Tay Teachy for E2 + Inapping for dissue targets IASA-RP-1180] Indentation plasticity and fracture in a IASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti istem IASA-TP-2970] /ER Electron stimulated desorption of at ver IASA-TP-2668] Permeation of oxygen through high	r atumir p 79 silicon p 30 -15-3 p 29 omic o p 29 purity,	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain
an (N SILI SILI SILN SILN SILN SILN	Cosmic Tay Teacy for E2 + Inapping for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP 2755)	r alumir p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024
an [N [N SILI [N SILN [N sill [N [N	A structure for the second structure in the second str	p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30	N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed
an (N SILI SILI SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL) (N) (N) (N) (N) (N) (N) (N) (N) (N) (N	A structure angets IASA-RP-1180] Indentation plasticity and fracture in a IASA-TP-2663] <b>CON CARBIDES</b> Heat treatment study of the SiC/Ti stem IASA-TP-2970] <b>/ER</b> Electron stimulated desorption of at ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver	p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg	N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed
an (N SILI (N SILI (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL (N SIL) (N) (N) (N) (N) (N) (N) (N) (N) (N) (N	Cosmic Tay Teachy for L2 + Inappling for dissue targets [ASA-RP-1180] Indentation plasticity and fracture in : [ASA-TP-2663] <b>CON CARBIDES</b> Heat treatment study of the SiC/Ti stem [ASA-TP-2970] <b>/ER</b> [Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2830]	r atumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67	N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022
an (N SILI (N SILI (N SIL (N SII (N SIII)	Cosmic Tay Teachy for L2 + Inapping for dissue targets IASA-RP-1180] Indentation plasticity and fracture in a IASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti istem IASA-TP-2970] /ER Electron stimulated desorption of at ver IASA-TP-2568] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2930] ULATION	r atumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022
an (N SILI SILI (N SIL (N SIL (N SIM	Cosmic Tay Teacy for L2 + Inappling for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2930] ULATION Fourteenth Space Simulation Confe December and December in Space	r atumii p 79 silicon p 30 -15-3 p 29 purity, p 29 purity, p 30 n oxyg p 67 rence:	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for
an (N SILI (N SILI (N SIL) SIL (N SIL) SIL (N SIL (N SIM) (N SIM)	Cosmic Tay Teachy for L2 + Inapping for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2930] ULATION Permeanth Presence in Space Permanent Presence in Space	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829
an (N SILI SILI SILI SILI SILI SILI SILI SIL	Cosmic Tay Test (International States) Indentation plasticity and fracture in a IASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2970] /ER Electron stimulated desorption of ati ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2930] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space IASA-CP-2446] A simulator investigation of the use	r alumii p 79 siliicon p 30 -15-3 p 29 pomic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of diai	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 tal data link
an [N [N [N [N [N [N [N [N [N [N [N [N [N	Cosmic Tay Teachy for L2 + Inappling for dissue targets [ASA-RP-1180] Indentation plasticity and fracture in : [ASA-TP-2663] <b>CON CARBIDES</b> Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2930] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space [ASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin	r alumii p 79 siliicon p 30 -15-3 p 29 pomic 0 p 29 purity, p 30 n oxyg p 67 rence: p 25 of digii gle pik	NB7-25984 NB7-25984 NB7-25984 NB7-25984 N90-19302 xygen from NB7-18629 large grain NB7-27024 en-exposed NB9-30022 Testing for NB8-10829 tal data link of operation
an [N SILI [N SILI [N SIL] SIL [N Iau [N Iau [N [N [N [N [N [N [N [N]]	Cosmic Tay Test (Structure in the second structure in	r alumii p 79 siliicon p 30 -15-3 p 29 pomic 0 p 29 purity, p 30 n oxyg p 67 rence: p 25 of digii gle pil/ p 13	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 tal data link ot operation N89-11726
an [N SILI [ <sup>N</sup> SILI SILI SILI SILI SILI SILI SILI ( <sup>N</sup> [ <sup>N</sup> [ <sup>N</sup> [ <sup>N</sup> [ <sup>N</sup> [ <sup>N</sup> [ <sup>N</sup> ] SIM	Cosmic Tay Teacting Viol E2 + Inappling to dissue targets IASA-RP-1180] Indentation plasticity and fracture in : IASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2970] /ER Electron stimulated desorption of at ver ASA-TP-2668] Permeation of oxygen through high ver AISA-TP-2668] Permeation of oxygen through high ver dissa-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space IASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin IASA-TP-2837] Simulation evaluation of TIMER, a tim	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pilk ne-bas	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-10829 tal data link of operation N89-11726 ed, terminal
an [N SILI [^ SIL] SIL [^ SIL] SIL [^ SIL] a [^ [^ SIM] a [^ fo [^ ain [^ ain]	Cosmic Tay Teachy for L2 + Inappling to dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver (ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver (ASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver (ASA-TP-2930] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space (ASA-CP-2446) A simulator investigation of the use r pilol/ATC communications in a sin (ASA-TP-2837] Simulation evaluation of TIMER, a tin r traffic, flow-management concept (LSA-TD)	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pilk p 13 ne-bas	N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 tal data link ot operation N89-11726 ed, terminal
an (N SILI SILI SILI SILI SILI SILI SILI SIL	Cosmic Tay Test (STEET Happing) of dissue targets [ASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-255] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2930] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space [ASA-TP-2837] Simulation evaluation of the use r pilot/ATC communications in a sin [ASA-TP-2837] Simulation evaluation of TIMER, a tim (rtaffic, flow-management concept [ASA-TP-2870]	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pild p 13 ne-bas p 13	N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-10829 ald data link of operation N89-11726 ed, terminal N89-15901
an [N SILI	Cosmic Tay Test (International Test (Internati	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digii ge pil p 13 ne-bas p 13 sal-time	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 tal data link of operation N89-11726 ed, terminal N89-15901 e simulators
an [N SILI SILI SILI SIL SILI SIM SIM SIM SIM SIM SIM	Cosmic Tay Teachy Ton L2 + Inapping for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of ati ver [ASA-TP-2970] /ER Electron stimulated desorption of ati ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-255] Auger electron intensity variations in rge grain polycrystalline silver [ASA-TP-2930] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space inSA-TP-2930] ULATION A simulator investigation of the use r pilot/ATC communications in a sin IASA-TP-2837] Simulation evaluation of TIMER, a tim r traffic, flow-management concept IASA-TP-2870] ULATORS Applications and requirements for re ground-test facilities	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi g e pil p 13 ne-bas p 13 pal-time	NB7-25984 NB9-10996 composite N90-19302 xygen from NB7-18629 large grain NB7-27024 en-exposed NB9-30022 Testing for NB8-10829 tal data link so toperation NB9-11726 ed, terminal NB9-15901 e simulators
an [N] [SILI [SIL] [SIL] [SIL] [SIM] [A] [] [] [] [] [] [] [] [] [] [] [] [] []	Cosmic Tay Teacy for L2 + Inapping for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2675] Auger electron intensity variations in rge grain polycrystalline silver (ASA-TP-2830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space (ASA-TP-2446) A simulator investigation of the use r pilot/ATC communications in a sin (ASA-TP-2870] ULATORS Applications and requirements for re ground-test facilities (ASA-TP-2672]	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pili ne-bas p 13 p 13 pal-time p 64	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-10829 tal data link of operation N89-11726 ed, terminal N89-15901 e simulators N87-23202
an (N SILI SILI SILI SILI SILI SILI (N SILI SILI (N SILI SILI (N SILI SILI SILI SILI SILI SI SILI SI SILI SILI SILI SI SILI	Cosmic Tay Teachy for L2 + Inapping for dissue targets [ASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem [ASA-TP-2970] /ER Electron stimulated desorption of at ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2668] Permeation of oxygen through high ver [ASA-TP-2755] Auger electron intensity variations in rige grain polycrystalline silver [ASA-TP-2755] Auger electron intensity variations in rige grain polycrystalline silver [ASA-TP-2830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space [ASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin (ASA-TP-2837) ULATOS Applications and requirements for re ground-test facilities [ASA-TP-2672] Simulatior evaluation of a display	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pila ne-bas p 13 pal-time p 64 y for	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 tal data link of operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff
an(N) SILI	Cosmic Tay Test (Structure in the second structure structu	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pill p 13 ne-bas p 13 eal-time p 64 y for	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 at lata lata lata link ot operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff
an () () () () () () () () () () () () ()	Cosmic Tay Test State St	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digii g p 13 ne-bas p 13 sal-time p 64 y for p 20 p - 20 n - 20 p - 20 p - 20 n - 20 p - 21 p - 20 p - 21 p - 21 p - 21 p - 20 p - 21 p	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Signal data link do operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469
an () () () () () () () () () () () () ()	Cosmic Tay Test Solutions of the Sic CT in the Sic CT in the Sic CT is the Sic CT in the Sic CT is t	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pild p 13 ne-bas p 13 p 13 p 13 p 13 p 20 onic o p 25 of digi gle pild p 13 p 13 p 20 p 13 p 20 p 13 p 20 p 20 p 20 p 20 p 20 p 20 p 20 p 20	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 tal data link ot operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access
an() () () () () () () () () () () () () (	Cosmic Tay Teachy Ton L2 + Inapping to dissue targets IASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2970] /ER Electron stimulated desorption of at ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2803] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space IASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin IASA-TP-2807] ULATORS Applications and requirements for re ground-test facilities IASA-TP-2672] Simulator evaluation of a display erformance Monitoring System IASA-TP-2908] Satellite-matrix-switched, time-divisio stwork simulator	r alumit p 79 silicon -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pill p 13 ne-bas p 13 real-time p 13 real-time p 64 r for p 20	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N88-10829 tal data link ot operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915
an() () () () () () () () () () () () () (	Cosmic Tay Test (Structure) (S	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pik p 13 ne-bas p 13 eal-time p 64 y for p 20 on-mul p 34	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 a takeoff N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915
an ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	Cosmic Tay Test (Cosmic Test (C	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 gle pi3 ne-bas p 13 ne-bas p 13 real-time p 64 y for p 20 on-rnul p 34 dis	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-11226 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915
an ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	Cosmic Tay Test (Cosmic Test	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of le pil p 13 rences p 13 ral-time p 64 r for p 20 p 34 dis 2 p 32	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 tal data link operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915 N88-14212
an ( / Li y / Li ii / ii / ia / Mi a / fo / ia / Mi in ( Pe / ia / Mi / Pe / ia / Mi in ( Pe / ia / Mi / Ia / Mi / Ia / Mi / Mi / Pe / ia / Mi / Pe / ia / Mi / Pe / ia / Mi / Ia / Mi / Pe / ia / Mi / Pe / ia / Mi / Pe / ia / Mi / Mi / Pe / ia / Mi / Mi / Pe / ia / Mi	Cosmic Tay Text (b) TEC + Thapping to dissue targets IASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2970] /ER Electron stimulated desorption of at ver ASA-TP-2668] Permeation of oxygen through high ver ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2668] Permeation of oxygen through high ver (ASA-TP-2675] Auger electron intensity variations in rge grain polycrystalline silver (ASA-TP-27830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space (ASA-TP-2846) A simulator investigation of the use r pilot/ATC communications in a sin (ASA-TP-2870] ULATON ASA-TP-2870] ULATORS Applications and requirements for re ground-test facilities (ASA-TP-2672] Simulator evaluation of a display erformance Monitoring System (ASA-TP-2908) Satellite-matrix-switched, time-divisio twork simulator (ASA-TP-2971) IGE CRYSTALS Growth of solid solution single crysta (ASA-TP-2787] Indentation plasticity and fracture in : (ASA-TP-2787)	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digi gle pill p 13 ne-bas p 13 p 13 p 13 p 13 p 34 lis p 32 silicon	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 tal data link of operation N89-11725 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915 N88-14212 N89-1096
an ( / ) y ( / ) ii / ii / ii / ii / ii / ii / ii	Cosmic Tay Teacy for L2 + Inapping to dissue targets IASA-RP-1180] Indentation plasticity and fracture in : IASA-TP-2663] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space IASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin IASA-TP-2837] Simulation evaluation of TIMER, a tin r traffic, flow-management concept IASA-TP-2870] ULATORS Applications and requirements for re ground-test facilities IASA-TP-2872] Simulator evaluation of a display erformance Monitoring System IASA-TP-2908] Satellite-matrix-switched, time-divisio stwork simulator IASA-TP-2871 Indentation plasticity and fracture in IASA-TP-2863] G re VENT UDSETS	r alumit p 79 silicon p 30 -15-3 p 29 pomic 0 p 29 purity, p 30 n 0xyg p 67 rence: p 25 of digi gle pild p 13 rel-bas p 13 rel-bas p 13 rel-bas p 13 rel-bas p 34 dis p 32 p 30 p 32	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 tal data link of operation N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915 N88-14212 N89-10996
an (/ ) Si	Cosmic Tay Test Status Indentation plasticity and fracture in a IASA-TP-2863] CON CARBIDES Heat treatment study of the SiC/Ti stem IASA-TP-2663] Permeation of oxygen through high ver IASA-TP-2668] Permeation of oxygen through high ver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2755] Auger electron intensity variations in rge grain polycrystalline silver IASA-TP-2830] ULATION Fourteenth Space Simulation Confe Permanent Presence in Space IASA-CP-2446] A simulator investigation of the use r pilot/ATC communications in a sin IASA-TP-2870] ULATOS Applications and requirements for ref ground-test facilities IASA-TP-2672] Simulator evaluation of a display erformance Monitoring System IASA-TP-2980] Satellite-matrix-switched, time-divisiti stwork simulator IASA-TP-2871] Growth of solid solution single crystat IASA-TP-2863] GLE CRYSTALS Growth of solid solution single crystat IASA-TP-2863] GLE CRYSTALS GLE CRYSTAL	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 p 67 rence: p 25 of digi gle pill p 13 ne-bas p 13 p 13 ne-bas p 13 p 20 of digi gle pill p 13 ne-bas p 13 p 30 rence: p 30 p 31 p 32 silicon p 32 silicon p 32 silicon p 33	num, silicon, N87-25984 · N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-11226 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915 N88-14212 N89-10996 num, silicon,
an ( / Li sy ( / Li sil / sil / al / fo / ai / Mi in ( P / f) ai / Mi ar ( P / f) ai /	Cosmic Tay Test State (Construction) (Cosmic Tay Test State) (Cosmic Tay Test State) (Construction) (Cosmic Test State) (Cosmic Test Sta	r alumii p 79 silicon p 30 -15-3 p 29 omic o p 29 purity, p 30 n oxyg p 67 rence: p 25 of digil p 13 ne-bas p 13 ne-bas p 13 rence: p 29 rence: p 13 rence: p 13 rence: p 13 rence: p 13 rence: p 13 rence: p 20 rence: p 13 rence: p 20 rence: p 13 rence: p 20 rence: p 20 rence: p 25 rence: p 25 rence: p 25 rence: p 25 rence: p 25 rence: p 26 rence: p 26 rence: p 27 rence: p 26 rence: p 27 rence: p 26 rence: p 27 rence: p 26 rence: p 26 rence: p 27 rence: p 26 rence: r	num, silicon, N87-25984 N89-10996 composite N90-19302 xygen from N87-18629 large grain N87-18629 large grain N87-27024 en-exposed N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-30022 Testing for N89-10829 at data link of operation N89-11726 ed, terminal N89-15901 e simulators N87-23202 a Takeoff N89-23469 tiple-access N90-11915 N88-14212 N89-10996 hum, silicon,

#### [NASA-RP-1198] p 52 N88-19037 SKIN FRICTION Effects of tail span and empennage arrangement on drag of a typical single-engine fighter aft end [NASA-TP-2352] p 3 p 3 N87-10838 SLIDING FRICTION Reaction of perfluoroalkylpolyethers (PFPE) with 440C steel in vacuum under sliding conditions at room temperature [NASA-TP-2883] p 31 N89-26091 SLIPSTREAMS Weak-wave analysis of shock interaction with a slipstream [NASA-TP-2848] p 8 N89-10020 SLOTS Gas-jet and tangent-slot film cooling tests of a 12.5 deg cone at Mach number of 6.7 [NASA-TP-2786] p 39 N90-28806 SMALL PERTURBATION FLOW wing Α transonic-small-disturbance design methodology [NASA-TP-2806] p 7 N88-17614 SMOOTHING An algorithm for surface smoothing with rational splines [NASA-TP-2708] p 65 N87-22447 SOFTWARE ENGINEERING Proceedings of the 5th Annual Users' Conference [NASA-CP-2399] p 62 N87-1 p 62 N87-10720 Computer Sciences and Data Systems, volume 1 [NASA-CP-2459-VOL-1] p 62 N87-19931 Development of confidence limits by pivotal functions for estimating software reliability [NASA-TP-2709] p 65 N87-23244 [NASA-IP-2709] p 65 N87-23244 NASA Workshop on Computational Structural Mechanics 1987, part 1 [NASA-CP-10012-PT-1] p 46 N89-29773 NASA Workshop on Computational Structural Mechanics 1987, part 3 [NASA-CP-10012-PT-3] p 46 N89-29799 Software Reuse Issues [NASA-CP-3057] p 63 N90-14789 SOFTWARE TOOLS Proceedings of the 5th Annual Users' Conference [NASA-CP-2399] p 62 N87-10720 Third Conference on Artificial Intelligence for Space Applications, part 2 [NASA-CP-2492-PT-2] p 63 N88-24188 OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 Integrated tools for control-system analysis p 20 N89-19309 [NASA-TP-2885] A knowledge-based tool for multilevel decomposition of a complex design problem [NASA-TP-2903] p 63 N89-23181 Software Reuse Issues [NASA-CP-3057] p 63 N90-14789 SOILS Exobiology and Future Mars Missions [NASA-CP-10027] p 59 N89-26334 SOLAR ARRAYS Solar array flight dynamic experiment [NASA-TP-2598] p 23 N87-12581 Solar array flight experiment/dynamic augmentation experiment [NASA-TP-2690] p 26 N87-20380 Space Photovoltaic Research and Technology, 1988. High Efficiency, Space Environment, and Array Technology [NASA-CP-3030] p 50 N89-24704 SOLAR ATMOSPHERE Coronal and Prominence Plasmas [NASA-CP-2442] p 79 N87-20871 A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun [NASA-RP-1224-VOL-1] p 53 N90-13893 SOLAR BACKSCATTER UV SPECTROMETER Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's quide [NASA-RP-1199] p 48 N88-17096 SOLAR CELLS Space Photovoltaic Research and Technology 1986. High Efficiency, Space Environment, and Array Technology [NASA-CP-2475] p 50 N87-26413 Space Photovoltaic Research and Technology, 1988. Efficiency, Space Environment, and Array High Technology [NASA-CP-3030] p 50 N89-24704

Crustal Dynamics Project: Catalogue of site

SITES

information

# SOLAR PROMINENCES

nd biat	
sa' uiði	1-powr laser
p 40	N89-17855
ape (E	SAT) user's
p 79	N89-30151
he Sol	ar Maximum
p 79	N87-19328
n 79	N87-20871
<b>P</b> · · ·	
xposur	e in manned
p 80	N90-25031
nic au	gmentation
p 26	N87-20380
986 - 2	035
p /3	N87-25906
p 48	N89-22152
he Sol	ar Maximum
р / 9	N87-19328
ρ79	N87-20947
ρ 79	N87-21785
ρ79	N89-14210
s surfa p 80	N90-18357
ointing	system for
n 33	NG0-21219
- 0-1	
ne 501	ar Maximum
p 79	N87-19328
p 79 ition Se	N87-20871 plar Physics.
n 79	N88-11609
ne 501	ar Maximum
p /9	N87-19328
ition So	olar Physics,
p 79	N88-11609
he Sol	ar Maximum
p 79	N87-19328
p 79	N87-20871
ition So	olar Physics,
p 79	N88-11609
proper	ties of two
/elengt	ns between
p 48	N87-22281
A biblic	ography with
р 22 А БіБІй	N87-29576
	And Care
p 22 shop	N88-27214
p 27	N90-10140
he Sol	ar Maximum
p 79	N87-19328
p 79	N87-20871
р 79	N87-20947
	ed, higi p 40 ape (E: p 79 p 79 p 79 p 79 p 79 p 80 p 79 p 80 p 79 p 80 p 79 p 79

# SOLAR RADIATION

SOLAR RADIATION Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's auide [NASA-RP-1199] p 48 N88-17096 Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152 Atlas of albedo and absorbed solar radiation derived from Nimbus 6 earth radiation budget data set, July 1975 to May 1978 p 57 N90-14741 [NASA-RP-1230] Atlas of albedo and absorbed solar radiation derived from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985 [NASA-RP-1231] p 57 N90-17233 SOLAR SIMULATORS Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582 SOLAR SPECTRA A high-resolution atlas of the infrared spectrum of the sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] p 53 N89-28969 Nimbus-7 ERB Solar Analysis Tape (ESAT) user's guide [NASA-RP-1211] p 79 N89-30151 SOLAR TERRESTRIAL INTERACTIONS On the statistics of El Nino occurrences and the relationship of El Nino to volcanic and solar/geomagnetic activity [NASA-TP-2948] p 79 N90-12456 Solar-Terrestrial Science Strategy Workshop [NASA-CP-3048] p 73 N90-18329 SOLAR-PUMPED LASERS Free-Space Power Transmission [NASA-CP-10016] p 27 N90-21795 SOLID ELECTRODES Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes [NASA-TP-2904] p 35 N89-21171 SOLID PROPELLANT ROCKET ENGINES SRM propellant and polymer materials structural test (NASA-TP-28211 p 44 N88-25013 SRM (Solid Rocket Motor) propellant and polymer materials structural modeling [NASA-TP-2824] p 45 N88-28343 Loads analysis and testing of flight configuration solid rocket motor outer boot ring segments p 47 N90-25366 [NASA-TP-3028] SOLID SOLUTIONS Growth of solid solution single crystals p 32 N88-14212 [NASA-TP-2787] SOLID STATE DEVICES Universal test fixture for monolithic mm-wave integrated circuits calibrated with an augmented TRD algorithm [NASA-TP-2875] p 34 N89-17767 SOLUTIONS Raman intensity as a probe of concentration near a crystal growing in solution [NASA-TP-2865] p 39 N89-16139 SONIC BOOMS Status of sonic boom methodology and understanding [NASA-CP-3027] p 9 N89-23415 SOOT Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flam [NASA-TP-2900] p 38 N89-25409 SOUND PRESSURE Annovance caused by advanced turboprop aircraft noise: Counter-rotating-propeller configuration [NASA-TP-3027] p 67 N90-29166 SOUND TRANSMISSION Evaluation of the ride quality of a light twin engine airplane using a ride quality meter [NASA-TP-2913] p 2 N89-22568 SOUND WAVES Propagation of sound waves in tubes of noncircular cross section [NASA-TP-2601] p 3 N87-14284 SOUTHERN HEMISPHERE The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 SPACE COMMERCIALIZATION Spacelab 3 Mission Science Review p 36 N87-22103 [NASA-CP-2429]

 [NASA-CP-2429]
 p.36
 N87-22103

 Report of the In Situ Resources Utilization Workshop
 {NASA-CP-3017}
 p.72
 N89-14188

Technology for large space systems: A bibliography with indexes (supplement 17) [NASA-SP-7046(17)] p 22 N87-29576 SPACE DEBRIS NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 SPACE ENVIRONMENT SIMULATION Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing p 25 N89-12582 [NASA-CP-3015] The effects of simulated space environmental parameters on six commercially available composite naterials [NASA-TP-2906] p 29 N89-19385 SPACE ERECTABLE STRUCTURES Solar array flight experiment/dynamic augmentation experiment [NASA-TP-2690] p 26 N87-20380 Space station systems: A bibliography with indexes (supplement 4) [NASA-SP-7056(04)] p 25 N87-26073 The 21st Aerospace Mechanisms Symposium p 43 N87-29858 [NASA-CP-24701 SPACE EXPLORATION The Jovian Atmospheres [NASA-CP-2441] p 77 N87-17598 Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p 78 N88-24564 Planetary Geology: Goals, Future Directions, and Recommendations [NASA-CP-3005] p 78 N88-26279 Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] p 81 N89-26805 Astronautics and Aeronautics, 1979-1984: chronology [NASA-SP-4024] p 81 N90-25928 SPACE FLIGHT Joint US/USSR study: Comparison of effects of horizontal and head-down bed rest [NASA-TP-3037] p 60 N90-28965 SPACE HABITATS Report of the In Situ Resources Utilization Workshop [NASA-CP-3017] p 72 N89-14188 SPACE LABORATORIES Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 SPACE MISSIONS Astronautics and Aeronautics, 1979-1984: A chronology [NASA-SP-4024] p 81 N90-25928 Liquid lubrication in space [NASA-RP-1240] p 42 N90-28063 SPACE PERCEPTION Determination of depth-viewing volumes for stereo three-dimensional graphic displays p 61 N90-22965 INASA-TP-29991 SPACE PLASMAS Double Layers in Astrophysics [NASA-CP-2469] p 72 N87-23313 SPACE PLATFORMS System study of the carbon dioxide observational latform system (CO-OPS): Project overview NASA TP-26961 p 23 N87-18588 Space station systems: A bibliography with indexes (supplement 4) NASA-SP-7056(04)1 p 25 N87-26073 SPACE PROCESSING Space Bioreactor Science Workshop p 58 N88-17168 [NASA-CP-2485] SPACE PROGRAMS Atmospheric Turbulence Relative to Aviation, Missile, and Space Programs [NASA-CP-2468] p 55 N87-22341 SPACE SHUTTLE BOOSTERS Analysis of quasi-hybrid solid rocket booster concepts for advanced earth-to-orbit vehicles p 27 N87-25425 [NASA-TP-2751] SRM propellant and polymer materials structural test program [NASA-TP-2821] p 44 N88-25013 Cyclic loads tests of carbon involute solid rocket motor outer boot ring segments p 45 N89-16192 [NASA-TP-2884] SPACE SHUTTLE MAIN ENGINE Conventionally cast and forged copper alloy for high-heat-flux thrust chambers p 30 N87-16902 [NASA-TP-2694] Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis [NASA-TP-2685] p 36 N87-17000

SPACE COMMUNICATION

# SUBJECT INDEX

Structural Integrity and Durability of Reusable Space

Propulsion Systems

[NASA-CP-2471] p 26 N87-22766 Three-step labyrinth seal for high-performance turbomachines [NASA-TP-1848] p 36 N87-23921 Straight cylindrical for seal high-performance turbomachines [NASA-TP-1850] p 36 N87-23936 Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 Probabilistic risk analysis of flying the space shuttle with and without fuel turbine discharge temperature redline protection NASA-TP-27591 p 65 N87-27474 The 58th Shock and Vibration Symposium, volume 1 [NASA-CP-2488-VOL-1] p 43 N88-13609 Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings p 41 N88-18933 [NASA-TP-2816] Lightweight structural design of a bolted case joint for the space shuttle solid rocket motor [NASA-TP-2851] p 25 N89-12580 Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2 NASA-CP-2437-VOL-2 p 27 N89-12626 SPACE SHUTTLE MISSIONS The 1987 Get Away Special Experimenter's Symposium [NASA-CP-2500] p 22 N88-17691 Spacelab: An international success story p 72 N88-19375 (NASA-SP-487) SPACE SHUTTLE ORBITERS Finite-element reentry heat-transfer analysis of space shuttle Orbite [NASA-TP-2657] p 37 N87-29795 Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements p 42 N90-19595 (NASA-TP-2977) SPACE SHUTTLE PAYLOADS Solar array flight dynamic experiment (NASA-TP-2598) p 23 N87-12581 The 1986 Get Away Special Experimenter's Symposium p 22 N87-20302 [NASA-CP-2438] Solar array flight experiment/dynamic augmentation experiment p 26 N87-20380 [NASA-TP-2690] Space Construction p 25 N88-10870 [NASA-CP-2490] The 1988 Get Away Special Experimenter's Symposium p 22 N89-10902 [NASA-CP-3008] Remote Sensing in Polarized Light [NASA-CP-3014] p 72 N89-14189 SPACE SHUTTLES Development testing of large volume water sprays for warm fog dispersal p 24 N87-12585 (NASA-TP-2607) Spacelab 3 Mission Science Review [NASA-CP-2429] p 36 N87-22103 Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space p 25 N88-10829 [NASA-CP-2446] Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 Cornering characteristics of the main-gear tire of the bace shuttle orbiter p 14 N88-18583 [NASA-TP-2790] Practices in adequate structural design p 24 N89-18504 [NASA-TP-2893] Graphics Technology in Space Applications (GTSA 1989) [NASA-CP-3045] p 62 N90-20651 Space shuttle avionics system [NASA-SP-504] p 24 N90-25160 Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and space shuttle/space station experiments [NASA-TP-3030] p 33 N90-25255 Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754 SPACE SIMULATORS Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582 SPACE STATION PAYLOADS Microgravity Particle Research on the Space Station p 58 N88-15354 (NASA-CP-2496) Experiments in Planetary and Related Sciences and the Space Station

[NASA-CP-2494] p 72 N89-14998

Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and space shuttle/space station experiments INASA-TP-30301 p 33 N90-25255 SPACE STATION POWER SUPPLIES Space station systems: A bibliography with indexes [NASA-SP-7056(05)] p 25 N88-13382 Space station systems: A bibliography with indexes (supplement 7) [NASA-SP-7056(07)] p 25 N89-18522 Space station systems: A bibliography with indexes (supplement 10) [NASA-SP-7056(10)] p 26 N90-25171 SPACE STATION PROPULSION Space station systems: A bibliography with indexes [NASA-SP-7056(05)] p 25 N88-13382 Space station systems: A bibliography with indexes (supplement 7) [NASA-SP-7056(07)] p 25 N89-18522 Space station systems: A bibliography with indexes (supplement 10) [NASA-SP-7056(10)] p 26 N90-25171 SPACE STATION STRUCTURES Space station structures and dynamics test program [NASA-TP-2710] p 43 N87-20568 Space station systems: A bibliography with indexes [NASA-SP-7056(05)] p 25 N88-13382 Space station systems: A bibliography with indexes (supplement 7) [NASA-SP-7056(07)] p 25 N89-18522 Space station systems: A bibliography with indexes (supplement 10) [NASA-SP-7056(10)] p 26 N90-25171 SPACE STATIONS Proceedings of the 5th Annual Users' Conference p 62 N87-10720 [NASA-CP-2399] NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-1] p 24 N87-16014 The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REV] p 43 N p 43 N87-16321 Space station structures and dynamics test program [NASA-TP-2710] p 43 N87-20568 Structural Dynamics and Control Interaction of Flexible Structures [NASA-CP-2467-PT-2] o 23 N87-22729 NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-2] p 25 N87-24495 Space station systems: A bibliography with indexes (supplement 4) [NASA-SP-7056(04)] p 25 N87-26073 Spacecraft 2000 [NASA-CP-2473] p 25 N88-10084 Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space [NASA-CP-2446] p 25 N88-10829 Space Construction [NASA-CP-2490] p 25 N88-10870 Spacecraft Fire Safety p 24 N88-12520 [NASA-CP-2476] Space station systems: A bibliography with indexes NASA-SP-7056(05) p 25 N88-13382 [NASA-SP-7056(05)] Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 The 1987 Get Away Special Experimenter's Symposium [NASA-CP-2500] p 22 N88-17691 Space Station Human Factors Research Review Volume 3: Space Station Habitability and Function: Architectural Research [NASA-CP-2426-VOL-3] p 59 N88-19883 Space Station Human Factors Research Review. Volume 1: EVA Research and Development p 59 N88-24145 [NASA-CP-2426-VOL-1] Space Station Human Factors Research Review. Volume 4: Inhouse Advanced Development and Research [NASA-CP-2426-VOL-4] p 59 N88-24148 Third Conference on Artificial Intelligence for Space Applications, part 2 p 63 N88-24188 [NASA-CP-2492-PT-2] A Study of Space Station Contamination Effects --conference p 72 N88-25390 [NASA-CP-3002] Second Conference on Artificial Intelligence for Space Applications [NASA-CP-3007] p 63 N88-29351 Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582

Space Station Induced Monitoring p 73 N89-15790 [NASA-CP-30211 Interactive orbital proximity operations planning system [NASA-TP-2839] o 61 N89-18039 Space station systems: A bibliography with indexes (supplement 7) [NASA-SP-7056(07)] p 25 N89-18522 The 23rd Aerospace Mechanisms Symposium p 46 N89-23892 [NASA-CP-3032] Technology for large space systems: A bibliography with indexes (supplement 20) [NASA-SP-7046(20)] p 26 N89-26037 Software Reuse Issues [NASA-CP-3057] p 63 N90-14789 Graphics Technology in Space Applications (GTSA 1989) [NASA-CP-3045] p 62 N90-20651 Space station systems: A bibliography with indexes (supplement 10) [NASA-SP-7056(10)] VASA-SP-7056(10)] p 26 N90-25171 Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and space shuttle/space station experiments 
 Space snumer space
 p 33
 N90-25255

 [NASA-TP-3030]
 p 33
 N90-25255

 Third Annual Workshop on Space
 Operations

 Automation and Robotics (SOAR 1989)
 p 62
 N90-25503
 Technology for large space systems: A bibliography with indexes (supplement 22) [NASA-SP-7046(22)] p 26 N90-26056 Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754 SPACE TRANSPORTATION Space Transportation Avionics Technology Symposium. Volume 1: Executive summary [NASA-CP-3081-VOL-1] p 17 N90-25980 SPACE TRANSPORTATION SYSTEM Space Construction [NASA-CP-2490] p 25 N88-10870 A study to evaluate STS heads-up ascent trajectory performance employing a minimum-Hamiltonian optimization strategy [NASA-TP-2793] p 23 N88-15820 SPACEBORNE EXPERIMENTS Spacelab 3 Mission Science Review [NASA-CP-2429] p 36 N87-22103 Microgravity Particle Research on the Space Station [NASA-CP-2496] p 58 N88-15354 Into the thermosphere: The atmosphere explorers p 52 N88-18084 [NASA-SP-490] The 1988 Get Away Special Experimenter's Symposium [NASA-CP-3008] p 22 N89-10902 Technology for Future NASA Missions: Civil Space Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 N89-11760 Experiments in Planetary and Related Sciences and the Space Station [NASA-CP-2494] p 72 N89-14998 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 55 p 59 N89-24023 Cells in Space (NASA-CP-10034) p 61 N90-13939 Solar-Terrestrial Science Strategy Workshop p 73 N90-18329 [NASA-CP-3048] Relativistic Gravitational Experiments in Space p 77 N90-19940 [NASA-CP-3046] Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and space shuttle/space station experiments [NASA-TP-3030] p 33 N90-25255 Proceedings of the LDEF Materials Data Analysis Workshop [NASA-CP-10046] p 28 N90-26075 Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754 SPACECRAFT CHARGING Space Station Induced Monitoring [NASA-CP-3021] o 73 N89-15790 NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 SPACECRAFT COMPONENTS The 58th Shock and Vibration Symposium, volume 2 [NASA-CP-2488-VOL-2] p 44 N88-18948

# SPACECRAFT LUBRICATION

SPACECRAFT CONSTRUCTION MATERIALS Outgassing data for selecting spacecraft materials [NASA-RP-1124] p 28 N88-10117 Technology for Future NASA Missions: Civil Space Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 N89-11760 Proceedings of the LDEF Materials Data Analysis Workshop [NASA-CP-10046] p 28 N90-26075 SPACECRAFT CONTAMINATION Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space [NASA-CP-2446] p 25 N88-10829 A Study of Space Station Contamination Effects --conference [NASA-CP-3002] p 72 N88-25390 Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing [NASA-CP-3015] p 25 N89-12582 NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) [NASA-CP-3059] p 62 N90-25503 SPACECRAFT CONTROL NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-1] p 24 N87-16014 Structural Dynamics and Control Interaction of Flexible Structures [NASA-CP-2467-PT-1] p 23 N87-22702 NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-2] p 25 N87-24495 Third Conference on Artificial Intelligence for Space Applications, part 1 [NASA-CP-2492-Pt-1] p 62 N88-16360 SPACECRAFT DESIGN NASA/DOD Control/Structures Interaction Technology, 1986 p 24 N87-16014 [NASA-CP-2447-PT-1] Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations [NASA-CP-2460] p 52 N87-20665 Airborne particulate matter in spacecraft [NASA-CP-2499] p 55 p 59 N88-14623 The 58th Shock and Vibration Symposium, volume 2 NASA-CP-2488-VOL-2] p 44 N88-18948 [NASA-CP-2488-VOL-2] p 44 N88-18948 Space Station Human Factors Research Review. Volume 3: Space Station Habitability and Function: Architectural Research [NASA-CP-2426-VOL-3] p 59 N88-19883 Space Station Human Factors Research Review. Volume 4: Inhouse Advanced Development and Research [NASA-CP-2426-VOL-4] p 59 N88-24148 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 SPACECRAFT DOCKING The 23rd Aerospace Mechanisms Symposium [NASA-CP-3032] p 46 N89-23892 SPACECRAFT ELECTRONIC EQUIPMENT Spacecraft 2000 [NASA-CP-2473] p 25 N88-10084 SPACECRAFT ENVIRONMENTS Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space [NASA-CP-2446] p 25 N88-10829 Spacecraft Fire Safety [NASA-CP-2476] p 24 N88-12520 Report of the 1st Planning Workshop for CELSS Flight Experimentation [NASA-CP-10020] p 60 N89-13898 SPACECRAFT INSTRUMENTS The 20th Aerospace Mechanics Symposium [NASA-CP-2423-REV] p 43 l p 43 N87-16321 Earth resources: A continuing bibliography with indexes (issue 54) [NASA-SP-7041(54)] p 49 N87-27315 Technology for Future NASA Missions: Civil Space Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 N89-11760 The Cassini mission: Infrared and microwave spectroscopic measurements [NASA-RP-1213] p 78 N89-16709 SPACECRAFT LAUNCHING Development testing of large volume water sprays for warm fog dispersal {NASA-TP-2607} p 24 N87-12585 SPACECRAFT LUBRICATION Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model

p 42 N90-28066

[NASA-TP-3017]

 $\sim 10^{-1}$ 

# SPACECRAFT ORBITS

# SPACECRAFT ORBITS

- Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments
- [NASA-TP-2866] p 65 N89-16415 SPACECRAFT PERFORMANCE
- Flight Mechanics/Estimation Theory Symposium 1988 [NASA-CP-3011] p 23 N89-15934 SPACECRAFT POWER SUPPLIES
- Space Photovoltaic Research and Technology 1986. High Efficiency, Space Environment, and Arrav Technology
- p 50 N67-26413 [NASA-CP-2475] Technology for Future NASA Missions: Civil Space
- Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 23 p 22 N89-11760 Space Photovoltaic Research and Technology, 1988. High Efficiency, Space Environment, and Array
- Technology [NASA-CP-3030] p 50 N89-24704 Second Beamed Space-Power Workshop NASA-CP-3037] p 27
- [NASA-CP-3037] N90-10140 Space Electrochemical Research and Technology (SERT), 1989
- [NASA-CP-3056] p 50 N90-20454 SPACECRAFT PROPULSION
- Structural Integrity and Durability of Reusable Space Propulsion Systems [NASA-CP-2471] p 26 N87-22766
- Spacecraft 2000 [NASA-CP-2473] p 25 N88-10084 Technology for Future NASA Missions: Civil Space
- Technology Initiative (CSTI) and Pathfinder [NASA-CP-3016] p 22 N89-11760
- Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626
- Second Bearned Space-Power Workshop (NASA-CP-3037) p 27 N90-10140
- SPACECRAFT RELIABILITY
- Probabilistic risk analysis of fiving the space shuttle with and without fuel turbine discharge temperature redline protection
- [NASA-TP-2759] p 65 N87-27474 SPACECRAFT STRUCTURES
- Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum
- [NASA-TP-2612] p 28 N87-10184 Lewis Structures Technology, 1988. Volume 1: Structural Dynamics
- [NASA-CP-3003-VOL-1] p 44 N88-23226 Effects of variables upon pyrotechnically induced shock response spectra, part 2
- [NASA-TP-2872] p 45 N89-13814 SPACECRAFT TRACKING Spacecraft 2000
- [NASA-CP-2473] p 25 N88-10084
- SPACECRAFT TRAJECTORIES Interactive orbital proximity operations planning
- system (NASA-TP-2839) p 61 N89-18039 SPACECREWS Payload crew utilization for spacelab missions
- [NASA-TP-2976] p 24 N90-14256
- SPACELAB Spacelab 3 Mission Science Review [NASA-CP-2429] p 36 N87-22103
- Spacelab: An international success story p 72 N88-19375 [NASA-SP-487] SPATIAL FILTERING
- Spatial vision processes: From the optical image to the symbolic structures of contour information
- [NASA-TP-2838] p 39 N89-13762 SPATIAL RESOLUTION
- Spatial Displays and Spatial Instruments [NASA-CP-10032] p 61 N90-22918
- Spatial interferometry in optical astronomy [NASA-RP-1245] p 75 N90-28470 SPECIFICATIONS
- Space shuttle avionics system [NASA-SP-504] p 24 N90-25160 SPECKLE INTERFEROMETRY
- Spatial interferometry in optical astronomy [NASA-RP-1245] p 75 N90-28470
- SPECTRAL METHODS Numerical simulation of channel flow transition. resolution requirements and structure of the hairpin
- vortex [NASA-TP-2667] p 4 N87-19351 SPECTRAL REFLECTANCE
- Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493]
- p 78 N88-24564

A-46

- SPECTROSCOPY
- Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p 78 N88-24564
- International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects
- [NASA-RP-1203] p 76 N88-28843 NASA Laser Light Scattering Advanced Technology
- Development Workshop, 1988 [NASA-CP-10033] p 40 N90-17085
- First International Conference on Laboratory Research for Planetary Atmospheres p 78 N90-26744 [NASA-CP-3077]
- SPECTRUM ANALYSIS The 58th Shock and Vibration Symposium, volume 2
- p 44 N88-18948 [NASA-CP-2488-VOL-2] SPHERES
- Parametric study of power absorptic electromagnetic waves by small ferrite spheres [NASA-TP-2949] p 66 N absorption from p 66 N90-12282
- SPHERICAL COORDINATES
- Compilation of methods in orbital mechanics and solar
- geometry [NASA-RP-1204] p 52 N89-10420 SPHERICAL HARMONICS
- Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -November 1978 to October 1985
- [NASA-RP-1186] p 55 N88-10451 SPIN
- Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane
- [NASA-TP-2691] n 14 N87-23614 SPIN TESTS
- Measurements of pressures on the tail and aft fuselage of an airplane model during rotary motions at spin attitudes
- [NASA-TP-2939] p 10 N90-10829 SPLASHING
- Measurements of flow rate and trajectory of aircraft tire-generated water spray [NAŠA-TP-2718] p 14 N87-24458
- SPLINE FUNCTIONS
- An algorithm for surface smoothing with rational splines p 65 N87-22447
- [NASA-TP-2708] SPLIT FLAPS
- Aerodynamic pressures and heating rates on surfaces between split elevons at Mach 6.6
- [NASA TP-2855] p 37 N89-12822 SPRAY NOZZLES
- Development testing of large volume water sprays for warm foo dispersal p 24 N87-12585 [NASA-TP-2607]
- SPRAYING Measurements of flow rate and trajectory of aircraft
- tire-generated water spray [NASA-TP-2718] p 14 N87-24458
- SPUTTERING The 20th Aerospace Mechanics Symposium
- p 43 N87-16321 [NASA-CP-2423-REV] STABILITY
- Liquid drop stability for protein crystal growth in microgravity
- p 58 N87-20727 [NASA-TP-2724] Rotordynamic Instability Problems in High-Performance Turbomachinery, 1986
- p 41 N87-22199 [NASA-CP-2443] An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopter
- rotor in hover [NASA-TP-2546] p 7 N88-20257
- STABILITY DERIVATIVES Analysis of flight data from a High-Incidence Research Model by system identification methods
- p 20 N90-10074 [NASA-TP-2940] STAGNATION FLOW
- Application of turbulence modeling to predict surface heat transfer in stagnation flow region of circular cylinder p 37 N87-27161 [NASA-TP-2758] STAGNATION PRESSURE
- Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack [NASA-TP-2716] p 14 N87-29497
- STAINLESS STEELS
- An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods
- (NASA-TP-2820) n 30 N89-19406 Reaction of perfluoroalkylpolyethers (PFPE) with 440C steel in vacuum under sliding conditions at room temperature
- [NASA-TP-2883] p 31 N89-26091

Stress corrosion study of PH13-8Mo stainless steel using the Slow Strain Rate Technique [NASA-TP-2934] p 30 N89-26976

SUBJECT INDEX

- STAR DISTRIBUTION Atlas of galaxies useful for measuring the cosmological
- distance scale NASA-SP-496 p 74 N89-12513
- STAR FORMATION
  - Star Formation in Galaxies [NASA-CP-2466] p 73 N87-24266
  - STAR TRACKERS Further developments in modeling digital control
  - systems with MA-prefiltered measurements. (NASA-TP-2909) p 33 N89-24507 STARS
  - Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 5: The point source catalog declination range -30 deg greater than delta greater than -50 deg [NASA-RP-1190-VOL-5] p 76 N89-14195
  - Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 2: The point source catalog declination range 90 deg greater than delta greater than 30 deg [NASA-RP-1190-VOL-2] p 76 N89-14
  - p 76 N89-14197 Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 6: The point source catalog declination
  - range -50 deg greater than delta greater than -90 deg [NASA-RP-1190-VOL-6] p 76 N89-14198 Infrared astronomical satellite (IRAS) catalogs and
  - atlases. Volume 7: The small scale structure catalog p 76 N89-14199 [NASA-RP-1190-VOL-7]
  - Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 3: The point source catalog declination range 30 deg greater than delta greater than 0 deg
  - p 77 N89-14201 [NASA-RP-1190-VOL-3] STATE ESTIMATION
  - A new approach to state estimation in deterministic digital control systems
  - [NASA-TP-2745] p 32 N87-24585 Exact state reconstruction in deterministic digital control
  - NASA-TP-27571 p 32 N87-27067 Further developments in exact state reconstruction in
  - deterministic digital control systems [NASA-TP-28121 p 32 N88-18751 More on exact state reconstruction in deterministic digital
  - control systems [NASA-TP-2847] p 33 N88-28177
  - The estimation error covariance matrix for the ideal state reconstructor with measurement noise

sing weighted-average measurements

A new state reconstructor for digital controls systems

Modeling digital control systems with MA-prefiltered

Exact state reconstruction in deterministic digital control

Effect of empennage arrangement on single-engine

nozzle/afterbody static pressures at transonic speeds

Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed

Static internal performance of a two-dimensional

Static performance of an axisymmetric nozzle with

Static performance of nonaxisymmetric nozzles with yaw

Static mechanical properties of 30 x 11.5 - 14.5, type

Static internal performance of a nonaxisymmetric vaned

convergent-divergent exhaust nozzle with multiaxis

а

static

convergent-divergent nozzle with thrust vectoring

8 aircraft tires of bias-ply and radial-belted design

thrust reverser with flow splay capability

investigation of

post-exit vanes for multiaxis thrust vectoring

circulation-control-wing concepts

Three-step labyrinth seal for

p 63 N89-13994

p 33 N89-27039

p 32 N87-22870

p 32 N87-27067

p 6 N88-10771

p 19 N88-14987

p 13 N87-15959

high-performance

p 36 N87-23921

p 5 N87-24432

p 8 N88-20280

p 8 N88-21118

p 15 N88-21157

p 10 N89-27634

two-dimensional

p 11 N90-19193

of

investigation

applied to upper

[NASA-TP-2881]

INAŠA-TP-29361

STATE VECTORS

measurements

systems

[NASA-TP-27321

[NASA-TP-2757]

STATIC PRESSURE

[NASA-TP-2753]

[NASA-TP-2482]

Large-scale

[NASA-TP-2684]

[NASA-TP-1848]

[NASA-TP-2721]

[NASA-TP-2800]

[NASA-TP-2813]

[NASA-TP-2810]

[NASA-TP-2933]

thrust-vectoring capability [NASA-TP-2973]

Static

thrust-vectoring vanes

turbomachines

STATIC TESTS

static stability application

surface-blowing aircraft

STATIC STABILITY

STATIC THRUST		
thrust-vectoring vanes	inc noza	ties with yaw
[NASA-TP-2813]	p 8	N88-21118
STATISTICAL ANALYSIS		
Statistical aspects of solar flares	. 70	
[NASA-IP-2/14]	p /9	N87-20947
Three component laser anemometer	er meas	wrements in
an annular cascade of core turbine va	ines wit	h contoured
end wall		
[NASA-TP-2846]	p 8	N89-10844
STEADY STATE		
on a clipped delta wing for pitching	and co	ntrol-surface
oscillations		
[NASA-TP-2594]	p 8	N88-28895
Steady-state and transition	al a	aerodynamic
(NASA-TP-2032)	neavy i	ain N89.25951
STELLAR ATMOSPHERES	p 10	1100-20001
The M-type stars		
[NASA-SP-492]	p 75	N88-11592
Commentary on interstellar matter	associa	ated with 18
Open clusters	- 77	NIDO 07610
[NASA-RP-1229]	р //	N09-2/012
nonthermal obenomena in stellar atm	osoheri	n senes un
[NASA-SP-502]	p 77	N90-18344
STELLAR COLOR	•	
O stars and Wolf-Rayet stars		
[NASA-SP-497]	p 74	N89-11657
STELLAR COMPOSITION		
(NASA-SP-492)	n 75	N88-11592
O stars and Wolf-Ravet stars	p / 5	100-11002
[NASA-SP-497]	p 74	N89-11657
STELLAR ENVELOPES		
The M-type stars		
[NASA-SP-492]	p 75	N88-11592
Star Formation in Galaxies		
[NASA-CP-2466]	p 73	N87-24266
O stars and Wolf-Rayet stars	F	
[NASA-SP-497]	р 74	N89-11657
STELLAR MASS EJECTION		
I NA SA SP 4021	n 75	N88-11592
STELLAR MODELS	p75	1400-11332
The M-type stars		
[NASA-SP-492]	p 75	N88-11592
STELLAR PHYSICS		
The M-type stars	n 75	N99 11602
STELL AR RADIATION	p75	100-11552
The M-type stars		
[NASA-SP-492]	p 75	N88-11592
STELLAR SPECTRA		
The M-type stars	a 76	N00 11500
International ultraviolet explore	p75 spect	ral atlas of
planetary nebulae, central stars, and	related	objects
[NASA-RP-1203]	p 76	N88-28843
STELLAR SPECTROPHOTOMETRY		
The M-type stars	- 26	
[NASA-SP-492] STEREOSCORIC VISION	p / 5	N88-11592
Determination of depth-viewing	volume	s for stereo
three-dimensional graphic displays		
[NASA-TP-2999]	p 61	N90-22965
STIFFNESS		
Dynamic characteristics of a vibratin	g beam	with periodic
(NASA-TP-2697)	D 44	N88-23988
Integrated force method versus di	splacen	nent method
for finite element analysis		
[NASA-TP-2937]	p 47	N90-18081
Loads analysis and testing of flight	coniig	uration solid
INASA.TP.30281	.s n 47	N90-25366
Buckling and postbuckling	bel	navior of
compression-loaded isotropic plates	vith cut	outs
[NASA-TP-3024]	p 47	N90-28859
STIMULATED EMISSION	to-i-	owner too
Electron stimulated desorption of a silver	atomic	oxygen irom
[NASA-TP-2668]	p 29	N87-18629
· · · · · · · · · · · · · · · · · · ·		al reflector
A simplified approach to axisymm	etric du	arrenector
A simplified approach to axisymm antenna design	etric du	
A simplified approach to axisymm antenna design [NASA-TP-2797]	etric du p 7	N88-16662
A simplified approach to axisymm antenna design [NASA-TP-2797] STOCHASTIC PROCESSES Drobabilistic risk analysis of thing th	etric du p 7	N88-16662
A simplified approach to axisymm antenna design [NASA-TP-2797] STOCHASTIC PROCESSES Probabilistic risk analysis of flying th and without fuel turbine discharge	etric du p 7 e space tempera	N88-16662 shuttle with ature redline
A simplified approach to axisymm antenna design [NASA-TP-2797] STOCHASTIC PROCESSES Probabilistic risk analysis of flying th and without fuel turbine discharge protection	etric du p 7 le space tempera	N88-16662 e shuttle with ature redline
A simplified approach to axisymm antenna design [NASA-TP-2797] STOCHASTIC PROCESSES Probabilistic risk analysis of flying th and without fuel turbine discharge protection [NASA-TP-2759]	etric du p 7 le space tempera p 65	N88-16662 e shuttle with ature redline N87-27474

STUICHIUMETHY		
Influence of the deposition conditions	on radi	ofrequency
(NASA-TP-2994)	p 33	N90-21210
STORAGE BATTERIES	•	
Space Electrochemical Research	and To	echnology
[NASA-CP-10029]	p 50	N89-22982
STRAIN ENERGY METHODS	•	
Seventeenth NASTRAN (R) Users' (	Colloqui	um
[NASA-CP-3029]	p 45	N89-22940
Three-dimensional analysis of a post	ouckled	embedded
delamination		
[NASA-TP-2823]	p 44	N88-26684
STRAIN GAGES	oalibra	tion on a
low-aspect-ratio wing structure at ele	vated t	emperature
[NASA-TP-2921]	p 46	N89-28034
STRAIN HARDENING	-	
Weld stresses beyond elastic	limit:	Materials
(NASA-TP-2935)	n 46	N89-27214
STRAIN RATE	P	
Stress corrosion study of PH13-8Mo s	tainless	steel using
the Slow Strain Rate Technique		N00 00076
STRATEGY	p 30	1109-20970
Solar-Terrestrial Science Strategy W	orksho	p
[NASA-CP-3048]	p 73	N90-18329
STRATOCUMULUS CLOUDS		
FIRE Science Results 1989 (NASA-CP-3079)	0.58	NOD-28224
STRATOSPHERE	p 30	100-20224
Airborne lidar measurements of EI Ch	ichon si	ratospheric
aerosols, May 1983		
[NASA-HP-1172] Description of data on the Nimbus 7	D 51	N87-11358
tape: Ozone and nitric acid		hap archive
[NASA-TP-2625]	p 51	N87-13022
SAGE aerosol measurements. Vol	ume 3:	January 1,
1981 to November 18, 1981 (NASA DP.1172)	n 61	NO7 17417
Airborne lidar measurements of FLCh	ichonsi	Ind/-1/41/
aerosols, January 1984		accopriono
[NASA-RP-1175]	p 51	N87-20663
Description of data on the Nimbus /	LIMS r	nap archive
tape: Water vapor and nitrogen dioxide (NASA-TP-2761)	LIMS r	nap archive
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide	LIMS r 9 p 56	nap archive N88-14572
Lescription of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200]	LIMS r p 56 p 52	nap archive N88-14572 N88-25094
Lescription of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the	LIMS r p 56 p 52 upper a	nap archive N88-14572 N88-25094 atmosphere
Lescription of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report	LIMS r p 56 p 52 upper a	nap archive N88-14572 N88-25094 atmosphere
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208]	LIMS r p 56 p 52 upper a p 52	nap archive N88-14572 N88-25094 atmosphere N88-29233
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Besearch Center, May 1974	LIMS r p 56 p 52 upper a p 52 p 52 ements	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the omber 1987
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209]	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the sember 1987 N88-29234
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1986: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014]	LIMS r p 56 p 52 upper a p 52 ements to Decce p 52 p 51	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna	LIMS r p 56 p 52 upper a p 52 ements to Decc p 52 p 51 mical qu	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 uantities for
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044]	LIMS r p 56 p 52 upper a p 52 ements to Decce p 52 p 51 mical qu isphere p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044]	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52 p 51 mical qu isphere p 53 s oberia	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Jantities for N89-25540 e. Sounder
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Mesoo (SAMS) experiment data user's guide	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52 p 51 mical qu isphere p 53 spherie	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Juantities for N89-25540 c Sounder
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide {NASA-TP-2761] SAM 2 data user's guide {NASA-RP-1200} Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 {NASA-RP-1209} Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso [SAMS) experiment data user's guide [NASA-RP-1221]	LIMS r p 56 p 52 upper a p 52 ements to Decc p 52 p 51 mical qu sphere p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the smber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-26304
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52 p 51 mical quisphere p 53 spherid p 53 d spec	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-26304 trum of the
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from	LIMS r p 56 p 52 upper a p 52 aments to Dece p 52 p 51 mical qui sphere p 53 spheriti p 53 ad spec	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 uantities for N89-25540 c: Sounder N89-25540 c: Sounder N89-26304 trum of the compilation
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2:	LIMS r p 56 p 52 upper a p 52 p 52 p 52 p 52 p 52 p 51 mical quisphere p 53 spheric p 53 d spectace. A 650 to Stratos	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 ohere and
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52 p 51 mical qui sphere p 53 g 53 d spec ace. A 650 to Stratos	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Jantities for N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2]	LIMS r p 56 p 52 upper a p 52 ements to Dece p 52 p 51 mical ql p 53 spheric spheric 650 to Stratos, p 53	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso	LIMS r p 56 p 52 upper a p 52 p 52 ments to Decc p 52 minical qu p 51 minical qu p 53 spheriu p 53 do specc ace. A 1 650 to Stratos, p 53 n of S1	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Juantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-CP-3044] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1221] Two-Dimensional Intercompariso Models	LIMS r p 56 p 52 upper a p 52 p 52 ments co p 52 p 51 mical qu p 53 sphere p 53 sphere p 53 sphere sp 53 sphere p 53 n of St Stratos, p 53 n of St	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-25540 c Sounder N89-26304 trum of the compilation d800 cm-1 phere and N89-28969 ratospheric N90-11405
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Herm [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Clobal stratospheric change: Re	LIMS r p 56 p 52 upper r p 52 ements to Decc p 52 p 51 mical q p 53 spherie p 53 spherie p 53 d spec acce. A 650 to Stratos, p 53 n of St p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mmber 1987 N88-29234 N89-14503 uantities for N89-25540 c. Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1208] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re	LIMS r p 56 p 52 upper a p 52 p 52 p 51 mical q p 53 sphere p 53 sphere p 53 d spec ace. A 1 650 to Stratos, p 53 n of St p 53 guirem	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c: Sounder N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c: Research
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10114] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Mesco (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircratt for Atm [NASA-CP-10041]	LIMS r p 56 p 52 upper a p 52 ments 52 p 51 mical qu sphere p 53 dd specc p 53 dd specc p 53 ad spect p 53 n of St p 53 n of St p 53 n of St p 53 p 53 p 53 p 55 p 55 p 55 p 55 p 55	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c: Research N90-14220
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re Very-High-Altitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic	LIMS r p 56 p 52 p 52 p 52 p 51 p 52 p 51 p 53 sphere p 53 sphere p 53 acce. A 1 650 to Stratos, p 53 n of St p 53 quirrem p 53 quirrem p 53 p 53 n of St p 53 p 154 p 53 p 154 p 154 p 55 p 55 p 55 p 55 p 55 p 55 p 55 p	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Jantities for N89-28304 trum of the compilation 4800 cm-1 phere and N89-28304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-114220 UV) ozone
Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-RP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide	LIMS r p 56 p 52 upper a p 52 p 52 p 51 p 53 co Decce p 53 sphere p 53 do specc p 53 do specc Stratos, p 53 quirem p 53 q 1 (1 (1 ) 1 (1 ) 1 (1 ) 1 (1 ) 1 (1 (1 ) 1 (1 ) 1 (1 ) 1 (1 (1 )	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the simber 1987 N88-29234 N89-14503 uantities for N89-26304 trum of the compilation 4800 cm-1 phere and N89-26304 trum of the complication 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-14220 UV) ozone
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re Very-High-Attlude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic products user's guide [NASA-RP-1224] STRESS (ESCHOL GGY)	LIMS r p 56 p 52 upper a p 52 p 52 p 52 p 51 mical ql p 53 g spheriu p 53 d spece. A 6 650 to Stratos, p 53 q uirem p 53 q uirem p 53 q uirem p 53 p 53	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the mber 1987 N88-29234 N89-14503 Jantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-14220 UV) ozone N90-17227
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Altitude Aircraft for Atm [NASA-CP-10011] Nimbus 7 solar backscatter ultravic products user's guide [NASA-RP-1234] STRESS (PSYCHOLOGY) Mental-State Estimation. 1987	LIMS r p 56 p 52 upper a p 52 ements to Decc p 52 p 51 mical qu sphere p 53 spheri p 53 spheri p 53 quirem p 53 quirem p 16 let (SB p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11422 UV) ozone N90-17227
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic products user's guide [NASA-CP-1234] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2504]	LIMS r p 56 p 52 upper a p 52 p 52 p 51 mical qu p 53 spherie p 53 spherion p 53 quirem p 53 quirem p 53 quirem p 53 quirem p 53 quirem p 53 p 53 p 53 p 53 p 53 p 53 p 53 p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c Sounder N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-11227 N88-23370
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic products user's guide [NASA-RP-1234] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2504] STRESS ANALYSIS	LIMS r p 56 p 52 upper a p 52 ments 52 p 51 mical qu sphere p 53 d spece 7 p 53 d spece 7 p 53 quirem p 53 quirem 53 quirem 16 p 53 quirem 16 p 53 p 53 p 53 p 53 p 53 p 53 p 53 p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 Jantities for N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c: Research N90-114220 UV) ozone N90-17227 N88-23370
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircratt for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic products user's guide [NASA-RP-1234] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2504] STRESS ANALYSIS Nonlinear Constitutive Relations for Ascientian 1000	LIMS r p 56 p 52 upper a p 52 p 52 p 52 p 52 p 52 p 52 p 52 p 52	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 Jantities for N89-25540 C Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-11227 N88-23370 emperature
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxide [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide [NASA-CP-10041] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2504] STRESS ANALVSIS Nonlinear Constitutive Relations for Applications, 1986	LIMS r p 56 p 52 p 52 p 52 p 51 p 52 p 51 p 53 d spect p 53 d spect sphere p 53 d spect p 53 n of SI p 53 quirem sphere p 53 p 16 let (SB p 16 le	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Jantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-17227 N88-23370 emperature N88-21498
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Altitude Aircraft for Atm [NASA-CP-3042] Global stratospheric change: Re Very-High-Altitude Aircraft for Atm [NASA-CP-3042] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2041] STRESS ANALYSIS Nonlinear Constitutive Relations for Applications, 1986 [NASA-CP-10010] Lawis Structures Technology 1988 V	LIMS r p 56 p 52 upper a p 52 ments to Dece p 52 mical qui sphere p 53 sphere p 53 sphere p 53 ds spec 550 to Stratos, p 53 quirem sospheri p 16 let (SB p 53 p 60 High Ti p 44	nap archive N88-14572 N88-25094 almosphere N88-29233 taken at the amber 1987 N88-29234 N89-14503 Jantities for N89-25540 c Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-26304 trum of the complexition 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c Research N90-11420 UV) ozone N90-17227 N88-23370 emperature N88-21498
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrarc sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] Two-Dimensional Intercompariso Models [NASA-CP-3042] Global stratospheric change: Re Very-High-Altitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide [NASA-CP-2504] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-10010] Lewis Structures Technology, 1988. V Mechanics	LIMS r p 56 p 52 upper a p 52 p 52 upper a p 52 p 51 mical qu p 53 spherie p 53 spherie p 53 quirem p 53 quirem p 53 quirem p 16 let (SB p 53 p 60 High To p 44 lolume 2	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c. Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c. Research N90-14220 UV) ozone N90-17227 N88-23370 emperature N88-21498 2: Structural
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide [NASA-CP-10041] Nimbus 7 solar backscatter ultravid products user's guide [NASA-CP-2504] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-10010] Lewis Structures Technology, 1988. V Mechanics [NASA-CP-3003-VOL-2]	LIMS r p 56 p 52 upper a p 52 p 52 p 51 mical qu p 53 spherie p 53 spherie p 53 ace. A 1 650 to Stratos quirem p 53 quirem 53 quirem 53 p 53 p 53 p 53 p 53 p 54 p 55 p 55 p 55 p 55 p 55 p 55 p 55	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 uantities for N89-25540 c: Sounder N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c: Research N90-117227 N88-23370 emperature N88-21498 2: Structural N88-21498
Description of data on the Nimbus / tape: Water vapor and nitrogen dioxidi [NASA-TP-2761] SAM 2 data user's guide [NASA-RP-1200] Present state of knowledge of the 1988: An assessment report [NASA-RP-1208] Forty-eight-inch lidar aerosol measure Langley Research Center, May 1974 [NASA-RP-1209] Polar Ozone Workshop. Abstracts [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-10014] Comparison of satellite-derived dyna the stratosphere of the Southern Hem [NASA-CP-3044] Nimbus-7 Stratospheric and Meso (SAMS) experiment data user's guide [NASA-RP-1221] A high-resolution atlas of the infrare sun and the earth atmosphere from sp of ATMOS spectra of the region from (2.3 to 16 microns). Volume 2: mesosphere, 650 to 3350 cm-1 [NASA-CP-3042] Global stratospheric change: Re Very-High-Attitude Aircraft for Atm [NASA-CP-10041] Nimbus 7 solar backscatter ultravic products user's guide [NASA-CP-2504] STRESS (PSYCHOLOGY) Mental-State Estimation, 1987 [NASA-CP-2003-VOL-2] Practices in adequate structural desi (NASA-CP-3003-VOL-2] Practices in adequate structural desi	LIMS r p 56 p 52 upper a p 52 ments p 52 p 51 mical qu p 53 dase A 650 to Stratos, p 53 n of St p 53 n of St p 53 n of St p 53 p 16 let (SB p 53 p 53 p 53 p 53 p 53 p 53 p 53 p 53	nap archive N88-14572 N88-25094 atmosphere N88-29233 taken at the mbber 1987 N88-29234 N89-14503 Jantities for N89-25540 c: Sounder N89-25540 c: Sounder N89-26304 trum of the compilation 4800 cm-1 phere and N89-28969 ratospheric N90-11405 ents for a c: Research N90-114220 UV) ozone N90-17227 N88-23370 emperature N88-21498 2: Structural N88-21498

[NASA-TP-2897]

p 45 N89-19580

# STRUCTURAL ANALYSIS

Computational Methods for Structural Mechanics and Dynamics, part 1 [NASA-CP-3034-PT-1] p 46 N89-24638 Computational Methods for Structural Mechanics and Dynamics [NASA-CP-3034-PT-2] p 46 N89-24654 STRESS CONCENTRATION Weld stresses beyond elastic limit: Materials discontinuity [NASA-TP-2935] p 46 N89-27214 STRESS CORROSION CRACKING Stress corrosion study of PH13-8Mo stainless steel using the Slow Strain Rate Technique [NASA-TP-2934] p 30 N89-26976 STRESS INTENSITY FACTORS Stress intensity and crack displacement for small edge cracks [NASA-TP-2801] p 44 N88-17095 STRESS MEASUREMENT Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-26981 p 41 N87-22235 STRESS-STRAIN RELATIONSHIPS Cyclic loads tests of carbon involute solid rocket motor outer boot ring segments [NASA-TP-2884] p 45 N89-16192 Tungsten fiber reinforced copper matrix composites: A review [NASA-TP-2924] p 29 N89-27796 STRESSES Weld stresses beyond elastic limit: Materials discontinuity [NASA-TP-2935] p 46 N89-27214 STRUCTURAL ANALYSIS Fifteenth NASTRAN (R) Users' Colloquium p 43 N87-27231 [NASA-CP-2481] Turbine Engine Hot Section Technology, 1985 [NASA-CP-2405] p 43 N88-11140 Nuclear techniques in studies of condensed matter [NASA-RP-1195] p 68 N88-13015 Space station systems: A bibliography with indexes NASA-SP-7056(05)] p 25 N88-13382 [NASA-SP-7056(05)] Continuum modeling of large lattice structures: Status and projections [NASA-TP-2767] p 25 N88-14115 Aeropropulsion '87. Session 2: Aeropropulsion Structures Research [NASA-CP-10003-SESS-2] p 18 N88-15785 Sixteenth NASTRAN (R) Users' Colloquium NASA-CP-2505] p 44 N88-20652 [NASA-CP-25051 Nonlinear Constitutive Relations for High Temperature Applications, 1986 p 44 N88-21498 [NASA-CP-10010] SRM (Solid Rocket Motor) propellant and polymer naterials structural modeling [NASA-TP-2824] p 45 N88-28343 Lightweight structural design of a bolted case joint for the space shuttle solid rocket motor [NASA-TP-2851] p 25 N89-12580 Turbine Engine Hot Section Technology 1986 p 45 N89-12876 [NASA-CP-2444] Turbine Engine Hot Section Technology, 1987 NASA-CP-2493] p 45 N89-17298 [NASA-CP-2493] Measured and predicted root-mean-square errors in square and triangular antenna mesh facets p 45 N89-17892 (NASA-TP-2896) Seventeenth NASTRAN (R) Users' Colloquium p 45 N89-22940 [NASA-CP-3029] Computational Methods for Structural Mechanics and Dynamics, part 1 p 46 N89-24638 [NASA-CP-3034-PT-1] Recent Advances in Multidisciplinary Analysis and Optimization, part 2 p 15 N89-25173 Mechanics 1987, part 1 (NASA CO CONTRACTOR OF CONTRACTOR p 46 N89-29773 [NASA-CP-10012-PT-1] on Computational Structural NASA Workshop Mechanics 1987, part 2 [NASA-CP-10012-PT-2] p 46 N89-29789 NASA Workshop Mechanics 1987, part 3 on Computational Structural [NASA-CP-10012-PT-3] p 46 N89-29799 Integrated force method versus displacement method for finite element analysis [NASA-TP-2937] p 47 N90-18081 Eighteenth NASTRAN (R) Users' Colloquium [NASA-CP-3069] p 47 N90-24637 Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections p 16 N90-26823 (NASA-TP-2951) Modal interaction in postbuckled plates. Theory p 47 N90-27121 [NASA-TP-2943]

Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications [NASA-TP-3016] p 26 N90-27738

Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual p 47 N90-28099 [NASA-TP-2916] The NASTRAN demonstration problem manual, level 17.5 p 42 N81-71592 [NASA-SP-224(05)] The NASTRAN programmers manual, level 17.5 p 42 N81-71594 [NASA-SP-223(05)] STRUCTURAL DESIGN In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane p 19 N87-10103 [NASA-TP-2224] Recent Experiences in Multidisciplinary Analysis and Optimization, part 1 p 13 N87-11717 [NASA-CP-2327-PT-1] Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597 Space station systems: A bibliography with indexes NASA-SP-7056(05)] p 25 N88-13382 (NASA-SP-7056(05)) Practices in adequate structural design p 24 N89-18504 [NASA-TP-2893] Recent Advances in Multidisciplinary Analysis and Optimization, part 2 p 15 N89-25173 [NASA-CP-3031-PT-2] Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805 Conceptual design of a synchronous Mars telecommunications satellite [NASA-TP-2942] p 78 N90-10814 NASA/DOD Controls-Structures Interaction Technology [NASA-CP-3041] p 26 N90-21062 STRUCTURAL DESIGN CRITERIA Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24585 STRUCTURAL ENGINEERING Recent Advances in Multidisciplinary Analysis and Optimization, part 1 [NASA-CP-3031-PT-1] p 15 N89-25146 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 Technology for large space systems: A bibliography with indexes (supplement 20) p 26 N89-26037 Workshop on Computational Structural Mechanics 1987, part 2 [NASA-CP-10012-PT-2] p 46 Noc 7 Technology (p-1) indexes (supplement 22) [NASA-SP-7046(22)] p 26 N90-26056 STRUCTURAL FAILURE Application of Newton's method to the postbuckling of rings under pressure loadings p 46 N89-29811 [NASA-TP-2941] Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections [NASA-TP-2951] p 16 N90-26823 Modal interaction in postbuckled plates. Theory p 47 N90-27121 [NASA-TP-2943] STRUCTURAL PROPERTIES (GEOLOGY) Status and future of lunar geoscience [NASA-SP-484] p 77 N87-19322 STRUCTURAL RELIABILITY Structural Integrity and Durability of Reusable Space Propulsion Systems [NASA-CP-2471] p 26 N87-22766 STRUCTURAL STABILITY Integrated force method versus displacement method for finite element analysis [NASA-TP-2937] p 47 N90-18081 STRUCTURAL VIBRATION Fifteenth NASTRAN (R) Users' Colloquium [NASA-CP-2481] p 43 N87-27231 The 58th Shock and Vibration Symposium, volume 1 p 43 N88-13609 [NASA-CP-2488-VOL-1] The 58th Shock and Vibration Symposium, volume 2 NASA-CP-2488-VOL-2} p 44 N88-18948 [NASA-CP-2488-VOL-2] Lewis Structures Technology, 1988. Volume 1: Structural **Dynamics** [NASA-CP-3003-VOL-1] p 44 N88-23226 Eighteenth NASTRAN (R) Users' Colloquium

[NASA-CP-3069] p 47 N90-24637 SUBJECTS

The NASA scientific and technical information system: Its scope and coverage [NASA-SP-7065] p 71 N89-15779 SUBSONIC AIRCRAFT

Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg p 6 N87-26874 [NASA-TP-2727]

SUBSONIC FLOW Efficient solutions to the Euler equations for supersonic

flow with embedded subsonic regions [NASA-TP-2523] p 3 N87-15183

Validation of a pair of computer codes for estimation and optimization of subsonic aerodynamic performance of simple hinged-flap systems for thin swept wings p 8 N89-10024

[NASA-TP-2828] SUBSONIC SPEED

Subsonic maneuver capability of a supersonic cruise fighter wing concept

p 3 N87-15184 [NASA TP-2642] An experimental investigation of an advanced turboprop

installation on a swept wing at subsonic and transonic speeds

- [NASA-TP-2729] p 6 N87-26883 Pressure measurements on a thick cambered and twisted 58 deg delta wing at high subsonic speeds p 6 N87-27643 [NASA-TP-2713]
- Effects of winglets on a first-generation jet transport ving. 7: Sideslip effects on winglet loads and selected wing loads at subsonic speeds for a full-span model

p 7 N88-18567 [NASA-TP-2619] SUBSONIC WIND TUNNELS

The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users [NASA-TP-3008]

p 12 N90-27649 SUBSTRUCTURES

Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections p 16 N90-26823 [NASA TP 2951]

SUCTION

- Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 N90-17627 SUN
- Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings p 79 N87-19328 [NASA-CP-2439]
- Coronal and Prominence Plasmas
- p 79 N87-20871 [NASA-CP-2442] Fifty year canon of solar eclipses: 1986 - 2035 [NASA-RP-1178-REV] p 73 N83

p 73 N87-25906 Compilation of methods in orbital mechanics and solar geometry

- [NASA-RP-1204] p 52 N89-10420 Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments
- INASA-TP-28661 p 65 N89-16415 SUNSPOTS
- Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings
- p 79 N87-19328 [NASA-CP-2439] SUPERCOMPUTERS
- Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998 SUPERCRITICAL AIRFOILS

The NASA Langley Laminar-Flow-Control (LFC) experiment on a swept, supercritical airfoil: Design overview

- [NASA-TP-2809] p 8 N88-21117 NASA SC(2)-0714 airfoil data corrected for sidewall boundary-layer effects in the Langley 0.3-meter transonic cryogenic tunnel
- [NASA-TP-2890] p 9 N89-17568 NASA supercritical airfoils: A matrix of family-related airfoils
- · p 11 N90-16710 INASA-TP-29691 SUPERCRITICAL FLOW
- Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042
- SUPERCRITICAL WINGS Supercritical wing technology: A report on flight
- evaluations [NASA-SP-301] p 2 N77-85474
- SUPERPLASTICITY
- Material characterization of superplastically formed titanium (Ti-6Al-2Sn-4Zr-2Mo) sheet [NASA-TP-2674] p 30 N87-20407
- SUPERSONIC AIRCRAFT Multiscale turbulence effects in supersonic jets
- xhausting into still air p 36 N87-24672 [NASA-TP-2707]
- Aeropropulsion '87. Session 6: High-Speed Propulsion Technology [NASA-CP-10003-SESS-6]
  - o 18 N88-15807

Shock structure and noise of supersonic jets in simulated flight to Mach 0.4

- (NASA-TP-2785) p 67 N88-16510 SUPERSONIC AIRFOILS
- Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042
- Supersonic aerodynamics of delta wings

[NASA-TP-2771] p 7 N88-17615 SUPERSONIC COMBUSTION RAMJET ENGINES Aeropropulsion '87. Session 6: High-Speed Propulsion

- Technology [NASA-CP-10003-SESS-6] p 18 N88-15807 An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion p 18 N88-15807
- [NASA-TP-2791] p 30 N88-15846 Numerical simulation of scramjet inlet flow fields
- [NASA-TP-25171 p 8 N88-23735 SUPERSONIC CRUISE AIRCRAFT RESEARCH
- Subsonic maneuver capability of a supersonic cruise fighter wing concept
- [NASA-TP-2642] p 3 N87-15184 Multiaxis control power from thrust vectoring for a supersonic fighter aircraft model at Mach 0.20 to 2.47 [NASA-TP-2712] p 5 N87-24433
- SUPERSONIC FLIGHT Status of sonic boom methodology and understanding [NASA-CP-3027] p 9 N89-23415
- SUPERSONIC FLOW
- Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation p 3 N87-10042 [NASA-TP-2336]
- Efficient solutions to the Euler equations for supersonic flow with embedded subsonic regions
- p 3 N87-15183 [NASA-TP-2523] Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1
- [NASA-TP-2660-PT-1] p 5 N87-23597 Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2
- [NASA-TP-2660-PT-2] p 5 N87-25301 Exhaust nozzles for propulsion systems with emphasis
- on supersonic cruise aircraft [NASA-RP-1235] p 18 N90-21037 SUPERSONIC NOZZLES
- Exhaust nozzles for propulsion systems with emphasis on supersonic cruise aircraft
- p 18 N90-21037 (NASA-RP-12351 SUPERSONIC SPEED
- Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system
- [NASA-TP-2401] p 4 N87-17668 Investigation of leading-edge flap performance on delta
- and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233
- Experimental cavity pressure distributions at supersonic speeds
- [NASA-TP-2683] p 5 N87-22626 Drag measurements of blunt stores tangentially mounted on a flat plate at supersonic speeds
- [NASA-TP-2742] p 6 N87-27626
- NAGA-17-2/42] Supersonic aerodynamics of delta wings uAGA\_TP\_2771} p.7 N88-17615 [NASA-TP-2771] Aerodynamic characteristics of wings designed with a combined-theory method to cruise at a Mach number of
- 4.5 [NASA-TP-2799] p 7 N88-19420
- Effect of milling machine roughness and wing dihedral on the supersonic aerodynamic characteristics of a highly swept wing
- [NASA-TP-2918] p 10 N89-25117 SUPERSONICS
- Planform effects on the supersonic aerodynamics of multibody configurations
- (NASA-TP-2762) p.6 N88-12454 SUPPLEMENTS
- NASA Thesaurus Supplement: A four part cumulative supplement to the 1985 edition of the NASA Thesaurus
- (supplement 3) NASA-SP-7053-SUPPL-3] p 70 N87-27557 SUPPORT SYSTEMS
- Earth Sciences Requirements for the Information Sciences Experiment System
- [NASA-CP-3072] p 50 N90-27140 SURFACE FINISHING
- Secondary electron emission characteristics of untreated and ion-textured titanium
- [NASA-TP-2902] p 30 Nos-17030 An Auger electron spectroscopy study of
- surface-preparation contaminants [NASA-TP-2972] p 33 N90-16968
- SURFACE NAVIGATION
- Joint University Program for Air Transportation Research, 1984 [NASA-CP-2452] n 1 N87-22604

Joint University Pro	ogram	for Air	Transportation
[NASA-CP-2502]		P for the	2 N88-23715
Research, 1987	ogram	tor Alr	
SURFACE PROPERTIES		<b>ب</b>	12 1409-19230
inflected surface	the field	scattered	I from a smooth
[NASA-1P-2632] Application of turbule	nce mo	p delina to	68 N87-13264 predict surface
heat transfer in stagnati [NASA-TP-2758]	on flow	region of p	circular cylinder 37 N87-27161
Effects of aerosols bidirectional reflectance	and measur	surface ements of	shadowing on I deserts
[NASA-TP-2756] Advances in contact a	algorithm	P - s and the	49 N87-28162
tires			AA N99 21456
SURFACE REACTIONS			
Surface catalytic de perfluoropolyalkylethers	gradatio at 345 (	n study C	of two linear
[NASA-TP-2774] AMSAHTS 1990: Adv	/ances i	p n Materia	27 N88-12543 Is Science and
Applications of High Ter	nperatu	re Superc	onductors
SURFACE ROUGHNESS			
splines	ласе :	smoothing	with trational
[NASA-TP-2708] SURFACE ROUGHNESS	EFFECT	rs p	65 N87-22447
Effect of milling mach on the supersonic aerod	ine roug	ihness an characteri	id wing dihedral istics of a highly
swept wing [NASA-TP-2918]	,	n	10 N89-25117
SURFACE TEMPERATUR	IE		10 1103-20117
flux	high-lev	/el, transk	ent surface heat
[NASA-TP-2840] SURFACE WAVES		р	39 N88-30099
A procedure for comp an inhomogeneous surfa	uting sur ace	face wave	e trajectories on
[NASA-TP-2929]		P	10 N89-26811
Theory of gearing			42 NO0 10502
SURVEYS		р.	42 1190-19393
Laser anemometer axial-flow fan rotor	measur	ements i	n a transonic
[NASA-TP-2879] SUSPENDING (HANGING	i)	p	38 N90-11245
General equilibrium helicopter system	charac	teristics	of a dual-lift
[NASA-TP-2615]	35	F	2 N88-19407
Forward-swept wing	configu	ration de	signed for high
method	0. 4 0	-	2 No7 11702
Subsonic longitud	inal	and la	teral-directional
characteristics of a configuration at angles (	a torw of attack	ard-swep up to 47	t-wing tighter deg
[NASA-TP-2727] SWEPT WINGS		ŗ	6 N87-26874
Applicability of linearia to design and analysis of	ed-theo	ry attache ystems at	d-flow methods low speeds for
thin swept wings with st [NASA-TP-2653]	harp lead	ting edge	s 3 N87-15174
An experimental investigation on a swoot	tigation	of an adva	anced turboprop
speeds	wing a	subsonic	6 N97-26992
The NASA Langle	y Lam	inar-Flow-	Control (LFC)
experiment on a swe overview	pt, sup	ercritical	airfoil: Design
[NASA-TP-2809] Validation of a pair o	f compi	F Iter code:	8 N88-21117 s for estimation
and optimization of sub	sonic a	erodynam or thin swe	ic performance
[NASA-TP-2828]	ine ro	ppeec ar	8 N89-10024
on the supersonic aerod	lynamic	character	istics of a highly
swept wing [NASA-TP-2918]		p	10 NB9-25117
SYMBOLS Spatial vision process	es: Fron	n the optic	cal image to the
symbolic structures of c [NASA-TP-2838]	ontour ii	nformation D	n 39 N89-13762
SYMMETRY			-

Exploiting	symmetriøs	in the	modeling	and	analysis	01
tires						
INACA TO 20	101		n	13	N87-176	90

[NASA-1P-2649]	p 13	N91-11090

## S

s

SYNCHRONISM		
A synchronous data analyzer for th	o Mini	mum Delav
Data Format (MDDF) and Launch Tra	jectory	Acquisition
System (LTAS)		
[NASA-TP-2743]	p 34	N87-24590
SYNCHRONOUS PLATFORMS		
Earth Science Geostationary Platforr	n Tech	nology
[NASA-CP-3040]	p 24	N90-19249
Thermal-distortion analysis of an ar	tenna	strongback
for geostationary high-frequency micro	wave a	applications
[NASA-TP-3016]	p 26	N90-27738
SYNOPTIC METEOROLOGY		
The Jovian Atmospheres		
[NASA-CP-2441]	p 77	N87-17598
Five year global dataset: NMC ope	rationa	l analyses
(1978 to 1982)		
[NASA-RP-1194]	p 55	N87-29996
SYSTEMS ANALYSIS		
Unique bit-error-rate measurement s	ystem	for satellite
communication systems		
[NASA-TP-2699]	p 33	N87-20448
Space station structures and dynamic	mics te	est program
[NASA-TP-2710]	p 43	N87-20568
Spacecraft 2000		
[NASA-CP-2473]	p 25	N88-10084
Dynamic analysis of multimest	n-gear	helicopter
transmissions		
[NASA-TP-2789]	p 41	N88-17045
Integrated tools for control-system a	nalysis	
[NASA-TP-2885]	p 20	N89-19309
SYSTEMS ENGINEERING		
NASA/DOD Control/Structures Inter	action *	Technology,
1986		
[NASA-CP-2447-PT-1]	p 24	N87-16014
Modeling digital control systems v	vith M	A-prefiltered
measurements		
[NASA-TP-2732]	p 32	N87-22870
A knowledge-based tool for multileve	l decor	nposition of
a complex design problem		

[NASA-TP-2903] p 63 N89-23181 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 NASA/DOD Controls-Structures Interaction Technology 1989 [NASA-CP-3041] p 26 N90-21062

Space shuttle avionics system		
[NASA-SP-504]	p 24	N90-25160
YSTEMS INTEGRATION		
NASA/Army Rotorcraft Technology.	Volume	3: Systems
Integration, Research Aircraft, and Inc	lustry	-
[NASA-CP-2495-VOL-3]	p1	N88-16650
Second Annual Workshop on	Space	Operations

Automation and Robotics (SOAR 1988) [NASA-CP-3019] p 61 N89-19817 Development and flight test experiences with a

flight-crucial digital control system		
[NASA-TP-2857]	p 20	N89-2432
Space shuttle avionics system	•	

(NASA-SP-504) p 24 N90-25160 SYSTEMS SIMULATION

Graphics Technology in Space Applications (GTSA 1989) [NASA-CP-3045] p 62 N90-20651

# Т

T TAURI STARS

FGK stars and T Tauri stars: Monograph series on nonthermal phenomena in stellar atmospheres [NASA-SP-502] p 77 N90-18344 TAIL ASSEMBLIES

Effects of tail span and empennage arrangement on drag of a typical single-engine fighter aft end

[NASA-TP-2352] p 3 N87-10838 Interference effects of thrust reversing on horizontal tail effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90

VASA-TP-2350] p 19 N87-10870 Flight investigation of the effect of tail configuration on [NASA-TP-2350] stall, spin, and recovery characteristics of a low-wing general aviation research airplane p 13 N87-16815 [NASA-TP-2644]

Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system [NASA-TP-2401]

p 4 N87-17668 Effects of empennage surface location on aerodynamic characteristics of a twin-engine atterbody model with nonaxisymmetric nozzles

p 14 N87-17693 [NASA-TP-2392] Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a

twin-engine fighter model at transonic speeds p4 N87-21873 [NASA-TP-2704]

# **TELEOPERATORS**

Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds [NASA-TP-2753] p 6 N88-10771 Measurements of pressures on the tail and aft fuselage of an airplane model during rotary motions at spin attitudes [NASA-TP-2939] p 10 N90-10829 Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles [NASA-TP-3036] p 11 N90-25938 TAIL SURFACES Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles [NASA-TP-2392] p 14 N87-17693 TAKEOFF Simulator evaluation of a display for a Takeoff Performance Monitoring System p 20 N89-23469 [NASA-TP-2908] TANGENTS Drag measurements of blunt stores tangentially mounted on a flat plate at supersonic speeds p 6 N87-27626 [NASA-TP-2742] Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments [NASA-TP-2866] p 65 N89-16415 TAPERING Derivation of a tappered p-version beam finite element [NASA-TP-2931] p 46 N89-26255 TASK COMPLEXITY Payload crew utilization for spacelab missions [NASA-TP-2976] p 24 N90-14256 TECHNICAL WRITING The NASA scientific and technical information system: Its scope and coverage [NASA-SP-7065] p 71 N89-15779 Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p 71 N90-26710 TECHNOLOGIES National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350 TECHNOLOGY ASSESSMENT Aeronautical facilities assessment [NASA-RP-1146] p 21 N87-10876 Astronautics and aeronautics, 1978: A chronology [NASA-SP-4023] p 80 N88-14062 Workshop on Technology Development Issues for the arge Deployable Reflector (LDR) [NASA-CP-2407] p 75 N88-20235 A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel [NASA-TP-2796] p 7 N88-20264 Cryogenic Fluid Management Technology Workshop. Volume 2: Roundtable Discussion of Technology Requirements p 37 N88-20599 [NASA-CP-10009] Report of the In Situ Resources Utilization Workshop [NASA-CP-3017] p 72 N89-14188 Solar-Terrestrial Science Strategy Workshop NASA-CP-3048] p 73 N90-18329 [NASA-CP-3048] Supercritical wing technology: A report on flight evaluations [NASA-SP-301] p 2 N77-85474 TECHNOLOGY UTILIZATION AMSAHTS 1990: Advances in Materials Science and Applications of High Temperature Superconductors [NASA-CP-10043] p 29 N90-27792 TELEMETRY Spacecraft 2000 [NASA-CP-2473] p 25 N88-10084 Proceedings of the Scientific Data Compression Workshop [NASA-CP-3025] p 63 N89-22332 TELEOPERATORS The 22nd Aerospace Mechanisms Symposium p 44 N88-21468 [NASA-CP-2506] Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) p61 N89-19817 [NASA-CP-3019] The 23rd Aerospace Mechanisms Symposium NASA-CP-3032] p 46 N89-23892 [NASA-CP-3032] Visual Information Processing for Television and Telerobotics [NASA-CP-30531 p 40 N90-16204 Graphics Technology in Space Applications (GTSA 1989)

p 62 N90-20651

[NASA-CP-3045]

Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) [NASA-CP-3059] p 62 N90-25503 TELEROBOTICS Optimized resolved rate control seven-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional graphics simulation p 64 N90-10618 [NASA-TP-2938] Visual Information Processing for Television and Telerobotics [NASA-CP-3053] p 40 N90-16204

TELEVISION SYSTEMS Visual Information Processing for Television and

- Telerobotics [NASA-CP-3053] p 40 N90-16204
- TEMPERATURE COMPENSATION Technique for temperature compensation of
- eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 **TEMPERATURE EFFECTS**
- Preparative electrophoresis for space
- [NASA-TP-2777] p 32 N88-10977 Oxidation characteristics of Ti-14AI-21Nb ingot alloy (NASA-TP-3012) p 31 N90-25206

TEMPERATURE MEASUREMENT

- Noncontact Temperature Measurement [NASA-CP-2503] p 32 N88-23895 Measurement of local high-level, transient surface heat flux
- [NASA-TP-28401 p 39 N88-30099 Technique for temperature compensation of
- eddy-current proximity probes (NASA-TP-2880) p 39 N89-15380 Determination of combustion gas temperatures by
- infrared radiometry in sooting and nonsooting flames p 38 N89-25409 [NASA-TP-2900] Gas-jet and tangent-slot film cooling tests of a 12.5 deg cone at Mach number of 6.7 p 39 N90-28806 (NASA-TP-2786)
- TEMPERATURE MEASURING INSTRUMENTS
- Noncontact Temperature Measurement p 32 N88-23895 [NASA-CP-2503] Measurement of local high-level, transient surface heat flux
- p 39 N88-30099 [NASA-TP-2840] **TEMPERATURE PROFILES**
- Velocity profiles in laminar diffusion flames
- p 36 N87-18035 [NASA-TP-2596] Nimbus-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide
- [NASA-RP-1221] p 53 N89-26304 TEMPERATURE SENSORS
- Probabilistic risk analysis of flying the space shuttle with and without fuel turbine discharge temperature redline protection
- [NASA-TP-2759] o 65 N87-27474 TENSILE CREEP
- Material characterization of superplastically formed titanium (Ti-6Al-2Sn-4Zr-2Mo) sheet
- [NASA-TP-2674] p 30 N87-20407 TENSILE PROPERTIES
- Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimid p 27 N87-18611 [NASA-TP-2663] **TENSILE STRENGTH**
- Heat treatment study of the SiC/Ti-15-3 composite ystem
- [NASA-TP-2970] p 29 N90-19302 **TERMINAL FACILITIES**
- Simulation evaluation of TIMER, a time-based, terminal air traffic, flow-management concept
- [NASA-TP-2870] p 13 N89-15901 TERMINOLOGY
- NASA thesaurus: Astronomy vocabulary p 74 N88-24553 [NASA-SP-70691 NASA Thesaurus supplement: A four part cumulative
- supplement to the 1988 edition of the NASA Thesaurus (supplement 3) [NASA-SP-7064-SUPPL-3] p 71 N90-22438
- TERRAIN Evaluation of a scale-model experiment to investigate
- long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 TERRESTRIAL RADIATION
- Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's auide
- p 48 N88-17096 [NASA-RP-11991 Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation
- p 56 N88-27677 [NASA-RP-1184] Summary of along-track data from the earth radiation budget satellite for several representative ocean regions p 56 N89-14634 [NASA-RP-1206]

A-50

TEST FACILITIES

ഹ

- Applications and requirements for real-time simulators in ground-test facilities (NASA-TP-2672) p 64 N87-23202 Langley Aircraft Landing Dynamics Facility p 21 N87-29544 (NASA-RP-1189) Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as occurs for a real gas [NASA-TP-2384] p 37 N87-29778 Fourteenth Space Simulation Conference: Testing for Permanent Presence in Space p 25 N88-10829 [NASA-CP-2446] TETHERED SATELLITES Tether Dynamics Simulation
- [NASA-CP-2458] p 41 N87-18821 TETHERING General equilibrium characteristics of a dual-lift
- helicopter system [NASA-TP-2615] p 2 N88-19407 TETHERLINES
- Tether Dynamics Simulation [NASA-CP-2458] p 41 N87-18821 TEXTURES
- Spatial vision processes: From the optical image to the symbolic structures of contour information p 39 N89-13762 [NASA-TP-2838]
- THERMAL ANALYSIS
- Finite-element reentry heat-transfer analysis of space shuttle Orbiter
- (NASA-TP-26571 p 37 N87-29795 Space station systems: A bibliography with indexes NASA-SP-7056(05) p 25 N88-13382 [NASA-SP-7056(05)] Comparison of predicted and measured temperatures
- of UH-60A helicopter transmission p 41 N89-24607 (NASA-TP-2911) THERMAL CONDUCTIVITY
- National Educators' Workshop: Update 1989 Standard Experiments in Engineering Materials Science and Technology p 28 N90-24350 [NASA-CP-3074]
- THERMAL CONTROL COATINGS
- Fifteenth Space Simulation Conference: Support the Highway to Space Through Testing p 25 N89-12582 INASA-CP-30151
- Turbine Engine Hot Section Technology 198 p 45 N89-12876 [NASA-CP-2444] Thermal Barrier Coatings. Abstracts and figures
- p 31 N89-13642 [NASA-CP-10019] Turbine Engine Hot Section Technology, 1987
- p 45 N89-17298 [NASA-CP-2493] THERMAL CYCLING TESTS
- Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum
- p 28 N87-10184 [NASA-TP-2612] Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites
- [NASA-TP-1063] p 28 N88-70029 THERMAL ENVIRONMENTS
- Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space
- [NASA-CP-2446] p 25 N88-10829 Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications p 26 N90-27738 [NASA-TP-3016]
- THERMAL FATIGUE Turbine Engine Hot Section Technology, 1987
- NASA-CP-24931 p 45 N89-17298 THERMAL PROTECTION
- Aerothermal tests of spherical dome protuberances on flat plate at a Mach number of 6.5
- [NASA-TP-2631] p 35 N87-13664 Aerothermal evaluation of a spherically blunted body with a trapezoidal cross section in the Langley 8-foot
- high-temperature tunnel [NASA-TP-2641] p 36 N87-18782
- Aerothermal tests of quilted dome models on a flat plate at a Mach number of 6.5 p 37 N88-22325
- [NASA-TP-2804] Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6
- (NASA-TP-2988) p 38 N90-23670 THERMAL RADIATION
- NASA/SDIO Space Environmental Effects on Materials Workshop, part 2 p 28 N89-23547
- [NASA-CP-3035-PT-2] THERMISTORS Preliminary estimates of radiosonde thermistor errors
- NASA-TP-2637] p 55 N87-12086 THERMODYNAMIC PROPERTIES
- Simplified curve fits for the thermodynamic properties of equilibrium air p 36 N87-26309
- [NASA-RP-1181] The M-type stars [NASA-SP-492] p 75 N88-11592

A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 [NASA-RP-1232] p 38 N90-27064

SUBJECT INDEX

- AMSAHTS 1990: Advances in Materials Science and Applications of High Temperature Superconductors p 29 N90-27792 INASA-CP-100431 FIRE Science Results 1989 [NASA-CP-3079] p 58 N90-28224 THERMODYNAMICS The Jovian Atmospheres [NASA-CP-2441] p 77 N87-17598 NASA-Chinese Aeronautical Establishment (CAE) Symposium [NASA-CP-2433] p 17 N87-20267 First International Conference on Laboratory Research for Planetary Atmospheres [NASA-CP-3077] p 78 N90-26744 THERMOPHYSICAL PROPERTIES Growth of solid solution single crystals [NASA-TP-2787] p 32 N88-14212 THERMOSPHERE
- Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations p 52 N87-20665 [NASA-CP-2460]
- Into the thermosphere: The atmosphere explorers p 52 N88-18084 [NASA-SP-490]
- THERMOVISCOELASTICITY Thermoviscoplastic model with application to copper
- [NASA-TP-2845] p 45 N89-16183 THESAURI
- NASA Thesaurus Supplement: A four part cumulative supplement to the 1985 edition of the NASA Thesaurus (supplement 3)
- [NASA-SP-7053-SUPPL-3] p 70 N87-27557 NASA thesaurus: Astronomy vocabulary NASA-SP-7069] p 74 N88-24553
- [NASA-SP-7069] NASA thesaurus. Volume 3: Definitions
- p 70 N89-13301 [NASA-SP-7064-VOL-3] NASA Thesaurus supplement: A four part cumulative supplement to the 1988 edition of the NASA Thesaurus (supplement 3)
- [NASA-SP-7064-SUPPL-3] p 71 N90-22438 THICKNESS
- Pressure measurements on a thick cambered and twisted 58 deg delta wing at high subsonic speeds N87-27643
- [NASA-TP-2713] p 6 THIN FILMS
- Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector
- p 35 N87-21239 [NASA-TP-2719] Influence of the deposition conditions on radiofrequency magnetron sputtered MoS2 films
- [NASA-TP-2994] p 33 N90-21210 THIN WALLS
- Mixed finite element models for free vibrations of thin-walled beams
- [NASA-TP-2868] p 45 N89-19579 THIN WINGS Applicability of linearized-theory attached-flow methods
- to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges (NASA-TP-2653) p D3 N87-15174
- THREADS Fastener design manual
- (NASA-RP-1228) p 42 N90-18740 THREE AXIS STABILIZATION
- A general-purpose balloon-borne pointing system for solar scientific instruments
- (NASA-TP-30131 p 33 N90-21219 THREE DIMENSIONAL FLOW
- Evaluation of diffuse-illumination holographic cinematography in a flutter cascade
- p 39 N87-13731 [NASA-TP-2593] Numerical simulation of scramjet inlet flow fields p 8 N88-23735 [NASA-TP-2517]
- Three-dimensional multigrid algorithms for the flux-split Euler equations
- p 65 N89-12316 [NASA-TP-2829] An upwind-biased, point-implicit relaxation algorithm for
- viscous, compressible perfect-gas flows p 38 N90-17042 [NASA-TP-2953] approximate for method catculating
- three-dimensional inviscid hypersonic flow fields [NASA-TP-3018] p 39 N90-27066 THRUST
- Evaluation of various thrust calculation techniques on an F404 engine
- [NASA-TP-3001] p 16 N90-25134 THRUST CONTROL static

circulation-control-wing concepts applied to upper surface-blowing aircraft

investigation

p 13 N87-15959

of

Large-scale

[NASA-TP-2684]
#### SUBJECT INDEX

#### THRUST REVERSAL

- Interference effects of thrust reversing on horizontal tail effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90
- [NASA-TP-2350] p 19 N87-10870 Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser
- [NASA-TP-2624] p 3 N87-12541 Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with a secondary-nozzle thrust reverser
- secondary-nozzle thrust reverser [NASA-TP-2834] p 8 N88-29752 Thrust-reverser flow investigation on a twin-engine
- transport [NASA-TP-2856] p 9 N89-14213
- Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability [NASA-TP-2933] p 10 N89-27634
- THRUST VECTOR CONTROL Static internal performance of single-expansion-ramp norzles with thrust vectoring complition up to 60 dec
- nozzles with thrust-vectoring capability up to 60 deg [NASA-TP-2364] p 3 N87-10839 Static internal performance of a two-dimensional
- convergent-divergent nozzle with thrust vectoring [NASA-TP-2721] p 5 N87-24432
- Multiaxis control power from thrust vectoring for a supersonic fighter aircraft model at Mach 0.20 to 2.47
- [NASA-TP-2712] p 5 N87-24433 Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional
- characteristics of the F-14 airplane [NASA-TP-2769] p 6 N88-12455 Static performance of an axisymmetric nozzle with
- post-exit vanes for multiaxis thrust vectoring [NASA-TP-2800] p 8 N88-20280 Static performance of nonaxisymmetric nozzles with yaw
- thrust-vectoring vanes [NASA-TP-2813] p 8 N88-21118
- A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effectors [NASA-TP-2907] p 20 N89-23468
- Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability [NASA-TP-2933] p 10 N89-27634
- Static investigation of a two-dimensional convergent-divergent exhaust nozzle with multiaxis thrust-vectoring capability
- [NASA-TP-2973] p 11 N90-19193 Internal performance of two nozzles utilizing gimbal concepts for thrust vectoring
- [NASA-TP-2991] p 11 N90-19200 THUNDERSTORMS
- NASA/MSFC FY-85 Atmospheric Processes Research Review [NASA-CP-2402] p 55 N87-13043
- TILES Aerothermal tests of spherical dome protuberances on
- a flat plate at a Mach number of 6.5 [NASA-TP-2631] p 35 N87-13664
- Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6
- [NASA-TP-2988] p 38 N90-23670 TIME DIVISION MULTIPLE ACCESS
- Digitally modulated bit error rate measurement system for microwave component evaluation
- [NASA-TP-2912] p 23 N89-28545 Satellite-matrix-switched, time-division-multiple-access network simulator
- [NASA-TP-2944] p 34 N90-11915 TIME LAG
- Piloted simulator study of allowable time delays in large-airplane response
- [NASA-TP-2652] p 19 N87-16849 TIME SERIES ANALYSIS
- Polar microwave brightness temperatures from Nimbus-7 SMMR: Time series of daily and monthly maps from 1978 to 1987
- [NASA-RP-1223] p 48 N89-26275 TIMING DEVICES
- Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study
- [NASA-TP-2616] p 16 N87-10864 TIP VANES
- Transonic flow analysis for rotors. Part 2: Three-dimensional, unsteady, full-potential calculation [NASA-TP-2375-PT-2] p 3 N87-10841
- TIRES Exploiting symmetries in the modeling and analysis of tires
- [NASA-TP-2649] p 13 N87-17690 Cornering characteristics of the main-gear tire of the space shuttle orbiter
- [NASA-TP-2790] p 14 N88-18583
- Advances in contact algorithms and their application to tires [NASA-TP-2781] p 44 N88-21456 Computational Methods for Structural Mechanics and Dynamics, part 1 [NASA-CP-3034-PT-1] p 46 N89-24638 TISSUES (BIOLOGY) Cosmic ray heavy ion LET mapping for aluminum, silicon and tissue targets [NASA-RP-1180] p 79 N87-25984 Space Bioreactor Science Workshop [NASA-CP-2485] p 58 N88-17168 TITAN The Cassini mission: Infrared and microwave spectroscopic measurements [NASA-RP-1213] p 78 N89-1670 TITANATES Heat treatment study of the SiC/Ti-15-3 composite system [NASA-TP-2970] p 29 N90-1930 TITANIUM Performance of a multistage depressed collector with nachined titanium electrodes [NASA-TP-2891] p 35 N89-1533 Secondary electron emission characteristics o untreated and ion-textured titanium (NASA-TP-2902) p 30 N89-1765 TITANIUM ALLOYS Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials [NASA-TP-2677] p 30 N87-1864 Material characterization of superplastically forme titanium (Ti-6AI-2Sn-4Zr-2Mo) sheet [NASA-TP-2674] p 30 N87-2040 Shot peening for Ti-6Al-4V alloy compressor blade p 43 N87-2056 [NASA-TP-2711] Emittance, catalysis, and dynamic oxidation o Ti-14AI-21Nb (NASA-TP-2955) p 31 N90-1024 Oxidation characteristics of Ti-14AI-21Nb ingot allo (NASA-TP-3012) p 31 N90-2520 TOLERANCES (MECHANICS) A Protection And Detection Surface (PADS) for damag tolerance [NASA-TP-3011] p 29 N90-2778 TOLERANCES (PHYSIOLOGY) Annoyance caused by advanced turboprop aircraft flyover noise: Single-rotating propeller configuration [NASA-TP-2782] p 67 N88-1744 TOLLMIEN-SCHLICHTING WAVES Interactions of Tollmien-Schlichting waves and Dear vortices. Comparison of direct numerical simulation and a weakly nonlinear theory [NASA-TP-2919] p 10 N89-25118 TOPOGRAPHY Surface topography of the Greenland Ice Sheet from satellite radar altimetry [NASA-SP-503] p 54 N90-2285 TORQUE Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tai brake torque system p 4 N87-17668 [NASA-TP-24011 TORSION An experimental investigation of the flap-lag-torsion aeroelastic stability of a small-scale hingeless helicopte rotor in hover [NASA-TP-2546] p 7 N88-2025 TOTAL OZONE MAPPING SPECTROMETER Scientific and Operational Requirements for TOMS Data [NASA-CP-2497] p 47 N88-1377 The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-2071 The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-2383 TRACE ELEMENTS A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun [NASA-RP-1224-VOL-1] p 53 N90-13893 TRACKING (POSITION)
  - ACKING (POSITION) Solar array flight dynamic experiment (NASA-TP-2598) p 23 N87-12581 Effect of motion cues during complex curved approach
- and landing tasks: A piloted simulation study [NASA-TP-2773] p 14 N88-12480

#### TRANSONIC FLOW

, r

,

TRADEOFES		
Effect of a trade between boattail ar	igle and	l wedge size
(NASA-TP-2717)	p5	N87-23593
TRAILING EDGE FLAPS		
drag reduction provided by a trailing dis	nts sno sk for hi	owing base oh Reynolds
number turbulent flow for subsonic a	und trai	sonic Mact
NASA-TP-26381	p 37	N88-14299
TRAINING SIMULATORS	, .	
Graphics Technology in Space /	Applica	tions (GTSA
[NASA-CP-3045]	p 62	N90-20651
TRAJECTORY ANALYSIS		
A synchronous data analyzer for 1 Data Format (MDDF) and Launch Tr	he Min alector	Acquisition
System (LTAS)		
[NASA-TP-2743] Trajectopy characteristics and heat	p 34	N87-24590
projectiles having large ballistic coeffi	cients	iyper verocity
[NASA-TP-2614]	р7	N88-19412
THAJECTORY OPTIMIZATION The effect of interplanetary traject	tory o	ntions on a
manned Mars aerobrake configuration	1	
[NASA-TP-3019]	p 24	N90-2603
Analog signal conditioning	for	flight-tes
instrumentation		107.000
INASA-HP-1139]	p 1/	N87-2953
Forbidden tangential orbit transfers t	etweer	intersecting
Keplerian orbits	n 23	N90-2602
Advanced Earth-to-Orbit Propulsion	n Tech	nology 1988
volume 1	- 07	100 0004
TRANSIENT HEATING	p 2/	MA0-5801
Measurement of local high-level, tra	Insient	surface <sup>'</sup> hea
flux (NASA-TR-2840)	n 30	N88-2000
TRANSIENT RESPONSE	p 38	100-3003
Steady-state and transition	al	aerodynami
INASA-TP-29321	neavy p 10	rain N89-2595
A transient response method	or line	ar couple
substructures	e 22	NO0 1244
TRANSITION TEMPERATURE	p 23	1190-1344
Indentation plasticity and fracture in	silicor	
[NASA-1P-2863]	p 30	N89-10996
Bit-error-rate testing of high-powe	ar 30-G	Hz traveling
wave tubes for ground-terminal applic (NASA-TP-2635)	ations	N87-1707
TRANSMISSIONS (MACHINE ELEMEN	TS)	
Testing of UH-60A helicopter tran	smissio	on in NASA
[NASA-TP-2626]	p 41	N87-1039
Vibration characteristics of OH-58A t	nelicopt	er main roto
transmission	0.41	N87,20654
Gear tooth stress measuremen	ts on t	he UH-60/
helicopter transmission	- 44	NO7 0000
Efficiency testing of a helicopter tra	p 4 i nsmissi	on planetan
reduction stage		
[NASA-TP-2795] Dynamic analysis of multimes	p41 th-rrear	N88-1522
transmissions	ni gou.	nencopio
[NASA-TP-2789]	p 41	N88-1704
of UH-60A helicopter transmission		emperature
[NASA-TP-2911]	p 41	N89-2460
Sensitivity of F-106B leading-edge	-vorte>	images to
flight and vapor-screen parameters	-	
[NASA-TP-2818]	p 8	N88-2376
Transonic flow analysis for	rotors	Part 2
Three-dimensional, unsteady, full- (NASA-TP-2375-PT-2)	potentia	l calculation
Effects of winglet on transonic flutte	p s er chara	acteristics o
a cantilevered twin-engine-transport w	ring mo	del
Calculation of viscous effects on	p 43 transc	nic flow fo
oscillating airfoils and comparisons wi	th expe	riment
[NASA-TP-2731]	p 6	N87-27622
A transonic-small-disturbance	WILL	
A transonic-small-disturbance methodology	- with	,
A transonic-small-disturbance methodology [NASA-TP-2806] Transonic Unsteady Aerodynamics	p7	N88-1761

[NASA-CP-3022-PT-1]

A-51

p 9 N89-19234

#### TRANSONIC SPEED

Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 2 [NASA-CP-3022-PT-2] p 9 N89-19247

Transonic Symposium: Theory, Application, and Experiment, volume 1, part 2 [NASA-CP-3020-VCL-1-PT-2] p 9 N89-20942

Laser anemometer measurements in a transonic axial-flow fan rotor INASA-TP-2879) 038 N90-11245

TRANSONIC SPEED Effects of tail span and empennage arrangement on

drag of a typical single-engine fighter aft end [NASA-TP-2352] p 3 N87-10838 Forward-swept wing configuration designed for high

maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702

An experimental investigation of an advanced turboprop installation on a swept wing at subsonic and transonic speeds

[NASA-TP-2729] p 6 N87-26883 Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack

[NASA-TP-2716] p 14 N87-29497 Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds

[NASA-TP-2588] p 6 N88-10765 Effect of empennage arrangement on single-engine nozzle/atterbody static pressures at transonic speeds [NASA-TP-2753] p 6 N88-10771

TRANSONIC WIND TUNNELS Evolution, calibration, and operational characteristics of the two-dimensional test section of the Langley 0.3-meter transonic ervogenic tunnel

[NASA-TP-2749] p 21 N87-28570 Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles [NASA-TP-3036] p 11 N90-25938

[NASA-TP-3036] p 11 N90-25938 TRANSPORT AIRCRAFT Piloted simulator study of allowable time delays in

large-airplane response [NASA-TP-2652] p 19 N87-16849

Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport [NASA-TP-2678] p 14 N87-20990

Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031

Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation

[NASA-TP-2567] p 12 N87-29469 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application

[NASA-TP-2482] p 19 N88-14987 Aeropropulsion '87. Session 6: High-Speed Propulsion Technology

[NASA-CP.10003-SESS-6] p 18 N88-15807 Thrust-reverser flow investigation on a twin-engine transport

[NASA-TP-2856] p 9 N89-14213 Integration effects of pylon geometry on a high-wing transport airplane

[NASA-TP-2877] p 9 N89-15888 Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks [NASA-TP-2962] p 20 N90-11757

Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program [NASA-TP-2917] p 16 N90-15902

TRANSPORT PROPERTIES

BRYNTRN: A baryon transport model

[NASA-TP-2887] p 80 N89-17562 A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 K

[NASA-RP-1232] p 38 N90-27064 TRANSPORT THEORY

Benchmark solutions for the galactic ion transport equations: Energy and spatially dependent problems [NASA-TP-2878] p 79 N89-16714 **TRAPPING** 

Hydrogen trapping and the interaction of hydrogen with metals

[NASA-TP-2744] p 30 N87-25463 TRAVELING WAVE TUBES

Bit-error-rate testing of high-power 30-GHz traveling wave tubes for ground-terminal applications [NASA-TP-2635] p 33 N87-17971

Design, fabrication and performance of small, graphite electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes p 35 N87-20474 [NASA-TP-2693] Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector p 35 N87-21239 [NASA-TP-2719] Revised NASA axially symmetric ring model for coupled-cavity traveling-wave tubes p 35 N87-22923 (NASA-TP-26751 Analytical and experimental performance of a dual-mode traveling wave tube and multistage depressed collector p 35 N87-25532 [NASA-TP-2752] Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube [NASA-TP-2788] p 35 N88-15146 Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes p 35 N89-21171 [NASA-TP-2904] Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211 Spent-beam refocusing analysis and multistage depressed collector design for a 75-W, 59- to 64-GHz coupled-cavity traveling-wave tube [NASA-TP-3039] p 35 N90-27965 TRIBOLOGY The 20th Aerospace Mechanics Symposium p 43 N87-16321 (NASA-CP-2423-REV) Structural Ceramics [NASA-CP-2427] p 31 N88-23872 The 24th Aerospace Mechanisms Symposium [NASA-CP-3062] p 47 N90-22079 TROPICAL METEOROLOGY On requirements for a satellite mission to measure tropical rainfall [NASA-RP-1183] p 55 N87-20701 TROPICAL STORMS On requirements for a satellite mission to measure tropical rainfall [NASA-RP-1183] p 55 N87-20701 TROPOSPHERE Future directions for H sub x O sub y detection p 51 N87-15528 [NASA-CP-2448] Space Opportunities for Tropospheric Chemistry Research

Performance of textured carbon on copper electrode

Calculation of secondary electron trajectories in

multistage depressed collectors for microwave amplifiers

p 34 N87-17990

p 34 N87-17991

multistage depressed collectors with medium-power

traveling wave tubes

[NASA-TP-2665]

[NASA-TP-2664]

[NASA-CP-2450] p 51 N87-18248 Scientific and Operational Requirements for TOMS Data

{NASA-CP-2497} p 47 N88-13774 Forty-eight-inch lidar aerosol measurements taken at the Langley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234 TRUSSES

NASA/DOD Control/Structures Interaction Technology, 1986

[NASA-CP-2447-PT-1] p 24 N87-16014 Modeling of joints for the dynamic analysis of truss structures

[NASA-TP-2661] p 43 N87-20567 Continuum modeling of large lattice structures: Status and projections

[NASA-TP-2767] p 25 N88-14115 TUNGSTEN

Tungsten fiber reinforced copper matrix composites: A review

[NASA-TP-2924] p 29 N89-27796 TURBINE BLADES Lewis inverse design code (LINDES): Users manual

[NASA-TP-2676] p 4 N87-20238 Turbine Engine Hot Section Technology, 1985 [NASA-CP-2405] p 43 N88-11140

 [NASA-CP-2405]
 p 43
 N88-11140

 Lewis Structures Technology, 1988. Volume 1: Structural
 Dynamics

 [NASA-CP-3003-VOL-1]
 p 44
 N88-23226

Turbine Engine Hot Section Technology, 1987 [NASA-CP-2493] p 45 N89-17298

TURBINE ENGINES

Turbine Engine Hot Section Technology, 1984 [NASA-CP-2339] p 43 N87-11180 Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation

[NASA-TP-2740] p 19 N87-25331 Aeropropulsive characteristics of isolated combined turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p 8 N88-23757 TURBINE PUMPS Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis [NASA-TP-2685] p 36 N87-17000 Straight cylindrical seal for high-performance turbomachines [NASA-TP-1850] p 36 N87-23936 Three-step cylindrical seal for high-performance turbomachines [NASA-TP-1849] p 36 N87-24639 Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings p 41 N88-18933 [NASA-TP-2816] Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump rotors [NASA-TP-3005] p 18 N90-23403 TURBOCOMPRESSORS Rotordynamic Instability Problems in High-Performance Turbomachinery, 1986 INASA-CP-2443 p 41 N87-22199 **TURBOFAN ENGINES** static Large-scale investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft INASA-TP-26841 p 13 N87-15959 Evaluation of installed performance of wing-tip-mounted pusher turboprop on a semispan wing [NASA-TP-2739] p 14 N87-26041 Advanced detection, isolation, and accommodation of sensor failures in turbofan engines: Real-time microcomputer implementation [NASA-TP-2925] p 20 N90-15112 TURBOMACHINERY Rotordynamic Instability Problems in High-Performance Turbomachinery, 1986 p 41 N87-22199 [NASA-CP-2443] Three-step labyrinth seal for high-performance turbomachines p 36 N87-23921 [NASA-TP-1848] Straight cylindrical seal for high-performance turbomachines p 36 N87-23936 [NASA-TP-1850] Aeropropulsion '87. Session 3: Internal Fluid Mechanics Research [NASA-CP-10003-SESS-3] p 18 N88-15790 Technique for temperature compensation of eddy-current proximity probes p 39 N89-15380 [NASA-TP-2880] Rotordynamic Instability Problems in High-Performance Turbomachinery, 1988 [NASA-CP-3026] p 41 N89-22891 Computer code for predicting coolant flow and heat transfer in turbomachinery p 18 N90-27722 [NASA-TP-2985] TURBOPROP AIRCRAFT Advanced turboprop project [NASA-SP-495] p 18 N89-12565 Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration p 20 N90-19239 INASA-TP-29821 TURBOPROP ENGINES Evaluation of installed performance of wing-tip-mounted pusher turboprop on a semispan wing p 14 N87-26041 INASA-TP-27391 An experimental investigation of an advanced turboprop installation on a swept wing at subsonic and transonic speeds [NASA-TP-2729] p 6 N87-26883 Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers INASA-TP-27631 p 6 N87-29462 TURBULENCE Multiscale turbulence effects in supersonic jets exhausting into still air p 36 N87-24672 [NASA-TP-2707] Application of turbulence modeling to predict surface heat transfer in stagnation flow region of circular cylinder [NASA-TP-2758] p 37 N87-27161 Stereopsis cueing effects on hover-in-turbulence performance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004 TURBULENCE EFFECTS Jet model for slot film cooling with effect of free-stream and coolant turbulence p 36 N87-18034 [NASA-TP-2655] Experimental evaluation of honeycomb/screen configurations and short contraction section for NASA

Lewis Research Center's altitude wind tunnel [NASA-TP-2692] p 21 N87-23662

TURBULENT BOUNDARY LAYER

Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5 [NASA-TP-2631] p 35 N87-13664

#### SUBJECT INDEX

at a Mach number of 6.5 [NASA-TP-2804]

Aerothermal tests of quilted dome models on a flat plate

A review of high-speed, convective, heat-transfer

p 37 N88-22325

VIBRATION

p 3 N87-12541

Shot peening for Ti-6AI-4V alloy compressor blades [NASA-TP-2711] p 43 N87-20566

Effect of port corner geometry on the internal

performance of a rotating-vane-type thrust reverser [NASA-TP-2624] p 3 N87-1

VANADIUM

VANES

computation methods
[NASA-1P-2914] p 38 N89-27116 Fluctuating pressures measured beneath a
high-temperature, turbulent boundary layer on a flat plate
at Mach number of 5
[NASA-1P-2947] p 67 N90-10680 TURBULENT FLOW
Experimental evaluation of honeycomb/screen
configurations and short contraction section for NASA
[NASA-TP-2692] p 21 N87-23662
Flight and wind-tunnel measurements showing base
drag reduction provided by a trailing disk for high Reynolds
number turbulent flow for subsonic and transonic Mach
[NASA-TP-2638] p 37 N88-14299
Numerical simulation of scramjet inlet flow fields
[NASA-TP-2517] p 8 N88-23735
With Application to Propulsion Systems
[NASA-CP-3006] p 37 N89-11153
TWISTED WINGS
Pressure measurements on a thick cambered and twisted 58 decidelts wind at high subsonic speeds
[NASA-TP-2713] p 6 N87-27643
TWO BODY PROBLEM
Forbidden tangential orbit transfers between intersecting Kenlerian orbits
[NASA-TP-3031] D 23 N90-26028
TWO DIMENSIONAL FLOW
Experimental validation of a two-dimensional shear-flow
INASA-TP-26791 D 66 N87-20798
Static internal performance of a two-dimensional
convergent-divergent nozzle with thrust vectoring
[NASA-TP-2721] p 5 N87-24432
Evolution, calibration, and operational characteristics of the two-dimensional test section of the Landev 0.3-meter
transonic cryogenic tunnel
[NASA-TP-2749] p 21 N87-28570
TWO DIMENSIONAL MODELS
model for determining acoustic impedance
[NASA-TP-2679] p 66 N87-20798
Two-Dimensional Intercomparison of Stratospheric
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p.53 N90-11405
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP.2043] p 38 N80-26184
Two-Dimensional Intercomparison of Stratospheric         Models         [NASA-CP-3042]       p 53       N90-11405 <b>Two PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space         Environment         [NASA-CP-3043]       p 38       N89-26184
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U-2 AIRCRAFT
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U-2 AIRCRAFT Global stratospheric change: Requirements for a Very High Altitude Aircreft of Alticebasic Bosenation
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 TWO PHASE FLOW Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-60A HELICOPTER
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-60A HELICOPTER Gear tooth stress measurements on the UH-60A
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-S0A HELCOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-T2-2588] 0.41 N87-22235
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-S0A HELICOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U U U U U U U U U U U U U H-60A Helicopter Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U U U U U U U U U D U U D U H-GOA Istratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-GOA HELICOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> U-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-60A HELICOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2611] p 41 N89-24607 ULTRAVIOLET RADIATION International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203] p 76 N88-28843 ULTRAVIOLET SPECTROMETERS
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U-2 AIRCRAFT</b> Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A</b> HELCOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 <b>ULTRAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203] p 76 N88-28843 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U-2 AIRCRAFT</b> Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A</b> HELCOPTER Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 <b>ULTRAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-2723] p 75 N88-28843 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 <b>UNIVERSITIES</b>
Two-Dimensional Intercomparison of Stratospheric Models         [NASA-CP-3042]       p 53       N90-11405         TWO PHASE FLOW       Workshop on Two-Phase Fluid Behavior in a Space Environment       [NASA-CP-3043]       p 38       N89-26184         U       U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         UH-60A HELCOPTER       Gara tooth strass measurements on the UH-60A helicopter transmission [NASA-TP-2698]       p 41       N87-22235         Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2698]       p 41       N89-24607         ULTRAVIOLET RADIATION       International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203]       p 76       N88-28843         ULTRAVIOLET SPECTROMETERS       Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723]       p 55       N87-26491         UNIVERSITIES       The 1986 Get Away Special Experimenter's Symposium       Name       Name
Two-Dimensional Intercomparison of Stratospheric Models         [NASA-CP-3042]       p 53       N90-11405         TWO PHASE FLOW       Workshop on Two-Phase Fluid Behavior in a Space Environment       [NASA-CP-3043]       p 38       N89-26184         U       U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         U       U       U       U         UH-60A HELCOPTER       Gara tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698]       p 41       N87-22235         Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2103]       p 41       N89-24607         ULTRAVIOLET RADIATION International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203]       p 76       N88-28643         ULTRAVIOLET SPECTROMETERS Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723]       p 55       N87-26491         UNIVERSITIES The 1986 Get Away Special Experimenter's Symposium [NASA-CP-2438]       p 22       N87-20302
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> -2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A HELICOPTER</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2698] p 41 N89-24607 <b>ULTRAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-1203] p 55 N87-26491 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 <b>UNIVERSITIES</b> The 1986 Get Away Special Experimenter's Symposium [NASA-CP-2438] p 22 N87-20302 Orders of magnitude: A history of the NACA and NASA,
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> -2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A HELICOPTER</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 <b>ULTRAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-1203] p 55 N87-26491 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 <b>UNVERSITIES</b> The 1986 Get Away Special Experimenter's Symposium [NASA-SP-2438] p 22 N87-20302 Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] n 81 N80-26905
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U-2 AIRCRAFT</b> Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A HELICOPTER</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 <b>ULTTAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-2723] p 55 N87-26491 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 <b>UNVERSITIES</b> The 1986 Get Away Special Experimenter's Symposium [NASA-CP-2438] p 22 N87-20302 Orders of magnitude: A history of the NACA and NASA, 1915-1930 [NASA-CP-2040] p 81 N89-26805 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-2063] p 2 N90-20921 The MSFC/UAH Data Management Symposium [NASA-CP-2040] p 62 N78-74659 <b>UNMANNED SPACECRAFT</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U-2 AIRCRAFT</b> Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 <b>UH-60A HELICOPTER</b> Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-2235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2911] p 41 N89-24607 <b>ULTRAVIOLET RADIATION</b> International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-273] p 55 N87-26491 <b>ULTRAVIOLET SPECTROMETERS</b> Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 <b>UNIVERSITIES</b> The 1986 Get Away Special Experimenter's Symposium [NASA-CP-2438] p 22 N87-20302 Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-CP-2040] p 81 N89-26805 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-2040] p 62 N78-74659 <b>UNMANED SPACECRAFT</b> Status and future of lunar geoscience [NASA-CP.2040] p 77 N87-4059
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 <b>TWO PHASE FLOW</b> Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b> <b>U</b>
Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405 TWO PHASE FLOW Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 U U U U U U U U U OL-2 AIRCRAFT Global stratospheric change: Requirements for a Very-High-Altitude Aircraft for Atmospheric Research [NASA-CP-10041] p 16 N90-14220 UH-60A HELCOPTEH Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-2235 Comparison of predicted and measured temperatures of UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22407 ULTRAVIDET RADIATION International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-TP-2723] p 55 N87-26491 ULTRAVIDLET SPECTROMETERS Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 UNVERSITIES The 1986 Get Away Special Experimenter's Symposium [NASA-CP-2438] p 22 N87-20302 Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] p 81 N89-26805 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-2043] p 2 N90-20921 The MSFC/UAH Data Management Symposium [NASA-CP-2040] p 62 N78-74659 UNMANED SPACECRAFT Status and future of lunar geoscience [NASA-SP-484] p 77 N87-19322

		•
UNSTEADY AERODYNAMICS	ic forc	es from the
SOUSSA surface-panel method for a f	iahter :	es nom me wina with tip
missile and comparison with experi	ment	and PANAIR
[NASA-TP-2736]	p 5	N87-26032
Transonic Unsteady Aerodynamics	and A	eroelasticity
1987, part 1	- 0	NOD 10004
[NASA-OP-3022-P1+1] Transpric Unsteady Aerodynamics	and A	PC281-900
1987, part 2	and ,	ion occupationly
[NASA-CP-3022-PT-2]	p 9	N89-19247
UNSTEADY FLOW		
Steady and unsteady aerodynamic	c force	es from the
missile and comparison with experi	ignier ment :	and PANAIR
[NASA-TP-2736]	p 5	N87-26032
UPPER ATMOSPHERE	•	
Present state of knowledge of the	upper	atmosphere
1988: An assessment report	n 57	N99 20222
Present state of knowledge of the	unner	atmosphere
1990: An assessment report	appe.	
[NASA-RP-1242]	p 54	N90-28929
UPPER SURFACE BLOWING		
Large-scale static inv	estigati	10 noi
surface-blowing aircraft	hhien	to upper
[NASA-TP-2684]	p 13	N87-15959
URANUS ATMOSPHERE		
The Jovian Atmospheres		
(NASA-GP-2441)	p //	N87-17598
Earth resources: A continuing biblio	oranhv	with indexes
(issue 57)		
[NASA-SP-7041(57)]	p 49	N88-23314
USER MANUALS (COMPUTER PROGE	RAMS)	
Pulse Lode Modulation (PCM) end Avdin Vector MMP-600 series system	oder n	andbook to:
[NASA-RP-1171]	o 33	N87-11916
Lewis inverse design code (LIND	ES): U	lsers manua
[NASA-TP-2676]	p 4	N87-20238
Nimbus 7 Solar Backscatter Ultravio	let (SE	UV) spectra
ouide	ince pi	oduct user :
[NASA-RP-1199]	p 48	N88-17096
SAM 2 data user's guide	•	
[NASA-RP-1200]	p 52	N88-25094
User's guide for the Nimbus 7 Sca Microwaya Radiamator (SMMR) CELL		Multichanne
(NASA-RP-1210)	-ALL 1	APO NR9-14648
User's manual for interactive LIN	EAR: A	FORTRAN
program to derive linear aircraft mode	ls	
[NASA-TP-2835]	p 65	N89-16437
Nimbus-7 Stratospheric and Mese	osphei	ric Soundei
(NASA-RP-1221)	0.53	N89-26304
Nimbus-7 ERB Solar Analysis T	ape (E	SAT) user's
guide		-
[NASA-RP-1211]	p 79	N89-30151
Nimbus / solar backscatter ultravi	olet (S	BUV) ozone
(NASA-RP-1234)	n 53	N90-17227
The NASTRAN demonstration prof	olem n	nanual. leve
17.5		
[NASA-SP-224(05)]	p 42	N81-71592
The NASTRAN programmers manu	al, leve	17.5
[NASA-SP-223(05)]	p 42	N81-71594
USER REQUIREMENTS	tunnal	Description
flow characteristics, and quide for use	rs	Description,
[NASA-TP-3008]	p 12	N90-27649
V		
V		

V/STOL AIRCRAFT

VACUUM EFFECTS

VACUUM SYSTEMS

VACUUM TESTS

[NASA-CP-3022-PT-1]	p 9 N89-19234	Experimental evaluation of two turning vane designs for	r
Transonic Unsteady Aerodynamics a	nd Aeroelasticity	fan drive corner of 0.1-scale model of NASA Lewis	s
1987, part 2		Research Center's proposed altitude wind tunnel	-
(NASA-CP-3022-PT-2)	p 9 N89-19247	[NASA-TP-2646] p 21 N87-18576	6
NSTEADY FLOW		Turbine Engine Hot Section Technology, 1985	
Steady and unsteady aerodynamic i	forces from the	[NASA-CP-2405] p 43 N88-11140	Ð
SOUSSA surface-panel method for a fig	hter wing with tip	Static performance of an axisymmetric nozzle with	h
missile and comparison with experime	ent and PANAIR	post-exit vanes for multiaxis thrust vectoring	
[NASA-1P-2/36]	p 5 N87-26032	[NASA-TP-2800] p 8 N88-20280	0
PPER ATMOSPHERE		The effectiveness of vane-aileron excitation in the	9
Present state of knowledge of the up	pper atmosphere	experimental determination of flutter speed by parameter	ır
(NASA PD 1009)	50 NO0 00000	identification	
Propert state of knowledge of the u	52 N00-29233	[NASA-IP-29/1] p 16 N90-15100	0
1990: An assessment report	pper annosphere	VAPORS	_
INASA-RP-12421	54 NG0-28929	Sensitivity of F-1066 leading-edge-vortex images to	Q
PPER SURFACE BLOWING	04 1100-20020	(NASA TD 2919) D 8 N98-22760	^
Large-scale static inves	tination of		
circulation-control-wing concepts app	olied to upper	Effects of variables upon pyrotechnically induced shool	L
surface-blowing aircraft		response spectra	^
[NASA-TP-2684]	p 13 N87-15959	[NASA-TP-2603] p 43 N87-1292	1
RANUS ATMOSPHERE		VARIABLE STARS	
The Jovian Atmospheres		The M-type stars	
[NASA-CP-2441] p	p 77 N87-17598	[NASA-SP-492] p 75 N88-1159;	2
RBAN DEVELOPMENT		VARIABLE SWEEP WINGS	
Earth resources: A continuing bibliogra	aphy with indexes	Flight-determined aerodynamic derivatives of the AD-	1
(issue 57)		oblique-wing research airplane	
[NASA-SP-7041(57)]	p 49 N88-23314	[NASA-TP-2222] p 19 N87-1087	1
SER MANUALS (COMPUTER PROGRA	MS)	VATOL AIRCRAFT	
Pulse Code Modulation (PCM) encod	fer handbook for	The 1987 Ground Vortex Workshop	
Aydin Vector MMP-600 series system		[NASA-CP-10008] p 9 N89-10849	9
[NASA-HP-11/1]	D 33 N87-11916	VECTORS (MATHEMATICS)	
Lewis inverse design code (LINDES	5): Users manual	Proceedings of the Scientific Data Compression	n
Nimbur 7 Solar Backsoattor Littraviolo	(SPIN) apostral	workshop	~
scan solar irradiance and Earth radiance	ce product user's	[NASA-CP-3025] p 63 N89-22332	2
ouide	ce product user s	Controlled Ecological Life Support System	
(NASA-RP-1199)	n 48 N88-17096	Bessperative Life Support Systems in Space	ı.
SAM 2 data user's quide		[NASA.CP-2480] n 60 N88-1225	1
(NASA-RP-1200)	D 52 N88-25094	VELOCITY	
User's guide for the Nimbus 7 Scan	ning Multichannel	Development and evaluation of an airplane electronic	c
Microwave Radiometer (SMMR) CELL-A	ALL tape	display format aligned with the inertial velocity vecto	- X
[NASA-RP-1210]	p 56 N89-14648	[NASA-TP-2648] p 16 N87-1343	8
User's manual for interactive LINEA	AR: A FORTRAN	VELOCITY DISTRIBUTION	
program to derive linear aircraft models		Laser anemometer measurements in a transonic	с
[NASA-TP-2835] p	p 65 N89-16437	axial-flow fan rotor	
Nimbus-7 Stratospheric and Mesos	pheric Sounder	[NASA-TP-2879] p 38 N90-1124	5
(SAMS) experiment data user's guide		VELOCITY MEASUREMENT	
[NASA-HP-1221] p	53 N89-26304	Velocity profiles in laminar diffusion flames	_
Nimbus-/ ERB Solar Analysis Tap	De (ESAT) users	[NASA-TP-2596] p 36 N87-1803	5
(NASA.DO.1211)	- 70 NP0 20151	I hree component laser anemometer measurements in	n J
Nimbus 7 solar backscatter ultraviole	ot (SRIIV) otone	an annular cascade of core turbine varies with contoured	a
oroducts user's quide	et (000V) 020116	(NASA-TP-2846) D.9 N80-1084	
(NASA-RP-1234)	53 N90-17227	VERTICAL AIR CURRENTS	•
The NASTRAN demonstration proble	em manual level	Snanwise measurements of vertical components of	f
17.5		atmospheric turbulence	
(NASA-SP-224(05))	0 42 N81-71592	[NASA-TP-2963] p 58 N90-19716	в
The NASTRAN programmers manual	level 17.5	VERTICAL DISTRIBUTION	
[NASA-SP-223(05)]	42 N81-71594	Forty-eight-inch lidar aerosol measurements taken at the	е
SER REQUIREMENTS		Langley Research Center, May 1974 to December 1987	7
The Langley 14- by 22-foot subsonic tu	nnel: Description.	[NASA-RP-1209] p 52 N88-29234	4
flow characteristics, and guide for users		VERTICAL LANDING	
[NASA-TP-3008]	0 12 N90-27649	Proceedings of the 1985 NASA Ames Research Center's	s
		Ground-Effects Workshop	_
V		[NASA-CP-2462] p 5 N87-24410	D
V		VENTICAL UNIENTATION	
		Enects of combining vertical and nonzonial information	Π
STOL AIRCRAFT		INTO a primary hight display	7
Proceedings of the 1985 NASA Ames R	lesearch Center's		'
Ground-Effects Workshop		The 1987 Ground Vortex Workshop	
[NASA-CP-2462]	p5 N87-24410	[NASA-CP-10008] 0 9 N89-1084	9
A review of technologies applicable to	o low-speed flight	Powered-lift aircraft technology	-
of high-performance aircraft investigate	d in the Langley	[NASA-SP-501] p 15 N90-12589	9
14- x 22-foot subsonic tunnel		VERY LARGE SCALE INTEGRATION	
[NASA-1P-2/96]	p7 N88-20264	A technique for evaluating the application of the pin-leve	H
ACUUM EFFECTS		stuck-at fault model to VLSI circuits	
Reaction of perfluoroalkylpolyethers (	PFPE) with 440C	[NASA-TP-2738] p 42 N87-28025	5
steel in vacuum under sliding cond	aluons at room	VERY LOW FREQUENCIES	
	- 04 - NOO 00001	A lunar far-side very low frequency array	
	1003-20091	[NASA-CP-3039] p 75 N90-10805	5
AUUUM STOLEMS		VHSIC (CIRCUITS)	
in vacuum systems	re measurements	Computer Sciences and Data Systems, volume 2	~
(NASA-RP-1219)	A0 N90-10412	[INADA-UP-2409-VUL-2] p 02 N87-19932	2
		Evaluation of the ride quality of a light twin anging	6
Outnassing data for selecting encour-	aft materiale	aimlana using a ride quality meter	9
(NASA-RP-1124)	0.28 NRA.10117	[NASA-TP-2913] n 2 NRQ-22564	8
[		(	-

#### SUBJECT INDEX

#### VIBRATION DAMPING

#### VIBRATION DAMPING

- NASA/DOD Control/Structures Interaction Technology, 1986
- [NASA-CP-2447-PT-1] p 24 N87-16014 NASA/DOD Control/Structures Interaction Technology, 1986
- [NASA-CP-2447-PT-2] p 25 N87-24495 The 58th Shock and Vibration Symposium, volume 1 p 43 N88-13609 [NASA-CP-2488-VOL-1] Lewis Structures Technology, 1988. Volume 1: Structural
- **Dynamics** [NASA-CP-3003-VOL-1] p 44 N88-23226 Experimental evaluation of a tuned electromagnetic

damper for vibration control of cryogenic turbopump rotors [NASA-TP-3005] p 18 N90-23403

- VIBRATION ISOLATORS The 58th Shock and Vibration Symposium, volume
- [NASA-CP-2488-VOL-1] p 43 N88-13609 The 22nd Aerospace Mechanisms Symposium [NASA-CP-2506] p 44 N88-21468
- Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754
- VIBRATION MEASUREMENT Testing of UH-60A helicopter transmission in NASA Lewis 2240-kW (3000-hp) facility
- [NASA-TP-2626] p 41 N87-10391
- Vibration characteristics of OH-58A helicopter main rotor transmission (NASA-TP-2705) p 41 N87-20555

VIDEO COMMUNICATION Jet transport flight operations using cockpit display of

- traffic information during instrument meteorological conditions: Simulation evaluation [NASA-TP-2567]
- p 12 N87-29469 VISCOPLASTICITY
- Nonlinear Constitutive Relations for High Temperature Applications, 1986 [NASA-CP-10010] p 44 N88-21498
- Thermoviscoplastic model with application to copper [NASA-TP-2845] p 45 N89-16183 p 45 N89-16183 VISCOUS FLOW
- Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] D 6 N87-27622
- Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 2 [NASA-CP-3022-PT-2] p 9 N89-19247
- An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows [NASA-TP-2953] p 38 N90-17042
- **VISUAL OBSERVATION** Atlas of Comet Halley 1910 II [NASA-SP-488]
- p 75 N87-30235 VISUAL PERCEPTION Spatial Displays and Spatial Instruments
- [NASA-CP-10032] p 61 N90-22918 VISUAL SIGNALS
- Determination of depth-viewing volumes for stereo three-dimensional graphic displays [NASA-TP-2999] p 61 N90-22965
- **VOICE COMMUNICATION**
- A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation p 13 N89-11726 [NASA-TP-2837] VOLCANOES

Airborne lidar measurements of El Chichon stratospheric aerosols, May 1983

- [NASA-RP-1172] p 51 N87-11358 Airborne lidar measurements of EI Chichon stratospheric aerosols, January 1984
- [NASA-RP-1175] p 51 N87-20663 On the statistics of El Nino occurrences and the relationship of El Nino to volcanic and solar/geomagnetic
- activity [NASA-TP-2948] p 79 N90-12456 VORTEX FLAPS
- Applicability of linearized-theory attached-flow methods to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges [NASA-TP-2653] p3 N87-15174
- Wind-tunnel free-flight investigation of a 0.15-scale model of the F-106B airplane with vortex flaps
- p 4 N87 21855 [NASA-TP-2700] Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922
- VORTEX SHEDDING
- Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 VORTICES
- Correlation of helicopter impulsive noise from blade-vortex interaction with rotor mean inflow p 66 N87-18399 [NASA-TP-2650]

Helicopter interaction locations: blade-vortex Scale-model acoustics and free-wake analysis results [NASA-TP-2658] p 4 N87-18537 Study of lee-side flows over conically cambered delta ۷

- wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597
- Measurement of velocity and vorticity fields in the wake of an airroil in periodic pitching motion INASA-TP-27801 p 66 N88-13002
- Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters
- p 8 N88-23760 [NASA-TP-2818] The 1987 Ground Vortex Workshop
- p 9 N89-10849 [NASA-CP-10008] Interactions of Tollmien-Schlichting waves and Dean vortices. Comparison of direct numerical simulation and a weakly nonlinear theory
- [NASA-TP-2919] p 10 N89-25118 Discrete-vortex model for the symmetric-vortex flow on
- cones [NASA-TP-29891 p 11 N90-20946
- A time-accurate adaptive grid method and the numerical simulation of a shock-vortex interaction
- [NASA-TP-2998] p 61 N90-21524 VORTICITY
- Measurement of velocity and vorticity fields in the wake of an airfoil in periodic pitching motion
- INASA-TP-27801 p 66 N88-13002

#### W

- WAKES
  - Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results p 4 N87-18537 [NASA-TP-2658] Measurement of velocity and vorticity fields in the wake of an airfoil in periodic pitching motion [NASA-TP-2780] p 66 N88-13002 Galileo probe parachute test program: Wake properties of the Galileo probe at Mach numbers from 0.25 to 0.95
  - [NASA-RP-1130] p 37 N88-18884 WALL JETS Jet model for slot film cooling with effect of free-stream and coolant turbulence [NASA-TP-2655] p 36 N87-18034
  - WALL TEMPERATURE Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle
  - [NASA-TP-2726] p 27 N87-25424 WARNING SYSTEMS
  - Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' Conference p 12 N88-17616 [NASA-CP-10006]
- Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921
- WATER
- Development testing of large volume water sprays for warm fog dispersal (NASA-TP-2607)
- p 24 N87-12585 Future directions for H sub x O sub y detection [NASA-CP-2448] p 51 N87-15528 Finite-rate water condensation in combustion-heated
- wind tunnels [NASA-TP-2833] p 22 N88-28075 WATER COLOR
- Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152
- WAVE INTERACTION Interactions of Tollmien-Schlichting waves and Dean
- vortices. Comparison of direct numerical simulation and a weakly nonlinear theory p 10 N89-25118 [NASA-TP-2919]
- WAVE PROPAGATION Propagation of sound waves in tubes of noncircular cross
- section p 3 N87-14284 [NASA-TP-2601]
- Evaluation of a scale-model experiment to investigate long-range acoustic propagation p 66 N88-11450 [NASA-TP-2748]
- Propagation effects on satellite systems at frequencies below 10 GHz: A handbook for satellite systems design [NASA-RP-1108/2] p 34 N88-14226
- Propagation effects handbook for satellite systems design. A summary of propagation impairments on 10 to 100 GHz satellite links with techniques for system desian
- [NAŠA-RP-1082(04)] p 34 N89-17060 WAVE SCATTERING
- Theory for computing the field scattered from a smooth inflected surface [NASA-TP-2632]
  - p 68 N87-13264

LEATTIEN
Meteorological and Environmental Inputs to Aviation
Systems
[NASA-CP-2498] p 56 N88-25105
Atmospheric Turbulance Relative to Aviation Missile
and Space Programs
[NASA-CP-2468] p 55 N87-22341
EAVING
The interlaminar fracture toughness of woven
graphite/epoxy composites
[NASA-TP-2950] p 29 N90-10179
/EDGES
Effect of a trade between boattail angle and wedge size
INASA TD 27171
Preliminary structural design of composite main rotor
blades for minimum weight
{NASA-TP-2730} p 28 N87-25435
/EIGHTLESSNESS
Microgravity Fluid Management Symposium
[NASA-CP-2465] p 32 N87-21141
/ELDING
Weld stresses beyond elastic limit: Materials
DISCONTINUITY
[NA3A-17-2555] p 40 N65-27214
NASA/MSEC FY-85 Atmospheric Processes Research
Review
[NASA-CP-2402] p 55 N87-13043
IND SHEAR
Doppler Radar Detection of Wind Shear
[NASA-CP-2435] p 12 N87-10054
Wind Shear/Turbulence Inputs to Flight Simulation and
Systems Certification
[NASA-CP-24/4] p1 N87-2526/
wind snear detection. Forward-looking sensor
[NASA-CP-10004] n 12 N88-14970
Airborne Wind Shear Detection and Warning Systems:
First Combined Manufacturers' and Technologists'
FISE COMUNIES MANUACTURES AND LECTIONOUSIS
Conference
Conference [NASA-CP-10006] p 12 N88-17616
[NASA-CP-10006] p 12 N88-17616 [nfluence of wind shear on the aerodynamic
[NASA-CP-10006] p 12 N88-17616 [nfluence of wind shear on the aerodynamic characteristics of airplanes
[NASA-CP-10006] p 12 N88-17616 [Influence of wind shear on the aerodynamic characteristics of airplanes [NASA-TP-2827] p 12 N88-26344
First Contence     [NASA-CP-10006]     p 12     N88-17616       [Influence of wind shear on the aerodynamic characteristics of airplanes     [NASA-TP-2827]     p 12     N88-26344       Piloted-simulation evaluation of escape guidance for circle wind shear on the secape guidance for circle wind shear on the sec
Instruction     Conference       [NASA-CP-10006]     p 12       [NASA-CP-10006]     p 12       Influence of wind shear on the aerodynamic characteristics of airplanes       [NASA-TP-2827]     p 12       N88-26344       Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       (NASA-TP-2827)       0.17
Instruction     Conference       [NASA-CP-10006]     p 12       [NASA-CP-10006]     p 12       [NASA-CP-10006]     p 12       [NASA-CP-2827]     p 12       [NASA-TP-2827]     p 12       N88-26344     Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       [NASA-TP-2886]     p 17       N89-16820     p 17
Instruction     Conference       [NASA-CP-10006]     p 12       [NASA-CP-10006]     p 12       Influence     of wind shear on the aerodynamic       characteristics of airplanes     p 12       [NASA-TP-2827]     p 12       Piloted-simulation evaluation of escape guidance for       microburst wind shear encounters       [NASA-TP-2886]     p 17       N89-16820       Joint University Program for Air Transportation
Instruction     Wahdhacturers     and     Fechnologists       Conference     [NASA-CP-10006]     p 12     N88-17616       Influence of wind shear on the aerodynamic characteristics of airplanes     p 12     N88-26344       Piloted-simulation evaluation of escape guidance for microburst wind shear encounters     p 17     N89-16820       Joint University Program for Air Transportation     Research, 1988-1989     p 2     N90-20921
Pilot     Conference       [NASA-CP-10006]     p 12       [NASA-CP-10006]     p 12       [Influence of wind shear on the aerodynamic characteristics of airplanes     p 12       [NASA-TP-2827]     p 12       N88-26344     Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       [NASA-TP-2886]     p 17       N89-16820     Joint University Program for Air Transportation       Research, 1988-1989     p 2       [NASA-CP-3063]     p 2       NOTUNNEL APPARATUS
First Contence       [NASA-CP-10006]       p 12       N88-17616         [Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [INASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       [NASA-TP-2886]       p 17         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       nmm       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         INASA-CP-3063]       p 2       N90-20921       IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for       NASA Lewis Research Center's altitude wind tunnel
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic       characteristics of airplanes       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for       microburst wind shear encounters       p 17       N89-16820         Joint       University       Program       for Air       Transportation         Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number         Experimental evaluation of wall Mach number       NASA-Lewis Research Center's altitude wind tunnel         [NASA-TP-2666]       p 21 - N87-17717
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wat! Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for for distribution of the out unition of the NASA Lewis Research Center's altitude wind tunnel       NASA Lewis Research Center's altitude wind tunnel
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis       Research center's corosed altitude wind tunnel
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint       University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         INASA-CP-3063]       p 2       N90-20921       IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for       NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2646]       p 21 - N87-17576       [NASA-TP-2646]       p 21 - N87-17576
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint       University       Program       for Air       Transportation         Research       1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for an drive corner of 0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 - N87-18776         Detailed flow surveys of turning vanes designed for a
Pirst Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic         characteristics of airplanes         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for         microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation         Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number         distributions of the octagonal test section proposed for         NASA-TP-2666]       p 21 · N87-17717         Experimental evaluation of two turning vane designs for         fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 · N87-18576         Detailed flow surveys of turning vanes designed for         0.1-scale model of NASA Lewis       Research Center's notes designed for
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic         characteristics of airplanes       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for         microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation         Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number         distributions of the octagonal test section proposed for         NASA.TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for         fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel         [NASA.TP-2646]       p 21         Detailed flow surveys of turning vanes designed for a         0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       [NASA-TP-2886]       p 17       N89-16820         Joint       University Program for Air Transportation       Research, 1988-1989       [NASA-CP-3063]       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21       N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2646]       p 21       N87-18576         Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2640]       p 21       N87-20295
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         INASA-CP-3063]       p 2       N90-20921       IND TUNNEL APPARATUS         Experimental evaluation of two turning vane designs for       p 21 - N87-17717       Experimental evaluation of two turning vane designs for         [NASA-TP-2666]       p 21 - N87-18576       Detailed flow surveys of turning vanes designed for a       0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel       [NASA-TP-2646]       p 21 - N87-18576         Detailed flow surveys of turning vanes designed for a       0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2646]       p 21 - N87-18576       Detailed flow surveys of turning vanes designed for a       0.1-scale model of NASA Lewis         [NASA-TP-2680]       p 21 - N87-18576       Detailed flow surveys of turning vanes designed for a
Instruction       Wahdhacturers       and       Fechnologists         Conference       [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint       University Program for Air Transportation       Research, 1988-1989         [NASA-CP-3063]       p 2       N90-20921 <b>IND TUNNEL APPARATUS</b> Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21 · N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2666]       p 21 · N87-18576         Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2680]       p 21 · N87-20295         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale       p 21 · N87-20295
Pirst Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic         characteristics of airplanes         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for         microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation         Research, 1988-1989         [NASA-CP-3063]       p 2       N90-20921         IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number         (INSA-TP-2666]       p 21 · N87-17717         Experimental evaluation of two turning vane designs for         fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 · N87-18576         Detailed flow surveys of turning vane designs for         fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 · N87-18576         Detailed flow surveys of turning vanes designs for         o.1-scale model of NASA Lewis Research Center's         proposed altitude wind tunnel       [NASA-TP-2660]         P 21 · N87-18576       Detailed flow surveys of turning v
Pilot       Conference         [NASA-CP-10006]       p 12       N88-17616         Influence       of wind shear on the aerodynamic         characteristics of airplanes       p 12       N88-17616         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for       microburst wind shear encounters       NASA-TP-2886]       p 17       N89-16820         Joint       University       Program       for Air       Transportation         Research, 1988-1989       p 2       N90-20921       IND TUNNEL APPARATUS         Experimental       evaluation of wat!       Mach number         fustShubtions of the octagonal test section proposed for       NASA Lewis Research Center's altitude wind tunnel         [NASA-TP-2666]       p 21       N87-17717         Experimental evaluation of two turning vane designs for       fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel       [NASA-TP-2646]       p 21       N87-18576         Detailed flow surveys of turning vanes designs for a       0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2660]       p 21       N87-20295         Experimental evaluation of turning vane designs for ingh-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's propos
Prist Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       [NASA-TP-2886]       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       [NASA-CP-3063]       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21       N87-18576       Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2680]       p 21       N87-20295         Experimental evaluation of turning vane designs for fan drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2680]       p 21       N87-20295         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitunel unnel         [
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic         characteristics of airplanes         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for         microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation         Research, 1988-1989         [NASA-TP-2866]       p 2       N90-20921         IND TUNNEL APPARATUS         Experimental evaluation of wall Mach number         [NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for         fan drive corner of 0.1-scale model of NASA Lewis         Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 - N87-187576         Detailed flow surveys of turning vane designed for a         0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2660]       p 21 - N87-20295         Experimental evaluation of turning vane designs for         NaSA-TP-2660]       p 21 N87-20295         Experimental evaluation of turning vane designs for         NASA-TP-2660]       p 21 N87-20295         Experimental evaluation of turning vane designs f
Pirst Contence       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       (NASA-TP-2886)       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       P 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       (NASA-TP-2666)       p 21 · N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2666)       p 21 · N87-18576         Detailed flow surveys of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2680)       p 21 · N87-18576         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2681)       p 21 · N88-17686         The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users </td
Pirst Contence         [NASA-CP-10006]       p 12 N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       p 12 N88-17616         [NASA-TP-2827]       p 12 N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17 N89-16820         Joint University Program for Air Transportation       Research, 1988-1989         [NASA-CP-3063]       p 2 N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel         [NASA-TP-2666]       p 21 N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21 N87-18576         Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2660]       p 21 N87-20295         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2680]       p 21 N87-18576         Detailed flow surveys of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2681]
First Contence         [NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic         characteristics of airplanes         [NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for         microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation         Research, 1988-1989       p 2       N90-20921         INASA-CP-3063]       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number         distributions of the octagonal test section proposed for       NASA-TP-2666]       p 21       N87-17717         Experimental evaluation of two turning vame designs for       fan drive corner of 0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2666]       p 21       N87-18576       Detailed flow surveys of turning vames designed for a         0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2680]       p 21       N87-20295         Experimental evaluation of turning vame designs for       high-speed and coupled fan-drive corners of 0.1-scale       model of NASA Lewis Research Center's proposed altitude wind tunnel         [NASA-TP-2681]       p 21       N87-10295       Exper
First Contence       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       (NASA-TP-2886)       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       (NASA-CP-3063)       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       NASA-TP-2666]       p 21       N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2646)       p 21       N87-18576         Detailed flow surveys of turning vane designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2680)       p 21       N87-18576         Detailed flow surveys of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       p 21       N88-720295         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corner
First Contence       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       p 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       [NASA-TP-2666]       p 21 - N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis       Research Center's proposed altitude wind tunnel         [NASA-TP-2646]       p 21       N87-18576       Detailed flow surveys of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2680]       p 21       N87-20295         Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       [NASA-TP-2681]       p 21       N87-20295         Experimental evaluation of turning vane designs for high-speed and coupled f
Plast Contence       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-CP-10006]       p 12       N88-17616         Influence of wind shear on the aerodynamic characteristics of airplanes       (NASA-TP-2827]       p 12       N88-26344         Piloted-simulation evaluation of escape guidance for microburst wind shear encounters       (NASA-TP-2886)       p 17       N89-16820         Joint University Program for Air Transportation       Research, 1988-1989       P 2       N90-20921         IND TUNNEL APPARATUS       Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel       (NASA-TP-2666)       p 21 · N87-17717         Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2666)       p 21 · N87-18576         Detailed flow surveys of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel       (NASA-TP-2680]       p 21 · N87-10568         The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users       non-27649       ND 20-27649         IND TUNNEL CALIBRATION       Experimental evaluation of honeycomb/screen configurations and short contraction section for NASA Lewis Research Center's altitude wind tunnel

- Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel p 21 N87-18576 [NASA-TP-2646]
- Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel
- INASA-TP-26801 p 21 N87-20295 Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude rind tunnel

[NASA-TP-2681]

#### ZONAL HARMONICS

#### SUBJECT INDEX

WIND TUNNEL MODELS

- Wind-tunnel free-flight investigation of a 0.15-scale model of the F-106B airplane with vortex flaps p 4 N87-21855 [NASA-TP-2700]
- Experimental evaluation of blockage ratio and plenum evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section of NASA Lewis Research Center's proposed altitude wind tunnel
- [NASA-TP-2702] p 21 N87-22694 Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic sneeds
- [NASA-TP-2588] p 6 N88-10765 Effects of winglets on a first-generation jet transport wing. 7: Sideslip effects on winglet loads and selected wing loads at subsonic speeds for a full-span model [NASA-TP-2619] p 7 N88-18 p 7 N88-18567 WIND TUNNEL STABILITY TESTS
- Effects of the installation and operation of jet-exhaust yaw vanes on the longitudinal and lateral-directional characteristics of the F-14 airplane [NASA-TP-2769] o 6 N88-12455
- WIND TUNNEL TESTS
- Wind-tunnel investigation of the flight characteristics of a canard general-aviation airplane configuration p 3 N87-10039 INASA-TP-26231
- In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane p 19 N87-10103 [NASA-TP-2224]
- Interference effects of thrust reversing on horizontal tail effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90
- p 19 N87-10870 [NASA-TP-2350] Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser
- [NASA-TP-2624] p 3 N87-12541 Effects of winglet on transonic flutter characteristics of a cantilevered twin-engine-transport wing model
- [NASA-TP-2627] p 43 N87-13789 Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system
- p 4 N87-17668 [NASA-TP-2401] Correlation of helicopter impulsive noise from
- blade-vortex interaction with rotor mean inflow p 66 N87-18399 [NASA-TP-2650] Summary of studies to reduce wing-mounted propfan
- installation drag on an M = 0.8 transport p 14 N87-20990 [NASA-TP-2678] Wind-tunnel free-flight investigation of a 0.15-scale
- model of the F-106B airplane with vortex flaps p 4 N87-21855 [NASA-TP-2700]
- Experimental evaluation of blockage ratio and plenum evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section of NASA Lewis Research Center's proposed altitude wind tunnel
- p 21 N87-22694 [NASA-TP-2702] Wind-tunnel investigation of a full-scale general aviation airplane equipped with an advanced natural laminar flow wina
- [NASA-TP-2772] p 6 N88-10009 Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic
- [NASA-TP-2588] p.6 N88-10765 Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers
- p 37 N88-14299 [NASA-TP-2638] A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel
- p 7 N88-20264 [NASA-TP-2796] Helicopter main-rotor noise: Determination of source contributions using scaled model data
- p 67 N88-26907 [NASA-TP-2825] Steady and unsteady transonic pressure measurements
- on a clipped delta wing for pitching and control-surface oscillations p 8 N88-28895 [NASA-TP-2594]
- Transonic Symposium: Theory, Application, and Experiment, Volume 1, Part 1 p 9 N89-20925
- [NASA-CP-3020-VOL-1-PT-1] Transonic Symposium: Theory, Experiment, volume 1, part 2 Application, and
- p 9 N89-20942 [NASA-CP-3020-VOL-1-PT-2] Hot-jet simulation in cryogenic wind tunnels p 15 N89-23448 [NASA-RP-1220]
- Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability [NASA-TP-2933] P
- p 10 N89-27634

Research in Natural Laminar Flow and Laminar-Flow Control, part 2

- [NASA-CP-2487-PT-2] p 10 N90-12519 Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration
- VASA-TP-2956 p 11 N90-14185 CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-TP-2956] [NASA-CP-3052] p 22 N90-17647
- Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration [NASA-TP-2982]
- NASA-TP-2982] p 20 N90-19239 Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8
- [NASA-TP-2462] p 2 N90-20942 WIND TUNNEL WALLS Experimental evaluation of wall Mach number
- distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel [NASA-TP-2666]
- ASA-TP-2666] p 21 N87-17717 NASA SC(2)-0714 airfoil data corrected for sidewall boundary-layer effects in the Langley 0.3-meter transonic cryogenic tunnel p 9 N89-17568
- [NASA-TP-2890] WIND TUNNELS
- Aeronautical facilities assessment
- [NASA-RP-1146] p 21 N87-10876 Engineer in charge: A history of the Langley Aeronautical Laboratory, 1917-1958 [NASA-SP-4305]
- p 80 N87-24390 WIND TURBINES
- Lewis Structures Technology, 1988. Volume 3: Structural Integrity Fatigue and Fracture Wind Turbines HOST
- [NASA-CP-3003-VOL-3] p 44 N88-22408 Lewis Structures Technology, 1988. Volume 1: Structural Dynamics
- [NASA-CP-3003-VOL-1] D 44 N88-23226 WIND VELOCITY
- Spanwise measurements of vertical components of atmospheric turbulence
- [NASA-TP-2963] p 58 N90-19718 WING LOADING
- Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2 [NASA-TP-2660-PT-2]
- p 5 N87-25301 Shape sensitivity analysis of wing static aeroelastic characteristics
- p 15 N88-22031 [NASA-TP-28081
- Evaluation of a strain-gage load calibration on a low-aspect-ratio wing structure at elevated temperature [NASA-TP-2921] p 46 N89-28034 WING PROFILES
- Shape sensitivity analysis of wing static aeroelastic characteristics
- [NASA-TP-2808] p 15 N88-22031 WING TIP VORTICES
- Evaluation of installed performance of а wing-tip-mounted pusher turboprop on a semispan wing [NASA-TP-2739] p 14 N87-26041 p 14 N87-26041 WINGLETS
- Effects of winglet on transonic flutter characteristics of a cantilevered twin-engine-transport wing model
- [NASA-TP-2627] p 43 N87-13789 Effects of winglets on a first-generation jet transport wing. 7: Sideslip effects on winglet loads and selected
- wing loads at subsonic speeds for a full-span model [NASA-TP-2619] p 7 N88-11 p7 N88-18567
- WINGS
- Effects of winglet on transonic flutter characteristics of a cantilevered twin-engine-transport wing model
- [NASA-TP-2627] p 43 N87-13789 Subsonic maneuver capability of a supersonic cruise
- lighter wing concept [NASA-TP-2642] p 3 N87-15184
- Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane
- [NASA-TP-2691] p 14 N87-23614 Steady and unsteady aerodynamic forces from the SOUSSA surface-panel method for a fighter wing with tip missile and comparison with experiment and PANAIR [NASA-TP-2736] p 5 N87-26032
- Wind-tunnel investigation of a full-scale general aviation airplane equipped with an advanced natural laminar flow wing
- [NASA-TP-2772] p 6 N88-10009 Α transonic-small-disturbance wing design methodology [NASA-TP-2806] p7 N88-17614
- Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760

[NASA-TP-2877] p 9 N89-15888 and transitional aerodynamic Steady-state characteristics of a wing in simulated heavy rain [NASA-TP-2932] p 10 N89-25951 WOLF-RAYET STARS O stars and Wolf-Rayet stars [NASA-SP-497] p 74 N89-11657 WORKLOADS (PSYCHOPHYSIOLOGY) Jet transport flight operations using cockpit display of traffic information during instrument meteorological conditions: Simulation evaluation p 12 N87-29469 [NASA-TP-2567] Effect of motion cues during complex curved approach and landing tasks: A piloted simulation study

Integration effects of pylon geometry on a high-wing

transport airplane

p 14 N88-12480 (NASA-TP-2773) Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370 WORKSTATIONS Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370

### Х

X RAY ASTRONOMY Essays in Space Science [NASA-CP-2464] p 72 N87-24247 X RAY SPECTROSCOPY FORTRAN program for x ray photoelectron spectroscopy data reformatting [NASA-TP-2957] p 69 N90-12348 X RAYS Rapid Fluctuations in Solar Flares [NASA-CP-2449] p 79 N87-21785 X WING ROTORS Proceedings of the Circulation-Control Workshop, 1986 [NASA-CP-2432] p7 N88-17586

- YAWING MOMENTS
- Cornering characteristics of the main-gear tire of the space shuttle orbiter [NASA-TP-2790]
  - p 14 N88-18583

## Ζ

- ZENITH
- Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers
- (NASA-TP-2643) ZERO LIFT
- multibody configurations [NASA-TP-2762]
- ZONAL FLOW (METEOROLOGY)
- [NASA-CP-3044] ZONAL HARMONICS
- micro-computer applications

p 48 N87-22281 Planform effects on the supersonic aerodynamics of p 6 N88-12454

Comparison of satellite-derived dynamical quantities for the stratosphere of the Southern Hemisphere p 53 N89-25540

An economical semi-analytical orbit theory for [NASA-TP-2811] p 66 N89-14052

ARPASI, DALE J.

NASA Scientific and Technical Publications 1987-1990

#### Typical Personal Author Index Listing



Listings in this index are arranged alphabetically by personal author. The title of the document provides the user with a brief description of the subject matter. The report number helps to indicate the type of document listed (e.g., NASA report, translation, NASA contractor report). The page and accession numbers are located beneath and to the right of the title. Under any one author's name the accession numbers are arranged in sequence with the AIAA accession numbers appearing first.

### A

ABBOTT, TERENCE S. Effects of combining vertical and horizontal information
into a primary flight display
[NASA-TP-2783] p 17 N88-12487
A simulation evaluation of the engine monitoring and control system display
[NASA-TP-2960] p 17 N90-18393
ABDOL-HAMID, KHALED S.
Multiscale turbulence effects in supersonic jets exhausting into still air
[NASA-TP-2707] p 36 N87-24672
ABEL, PHILLIP B.
FORTRAN program for x ray photoelectron spectroscopy data reformatting
[NASA-TP-2957] p 69 N90-12348
ABRAHAMSON, A. LOUIS
Measured and calculated acoustic attenuation rates of
tuned resonator arrays for two surface impedance distribution models with flow
[NASA-TP-2766] p 67 N88-17440
ADAMS, MARY S.
Fuselage design for a specified Mach-sliced area distribution
[NASA-TP-2975] p 16 N90-18385
ADAMS, WILLIAM M., JR.
Nonlinear programming extensions to rational function
approximation methods for unsteady aerodynamic forces
[NASA-TP-2776] p 15 N88-24623
ADELMAN, HOWARD M.
Sensitivity Analysis in Engineering
[NASA-CP-2457] p 43 N87-18855
ADMIRE, J. R.
A transient response method for linear coupled
INASA-TP-2926I p 23 N90-13444
AHNED RAFIO
Cyclic loads tests of carbon involute solid rocket motor
INASA TO 28941 D 45 N89-16192
Loade analysis and testing of flight configuration solid
rocket motor outer boot ring segments
[NASA-TP-3028] p 47 N90-25366

AIKIN, ARTHUR C.
[NASA-CP-10014] p 51 N89-14503
Albertson, Cindf w. Aerothermal evaluation of a spherically blunted body
with a trapezoidal cross section in the Langley 8-foot
INASA-TP-26411 D 36 N87-18782
Fluctuating pressures measured beneath a
high-temperature, turbulent boundary layer on a flat plate at Mach number of 5
[NASA-TP-2947] p 67 N90-10680
LANDSAT-4 and LANDSAT-5 multispectral scanner
coherent noise characterization and removal
ALLEN, JOHN E., JR.
First International Conference on Laboratory Research
[NASA-CP-3077] p 78 N90-26744
ALLISON, MICHAEL
[NASA-CP-2441] p 77 N87-17598
ALTHOFF, SUSAN L.
performance of a small-scale rotor model
[NASA-TP-2832] p 10 N89-24264
ALTON, BHADLEY M. Nimbus-7 ERB Solar Analysis Tape (ESAT) user's
guide
[NASA-RP-1211] p 79 N89-30151 ANDERSEN, CARL M.
Exploiting symmetries in the modeling and analysis of
tires [NASA-TP-2649] p 13 N87-17690
ANDERSON, B. J.
Development testing of large volume water sprays for warm fog dispersal
[NASA-TP-2607] p 24 N87-12585
ANDERSON, W. KYLE Three-dimensional multigrid algorithms for the flux-split
Euler equations
[NASA-1P-2829] p 65 N89-12316 ANDRO, MONTY
Satellite-matrix-switched, time-division-multiple-access
NASA-TP-29441 p 34 N90-11915
ANTONIEWICZ, ROBERT F.
User's manual for LINEAR, a FORTRAN program to derive linear aircraft models
[NASA-TP-2768] p 65 N88-21740
Derivation and definition of a linear aircraft model (NASA-RP-1207) p 19 N89-15123
User's manual for interactive LINEAR: A FORTRAN
program to derive linear aircraft models (NASA-TP-2835) p 65 N89-16437
APPLIN, ZACHARY T.
Low-speed aerodynamic characteristics of a twin-engine oeneral aviation configuration with aft-fuselage-mounted
pusher propellers
[NASA-TP-2763] p 6 N87-29462 Experimental and theoretical aerodynamic
characteristics of a high-lift semispan wing model
[NASA-1P-2990] p 11 N90-20046 The Langley 14- by 22-foot subsonic tunnel: Description.
flow characteristics, and guide for users
[NASA-1P-3008] p 12 N90-27649 ARDANUY, PHILIP E.
The 1987 Airborne Antarctic Ozone Experiment: The
Nimbus-7 TOMS data atlas (NASA-RP-1201) n 49 NR8-20714
ARDIZZONE, JOSEPH

(1978 to 1982) [NASA-RP-1194] p 55 N87-29996 ARMSTRONG, ELIZABETH S.

Computer-aided design analysis of 57-mm, angular-contact, cryogenic turbopump bearings (NASA-TP-2816) p.41 N88-18933

[NASA-TP-2816] p 41 N88-18933 High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 Applications and requirements for real-time simulators in ground-test facilities [NASA-TP-2672] p 64 N87-23202 ASAI, KEISUKE Hot-jet simulation in cryogenic wind tunnels [NASA-RP-1220] p 15 N89-23448 ATHAY, G. Theoretical Problems in High Resolution Solar Physics, 2

[NASA-CP-2483] p 79 N88-11609 ATWELL, WILLIAM Improved model for solar cosmic ray exposure in manned

Earth orbital flights [NASA-TP-2987] p 80 N90-25031 AYDELOTT, JOHN C.

Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924

### В

**BADI, DEBORAH** OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 BADI, DEBORAH M. Conceptual design of synchronous Mars а telecommunications satellite [NASA-TP-2942] p 78 N90-10814 BALCKBURN, LINDA B. Effect of LID (Registered) processing on the microstructure and mechanical properties of Ti-6AI-4V and Ti-6AI-2Sn-4Zr-2Mo titanium foil-gauge materials [NASA-TP-2677] p 30 N87-18644 BALDASARE, PAUL Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program [NASA-TP-2917] D16 N90-15902 BALDWIN, RICHARD S. Space Electrochemical Research and Technology (SERT), 1989 [NASA-CP-3056] p 50 N90-20454 BALLARD, RODNEY W. Proceedings of a conference on Cardiovascular Bioinstrumentation p 59 N89-17997 [NASA-CP-10022] BALLIN, MARK G. Rotorcraft flight-propulsion control integration: An eclectic design concept p 19 N88-19475 [NASA-TP-2815] BANGERT, LINDA S. Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds [NASA-TP-2704] p 4 N87-21873 Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability [NASA-TP-2933] p10 N89-27634 BANKS, DANIEL W. A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel p 7 N88-20264 [NASA-TP-2796] Aerodynamics in ground effect and predicted landing ground roll of a fighter configuration with secondary-nozzle thrust reverser [NASA-TP-2834] p 8 N88-29752 BANKS, PETER M. Solar-Terrestrial Science Strategy Workshop p 73 N90-18329 [NASA-CP-3048] BARE, E. ANN Effect of a trade between boattail angle and wedge size on the performance of a nonaxisymmetric wedge nozzle p 5 N87-23593 INASA-TP-27171 Static internal performance of a two-dimensional convergent-divergent nozzle with thrust vectoring p 5 N87-24432 (NASA-TP-2721)

BARGER, R. L. Multiaxis control power from thrust vectoring for a supersonic fighter aircraft model at Mach 0.20 to 2.47 [NASA-TP-2712] p 5 N87-24433 BARGER, R. L. Theory for computing the field scattered from a smooth inflected surface [NASA-TP-2632] p 68 N87-13264 Some path-following techniques for solution of nonlinear equations and comparison with parametric differentiation p 64 N87-14054 [NASA-TP-2654] BARGER, RAYMOND L. On minimizing the number of calculations in design-by-analysis codes p 5 N87-23586 INASA-TP-27061 A simplified approach to axisymmetric dual-reflector antenna design [NASA-TP-2797] p 7 N88-16662 A performance index approach to aerodynamic design with the use of analysis codes only [NASA-TP-2805] p 7 N88-18552 Weak-wave analysis of shock interaction with a slipstream p8 N89-10020 [NASA-TP-2848] A procedure for computing surface wave trajectories on an inhomogeneous surface [NASA-TP-29291 p 10 N89-26811 Fuselage design for a specified Mach-sliced area distribution [NASA-TP-2975] p 16 . N90-18385 BARKER, L. KEITH resolved Optimized control rate seven-degree-of-freedom Laboratory Telerobotic Manipulator (LTM) with application to three-dimensional graphics simulation [NASA-TP-2938] p 64 N90-10618 BARRANGER, JOHN P. Low-cost FM oscillator for capacitance type of blade tip clearance measurement system [NASA-TP-2746] p 17 N87-24481 BARRETT, RICHARD T. Fastener design manual [NASA-RP-1228] p 42 N90-18740 BARTH. J. M. Cosmic ray heavy ion LET mapping for aluminum, silicon, and tissue targets [NASA-RP-1180] p 79 N87-25984 BARTHELEMY, JEAN-FRANCOIS M. Shape sensitivity analysis of wing static aeroelastic characteristics [NASA-TP-2808] p 15 N88-22031 Recent Advances in Multidisciplinary Analysis and Optimization, part 1 [NASA-CP-3031-PT-1] p 15 N89-25146 Recent Advances in Multidisciplinary Analysis and Optimization, part 2 [NASA-CP-3031-PT-2] p 15 N89-25173 Recent Advances in Multidisciplinary Analysis and Optimization, part 3 [NASA-CP-3031-PT-3] p 15 N89-25201 BARTHELME, NEAL The 1987 Get Away Special Experimenter's Symposium [NASA-CP-2500] p 22 N88-17691 BARTLETT, GLYNN R. Evaluation of installed performance of а wing-tip-mounted pusher turboprop on a semispan wing p 14 N87-26041 [NASA-TP-2739] BATTEN, CARMEN E. Closed-Cycle, Frequency-Stable CO2 Laser Technology [NASA-CP-2456] p 40 N87-20522 BATTERSON, JAMES G. Analysis of flight data from a High-Incidence Research Model by system identification methods [NASA-TP-2940] p 20 N90-10074 BAVUSO, SALVATORE J. Applications of the hybrid automated reliability predictor:

- Applications of the hybrid automated reliability predictor: Revised edition [NASA-TP-2760-REV] p 63 N90-11454 BEARD. K. V.
- Development testing of large volume water sprays for warm fog dispersal INASA-TP-26071 p. 24 N87-12585
- [NASA-TP-2607] p 24 N87-12585 BECKER, LAWRENCE E.
- Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application [NASA-TP-2482] p 19 N88-14987
- BEDKE, JOHN
- Atlas of galaxies useful for measuring the cosmological distance scale (NASA-SP-496) p 74 N89-12513
- BEICHMAN, C. A. Infrared astronomical satellite (IRAS) catalogs and
- atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 N89-14194

- BELTON, MICHAEL J. S. Time-Variable Phenomena in the Jovian System [NASA-SP-494] p 78 N89-28474
- BELVIN, W. KEITH Modeling of joints for the dynamic analysis of truss structures
- [NASA-TP-2661] p 43 N87-20567 BERGEN, FRED D.
- Shape sensitivity analysis of wing static aeroelastic characteristics [NASA-TP-2808] p 15 N88-22031
- BERKE, LASZLO
- Integrated force method versus displacement method for finite element analysis
- [NASA-TP-2937] p 47 N90-18081 BERRIER, B. L
- Effects of tail span and empennage arrangement on drag of a typical single-engine fighter aft end [NASA-TP-2352] p 3 N87-10838
- Static internal performance of single-expansion-ramp nozzles with thrust-vectoring capability up to 60 deg [NASA-TP-2364] p 3 N87-10839
- Effect of port corner geometry on the internal performance of a rotating-vane-type thrust reverser
- [NASA-TP-2624] p 3 N87-12541 BERRIER, BOBBY L Effects of the installation and operation of jet-exhaust
- yaw vanes on the longitudinal and lateral-directional characteristics of the F-14 airplane [NASA-TP-2769] p 6 N88-12455
- Static performance of an axisymmetric nozzle with post-exit vanes for multiaxis thrust vectoring
- [NASA-TP-2800] p 8 N88-20280 Static performance of nonaxisymmetric nozzles with yaw thrust-vectoring vanes
- [NASA-TP-2813] p 8 N88-21118 Internal performance of two nozzles utilizing gimbal
- concepts for thrust vectoring [NASA-TP-2991] p 11 N90-19200
- BESS, T. DALE Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 6 Earth radiation budget data set, July 1975 to June 1978
- [NÅSA-RP-1185] p 55 N87-26489 Atlas of wide-field-of-view outgoing longwave radiation derived from Nimbus 7 Earth radiation budget data set -November 1978 to October 1985
- [NASA-RP-1186] p 55 N88-10451 Allas of albedo and absorbed solar radiation derived from Nimbus 6 earth radiation budget data set, July 1975 to May 1978
- [NASA-RP-1230] p 57 N90-14741 Atlas of albedo and absorbed solar radiation derived from Nimbus 7 Earth radiation budget data set, November 1978 to October 1985
- [NASA-RP-1231] p 57 N90-17233 BEZOS, GAUDY M.
- Steady-state and transitional aerodynamic characteristics of a wing in simulated heavy rain [NASA-TP-2932] p 10 N89-25951
- BHARTIA, P. K. Nimbus 7 solar backscatter ultraviolet (SBUV) ozone
- products user's guide [NASA-RP-1234] p 53 N90-17227
- BHATIA, K. G. Effects of winglet on transonic flutter characteristics of
- a cantilevered twin-engine-transport wing model [NASA-TP-2627] p 43 N87-13789 BIGGERS, SHERRILL B.
- A Protection And Detection Surface (PADS) for damage tolerance
- [NASA-TP-3011] p 29 N90-27788 BILSTEIN, ROGER E.
- Orders of magnitude: A history of the NACA and NASA, 1915-1990 [NASA-SP-4406] p 81 N89-26805
- BINDSCHADLER, ROBERT A.
- Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland [NASA-RP-1233-VOL-1] p 54 N90-20562
- [NASA-RP-1233-VOL-1] p 54 N90-20562 Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat
- [NASA-RP-1233-VOL-2] p 54 N90-20563
- Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat [NASA-RP-1233-VOL-4] p 54 N90-20564
- SeaRISE: A Multidisciplinary Research Initiative to Predict Rapid Changes in Global Sea Level Caused by Collapse of Marine Ice Sheets [NASA-CP-3075] p 48 N90-22824
- [NASA-CP-3075] p 48 N90-22824 Surface topography of the Greenland Ice Sheet from satellite radar altimetry
- [NASA-SP-503]

PERSONAL AUTHOR INDEX

- BLACKFORD, GARY A. Secondary electron emission characteristics of untreated and ion-textured titanium [NASA-TP-2902] p 30 N89-17650 BLAIR, A. B., JR. Wind-tunnel investigation at supersonic speeds of a remote-controlled canard missile with a free-rolling-tail brake torque system [NASA-TP-2401] p 4 N87-17668 BLAIR, ROBERT W., JR. Geomorphology from space: A global overview of regional landforms [NASA-SP-486] p 47 N87-18139 BLAND, SAMUEL R. Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] p 6 N87-27622 Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 1 [NASA-CP-3022-PT-1] p 9 N89-19234 Transonic Unsteady Aerodynamics and Aeroelasticity 1987, part 2 [NASA-CP-3022-PT-2] p 9 N89-19247 BLECH, RICHARD A. Applications and requirements for real-time simulators in ground-test facilities [NASA-TP-2672] p 64 N87-23202 Parallel Gaussian elimination of a block tridiagonal matrix using multiple microcomputers [NASA-TP-2892] p 64 N89-17422 BOCKELIE, MICHAEL J. A time-accurate adaptive grid method and the numerical simulation of a shock-vortex interaction [NASA-TP-2998] p 61 N90-21524 BOGUE, RODNEY K. signal conditioning Analog for flight-test instrumentation [NASA-RP-1159] o 17 N87-29533 BOLDMAN, DONALD B. Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2646] p 21 N87-18576 Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2680] p 21 N87-20295 Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2681] p 21 N88-17686 BOOTH, EARL R., JR. Measurement of velocity and vorticity fields in the wake of an airfoil in periodic pitching motion [NASA-TP-2780] p 66 N88-13002 BORUCKI, WILLIAM J. Second Workshop on Improvements to Photometry [NASA-CP-10015] p 74 N89-13310 p 74 N89-13310 BOUSMAN, WILLIAM G. Integrated Technology Rotor Methodology Assessment Workshop p 2 N88-27148 [NASA-CP-10007] The effects of structural flap-lag and pitch-lag coupling on soft inplane hingeless rotor stability in hover (NASA-TP-3002) p 12 N90-28503 BOWKER, DAVID E. Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts p 49 N87-28162 [NASA-TP-2756] Earth Sciences Requirements for the Information Sciences Experiment System p 50 N90-27140 [NASA-CP-3072] BOWLES, ROLAND L. Wind Shear/Turbulence Inputs to Flight Simulation and Systems Certification [NASA-CP-2474] p 1 N87-25267 Airborne Wind Shear Detection and Warning Systems: First Combined Manufacturers' and Technologists' Conference [NASA-CP-10006] p 12 N88-17616 BOWMAN, JAMES S., JR. Measurements of pressures on the tail and aft fuselage of an airplane model during rotary motions at spin attitudes [NASA-TP-2939] p 10 N90-10829 BOYD, MARK Applications of the hybrid automated reliability predictor: Revised edition [NASA-TP-2760-REV] p 63 N90-11454 BRACALENTE, E. M.
- Wind shear detection. Forward-looking sensor technology [NASA-CP-10004] p 12 N88-14970

p 54 N90-22850

#### BRANDON, JAY M. Piloted-simulation study of effects of vortex flaps on

low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 BRANDT, JOHN C.

Atlas of Comet Halley 1910 II (NASA-SP-488)

p 75 N87-30235 BRASLOW, ALBERT L.

Simulated-airline-service flight tests of laminar-flow control with perforated-surface suction system [NASA-TP-2966] p 16 f p 16 N90-17627

BRAUN, ROBERT D. The effect of interplanetary trajectory options on a

manned Mars aerobrake configuration [NASA-TP-3019] p 24 N90-26036

BRENNER, ANITA C.

- Satellite radar altimetry over ice. Volume 1: Processing and corrections of Seasat data over Greenland [NASA-RP-1233-VOL-1] p 54 N90-20562 Satellite radar altimetry over ice. Volume 2: Users' guide for Greenland elevation data from Seasat [NASA-RP-1233-VOL-2] p 54 N90-20563
- Satellite radar altimetry over ice. Volume 4: Users' guide for Antarctica elevation data from Seasat [NASA-RP-1233-VOL-4] p 54 N90-20564
- Surface topography of the Greenland Ice Sheet from satellite radar attimetry
- [NASA-SP-503] p 54 N90-22850 BRESSETTE, WALTER E.
- Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite p 55 N87-26491 [NASA-TP-2723]
- BROOKS, CUYLER W., JR. The NASA Langley Laminar-Flow-Control (LFC) experiment on a swept, supercritical airfoil: Design
- overview [NASA-TP-2809] p8 N88-21117 BROOKS, DAVID R.
- Summary of along-track data from the Earth radiation budget satellite for several major desert regions p 56 N88-20772 [NASA-RP-1197]
- Summary of along-track data from the earth radiation budget satellite for several representative ocean regions [NASA-RP-1206] p 56 N89-14634
- BROOKS, THOMAS F. Helicopter main-rotor noise: Determination of source contributions using scaled model data
- [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-1218]
- p 67 N89-25673 BROOM, BETH H.
- Liquid drop stability for protein crystal growth in microgravity [NASA-TP-2724] p 58 N87-20727

BROWN, GERALD V. Experimental evaluation of a tuned electromagnetic

- damper for vibration control of cryogenic turbopump rotors
- [NASA-TP-3005] p 18 N90-23403 BROWN, P. W.
- Piloted simulation study of the effects of an automated trim system on flight characteristics of a light twin-engine airplane with one engine inoperative
- [NASA-TP.2633] p 3 N87-10843 BROWN, PHILIP W. Piloted-simulation study of effects of vortex flaps on
- low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed
- static stability application [NASA-TP-2482] p 19 N88-14987
- BRUNO, LEONARD C. NASA historical data book. Volume 1: NASA resources 1958-1968
- [NASA-SP-4012-VOL-1] p 80 N88-25428 BRUNTY, J. A.
- A transient response method for linear coupled substructures p 23 N90-13444
- [NASA-TP-2926] BRUTON, WILLIAM M. Advanced detection, isolation and accommodation of
- sensor failures: Real-time evaluation p 19 N87-25331 [NASA-TP-2740] BUCK, WARREN W.
- Possible complementary cosmic-ray systems: Nuclei and antinuclei
- [NASA-TP-2741] p 68 N87-24977 BRYNTRN: A baryon transport model p 80 N89-17562 [NASA-TP-2887] Kaon-nucleus scattering
- [NASA-TP-2920] p 80 N89-25103 BUDINGER, JAMES M. Digitally modulated bit error rate measurement system for microwave component evaluation p 23 N89-28545 [NASA-TP-2912]

Satellite-matrix-switched, time-division-multiple-access network simulator INASA-TP-29441 p 34 N90-11915 BUGLIA, JAMES J. Compilation of methods in orbital mechanics and solar

geometry [NASA-RP-1204] p 52 N89-10420

- Effect of ephemeris errors on the accuracy of the computation of the tangent point altitude of a solar scanning ray as measured by the SAGE 1 and 2 instruments
- [NASA-TP-2866] p 65 N89-16415 BURGESS, ERIC
- Into the thermosphere: The atmosphere explorers (NASA-SP-490) p 52 N88-18084 BURKEN. JOHN J.
- Control surface spanwise placement in active flutter suppression systems [NASA-TP-2873] p 45 N89-16196
- BURLEY, C. L. Power cepstrum technique with application to model
- helicopter acoustic data [NASA-TP-2586] p 66 N87-17479
- BURLEY, J. R., II
- Effects of tail span and empennage arrangement on drag of a typical single-engine fighter aft end [NASA-TP-2352] p 3 N87-10838
- BURLEY, JAMES R., II Effect of a trade between boattail angle and wedge size on the performance of a nonaxisymmetric wedge nozzle
- (IASA.TP.2717) p 5 N87-23593 Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds N89 10721 p6 N88-10771 [NASA TP-2753]
- BURLEY, RICHARD R.
- Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel [NASA-TP-2666] p 21 N87-17717
- Experimental evaluation of blockage ratio and plenum evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section of NASA Lewis Research Center's proposed altitude wind tunnel
- [NASA-TP-2702] p 21 N87-22694 Experimental evaluation of honeycomb/screen configurations and short contraction section for NASA Lewis Research Center's altitude wind tunnel
- [NASA-TP-2692] p 21 N87-23662 BURNS, JACK O.
- Future Astronomical Observatories on the Moon [NASA-CP-2489] p 74 N89-15810
- A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805 BURNS, R. A.
- Development testing of large volume water sprays for warm fog dispersal
- p 24 N87-12585 [NASA-TP-2607] BURNS, ROWLAND E.
- Forbidden tangential orbit transfers between intersecting Keplerian orbits
- [NASA-TP-3031] p 23 N90-26028 BUSH. HAROLD G. Lightweight structural design of a bolted case joint for
- the space shuttle solid rocket motor [NASA-TP-2851] p 25 N89-12580
- INFORM
   Surger

   BUTLER, RICKY W.
   SURE reliability analysis: Program and mathematics

   SURE reliability analysis:
   p 65

   N88-17380
   p 65
- The Fault Tree Compiler (FTC): Program and
- mathematics p 64 N89-24815 [NASA-TP-2915]

### С

CALLAHAN, PAUL X.		
Cells in Space		
[NASA-CP-10034]	p 61	N90-1393
CAMP, DENNIS W.	•	
Atmospheric Turbulence Re and Space Programs	elative to Avia	tion, Missile
[NASA-CP-2468]	p 55	N87-2234
Meteorological and Enviror Systems	mental Inputs	to Aviation
[NASA-CP-2498]	p 56	N88-2510
CAMPBELL, BRYAN A.		
Steady-state and tr	ansitional	aerodynamie
characteristics of a wing in sin	nulated heavy	rain
[NASA-TP-2932]	p 10	N89-25951
CAMPBELL, RICHARD L.		
A transonic-small-distur methodology	bance win	g desigr
[NASA-TP-2806]	p 7	N88-17614

CAMPBELL, THOMAS G. Earth Science Geostationary Platform Technology [NASA-CP-3040] p 24 N90-19249

CAVALIERI, DONALD J.

- CAMPBELL, WILLIAM A., JR. Outgassing data for selecting spacecraft materials [NASA-RP-1124] p 28 N88-10
- p 28 N88-10117 CAMPBELL, WILLIAM J.
- Arctic Sea ice, 1973-1976: Satellite passive-microwave observations
- [NASA-SP-489] p 58 N87-24870 CANNING, THOMAS N.

Galileo probe parachute test program: Wake properties

- of the Galileo probe at Mach numbers from 0.25 to 0.95 [NASA-RP-1130] p 37 N88-18884 CAPONE, F. J.
- Interference effects of thrust reversing on horizontal tail effectiveness of twin-engine fighter aircraft at Mach numbers from 0.15 to 0.90
- p 19 N87-10870 [NASA-TP-2350] Effect of port corner geometry on the internal
- erformance of a rotating-vane-type thrust reverse p 3 N87-12541 [NASA-TP-2624]
- CAPONE, FRANCIS J.
- Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles p 14 N87-17693 [NASA-TP-2392]
- Multiaxis control power from thrust vectoring for a supersonic fighter aircraft model at Mach 0.20 to 2.47
- [NASA-TP-2712] p 5 N87-24433 CAPRON, WILLIAM R. Simulation evaluation of TIMER, a time-based, terminal
  - air traffic, flow-management concept [NASA-TP-2870] p 13 N89-15901
  - Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation
  - [NASA-TP-2978] p 13 N90-18378 CARDEN, HUEY D.
  - Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections [NASA-TP-2951] p 16 N90-26823
  - CAREK, GERALD A.
  - Shot peening for Ti-6AI-4V alloy compressor blades [NASA-TP-2711] p 43 N87-20566 p 43 N87-20566 CARLBERG, INGRID A.
  - Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748]
  - p 66 N88-11450
- CARLSON, HARRY W. Applicability of linearized-theory attached-flow methods to design and analysis of flap systems at low speeds for thin swept wings with sharp leading edges [NASA-TP-2653] p 3 N87-15174
- Validation of a pair of computer codes for estimation and optimization of subsonic aerodynamic performance of simple hinged-flap systems for thin swept wings
- p 8 N89-10024 [NASA-TP-2828] Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an
- application to optimization [NASA-TP-2961] p 11 N90-14187 CARLSON, JOHN R.
- An experimental investigation of an advanced turboprop installation on a swept wing at subsonic and transonic speeds
- [NASA-TP-2729] p 6 N87-26883 Integration effects of pylon geometry on a high-wing
- transport airplane [NASA-TP-2877] p 9 N89-15888
- CARSON, GEORGE T., JR.

nonaxisymmetric nozzles (NASA-TP-3036)

CASTELLI, A.

[NASA-CP-2040]

observations

[NASA-SP-489]

CAVALIERI, DONALD J.

- Effects of empennage surface location on aerodynamic characteristics of a twin-engine afterbody model with nonaxisymmetric nozzles
- [NASA-TP-2392] p 14 N87-17693 Effect of a trade between boattail angle and wedge size on the performance of a nonaxisymmetric wedge nozzle [NASA-TP-2717] p 5 N87-23593

Aeropropulsive characteristics of isolated combined

Effect of tail size reductions on longitudinal aerodynamic

Arctic Sea ice, 1973-1976: Satellite passive-microwave

p 11 N90-25938

p 62 N78-74659

p 58 N87-24870

**B-3** 

turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p 8 N88-23757

characteristics of a three surface F-15 model with

The MSFC/UAH Data Management Symposium

#### CAZIER, F. W., JR.

CAZIER, F. W., JR. Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895 CEBULA, RICHARD P. Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's auide [NASA-RP-1199] p 48 N88-17096

Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide p 53 N90-17227 [NASA-RP-1234]

CHANG, I. C. Transonic flow analysis for rotors. Part 2: Three-dimensional, unsteady, full-potential calculation [NASA-TP-2375-PT-2] p 3 N87-10841

CHANG, S. C. Solution of elliptic partial differential equations by fast Poisson solvers using a local relaxation factor. 2: Two-step method

p 64 N87-14918 [NASA-TP-2530] CHANG, SHERWOOD

Carbon in the Galaxy: Studies from Earth and Space [NASA-CP-3061] p 73 N90-27562 CHEESEMAN, PETER

Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS) [NASA-RP-1217] p 75 N90-10807

CHEGINI, HOSHANG A simplified method for determining heat of combustion

of natural gas [NASA-TP-2682] p 39 N87-20514

CHESTER, THOMAS J. Infrared astronomical satellite (IRAS) catalogs and

atlases. Volume 1: Explanatory supplement p 76 N89-14194 [NASA-RP-1190-VOL-1] CHOY, FRED K.

Dynamic analysis of multimesh-gear helicopter transmissions

(NASA-TP-2789) p 41 N88-17045 CHU, JULIO

Pressure measurements on a thick cambered and visted 58 deg delta wing at high subsonic speeds p 6 N87-27643 [NASA-TP-2713]

CHU, W. P. SAM 2 data user's quide

[NASA-RP-1200] p 52 N88-25094 CHUN, SANG Y.

BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562 CICOLANI, L. S.

General equilibrium characteristics of a dual-lift helicopter system p 2 N88-19407 [NASA-TP-2615]

CLARK, DAVID R. Integrated tools for control-system analysis [NASA-TP-2885] p 20 N89-19309

- CLARK, R. K. Emittance. catalysis, and dynamic oxidation of
- Ti-14AI-21Nb [NASA-TP-2955] p 31 N90-10248 CLARK, RONALD K.
- Oxidation characteristics of Ti-14AI-21Nb ingot alloy [NASA-TP-3012] p 31 N90-25206 CLEARWATER, YVONNE A.

Space Station Human Factors Research Review. Volume 4: Inhouse Advanced Development and Research

[NASA-CP-2426-VOL-4] p 59 N88-24148 CLEGG P.E.

Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement p 76 N89-14194 [NASA-RP-1190-VOL-1]

CLEMMONS, JAMES I., JR. Frequency domain laser velocimeter signal processor:

A new signal processing scheme [NASA-TP-2735] p 40 N87-27994

CLINE, THOMAS L.

**B-4** 

Essays in Space Science [NASA-CP-2464] o 72 N87-24247

- COE. H. H. Testing of UH-60A helicopter transmission in NASA
- Lewis 2240-kW (3000-hp) facility INASA-TP-26261 o 41 N87-10391
- COE, HAROLD H. Computer-aided design analysis 57-mm, of angular-contact, cryogenic turbopump bearings [NASA-TP-2816] p 41 N88-18933
- Comparison of predicted and measured temperatures of UH-60A helicopter transmission

p 41 N89-24607 [NASA-TP-2911]

COE. PAUL L. JR.

Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration

p 20 N90-19239 [NASA-TP-2982] COHEN. MARC M.

- Space Station Human Factors Research Review. Volume 3: Space Station Habitability and Function: Architectural Research p 59 N88-19883 [NASA-CP-2426-VOL-3]
- Space Station Human Factors Research Review. Volume 1: EVA Research and Development
- [NASA-CP-2426-VOL-1] p 59 N88-24145 Space Station Human Factors Research Review. 4: Inhouse Advanced Development and Volume Research
- [NASA-CP-2426-VOL-4] p 59 N88-24148 COKELEY, R.
- Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application [NASA-TP-2482] o 19 N88-14987
- COLLINS, WILLIAM D.
- Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polyetherimides [NASA-TP-2928] p 31 N89-25332
- COMISO, JOSEFINO C.
- Arctic Sea ice, 1973-1976: Satellite passive-microwave observations p 58 N87-24870 [NASA-SP-489]
- Polar microwave brightness temperatures from Nimbus-7 SMMR: Time series of daily and monthly maps from 1978 to 1987
- [NASA-RP-1223] p 48 N89-26275 COMPTON, WILLIAM DAVID
- Where no man has gone before: A history of Apollo lunar exploration missions
- [NASA-SP-4214] p 81 N89-25946 COMSTOCK, J. RAYMOND, JR.
- Mental-State Estimation, 1987 [NASA-CP-2504] p 60 N88-23370 CONNOR, ANDREW B.
- Correlation of helicopter impulsive noise from blade-vortex interaction with rotor mean inflow p 66 N87-18399 [NASA-TP-2650]
- CONTL PETER S.
- O stars and Wolf-Rayet stars [NASA-SP-497]
- p 74 N89-11657 COOK, GEORGE E. A generalized method for automatic downhand and
- feed control of a welding robot and positioner [NASA-TP.2807] p 32 N88-17869
- CORALLO, GREGORY R.
- Electron stimulated desorption of atomic oxygen from silver [NASA-TP-2668] p 29 N87-18629
- CORBAN, ROBERT R.
- Experimental evaluation of wall Mach number distributions of the octagonal test section proposed for NASA Lewis Research Center's altitude wind tunnel p 21 N87-17717 INASA-TP-26661
- COULSON, KINSELL L.
- Remote Sensing in Polarized Light INASA-CP-30141
- p 72 N89-14189 COVELL PETER F. Investigation of leading-edge flap performance on delta
- ind double-delta wings at supersonic speeds p 4 N87-20233 [NASA-TP-2656]
- Effects of winglets on a first-generation jet transport ing. 7: Sideslip effects on winglet loads and selected wing loads at subsonic speeds for a full-span model
- [NASA-TP-2619] p 7 N88-18567 COY, JOHN J.
- Vibration characteristics of OH-58A helicopter main rotor transmission [NASA-TP-2705] p 41 N87-20555
- CRAM. LAWRENCE F. FGK stars and T Tauri stars: Monograph series on
- nonthermal phenomena in stellar atmospheres p 77 N90-18344 (NASA-SP-502)
- CREDEUR, LEONARD Simulation evaluation of TIMER, a time-based, terminal
- air traffic, flow-management concept p 13 N89-15901 INASA-TP-28701 Delivery performance of conventional aircraft by
- terminal-area, time-based air traffic control: A real-time simulation evaluation [NASA-TP-2978] p 13 N90-18378
- CROSLEY, DAVID R.
- Future directions for H sub x O sub y detection [NASA-CP-2448] p 51 N87-15528 CROSS, JEFFREY L
- Tip aerodynamics and acoustics test: A report and data SULVEY
- INASA-RP-11791 p 9 N89-17579

#### PERSONAL AUTHOR INDEX

CU. C. C.

- User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape p 56 N89-14648 [NASA-RP-1210] CUCINOTTA, FRANCIS A.
- Doubly differential cross sections for galactic heavy-ion fragmentation
- (NASA-TP-26591 p.68 N87-17487 Eikonal solutions to optical model coupled-channel
- equations [NASA-TP-2830] D 68 N88-30402
- A general formalism for phase space calculations p 66 N89-14053 [NAŠA-TP-2843]
- BRYNTRN: A baryon transport model p 80 N89-17562 [NASA-TP-2887]
- Improved model for solar cosmic ray exposure in manned Earth orbital flights
- [NASA-TP-2987] p 80 N90-25031 Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results
- [NASA-TP-3021] p 80 N90-29290 CUNNINGHAM, HERBERT J.
- Steady and unsteady aerodynamic forces from the SOUSSA surface-panel method for a fighter wing with tip missile and comparison with experiment and PANAIR [NASA-TP-2736] p 5 N87-26032
- CURREN, ARTHUR N.

[NASA-TP-2223]

wind tunnel acoustic treatment

DAHL MILO D.

INASA-TP-29961

and dc methods

[NASA-TP-2820]

[NASA-TP-2715]

[NASA-TP-2744]

[NASA-TP-2724]

[NASA-TP-2653]

[NASA-TP-2828]

[NASA-CP-3027]

[NASA-TP-2918]

swept wing

DARDEN, CHRISTINE M.

aluminum

metals

DANIEL, RON

microgravity

DANFORD, MERLIN D.

DANFORD, M. D.

Performance of textured carbon on copper electrode multistage depressed collectors with medium-power traveling wave tubes

- [NASA-TP-2665] p 34 N87-17990 Secondary electron emission characteristics of
- untreated and ion-textured titanium p 30 N89-17650 [NASA-TP-2902] characteristics of Secondary electron emission

molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211

- CURRIER, S. F. Pulse Code Modulation (PCM) encoder handbook for ydin Vector MMP-600 series system
- p 33 N87-11916 [NASA-RP-1171] CURRY, R. E.
- In-flight total forces, moments and static aeroelastic characteristics of an oblique-wing research airplane p 19 N87-10103 [NASA-TP-2224]
- Flight-determined aerodynamic derivatives of the AD-1 oblique-wing research airplane
- [NASA-TP-2222] p 19 N87-10871 CURRY, ROBERT E.
- Flight characteristics of the AD-1 oblique-wing research aircraft

D

Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed

An electrochemical study of corrosion protection by

primer-topcoat systems on 4130 steel with ac impedance

The corrosion mechanisms for primer coated 2219-T87

Hydrogen trapping and the interaction of hydrogen with

Liquid drop stability for protein crystal growth in

Applicability of linearized-theory attached-flow methods

Validation of a pair of computer codes for estimation

Status of sonic boom methodology and understanding

Effect of milling machine roughness and wing dihedral

on the supersonic aerodynamic characteristics of a highly

and optimization of subsonic aerodynamic performance

of simple hinged-flap systems for thin swept wings

to design and analysis of flap systems at low speeds for

thin swept wings with sharp leading edges

p 19 N87-18570

p 22 N90-19242

p 30 N89-19406

p 30 N87-21076

p 30 N87-25463

p 58 N87-20727

p3 N87-15174

p 8 N89-10024

p 9 N89-23415

p 10 N89-25117

Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 DAUGHERTY, ROBERT H. Measurements of flow rate and trajectory of aircraft tire-generated water spray [NASA-TP-2718] p 14 N87-24458 Cornering characteristics of the main-gear tire of the space shuttle orbiter [NASA-TP-2790] p 14 N88-18583 DAVIDSON, M. R. Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver [NASA-TP-2930] p 67 N89-30022 DAVIS, M. H. Upper and Middle Atmospheric Density Modeling Requirements for Spacecraft Design and Operations [NASA-CP-2460] p 52 N87-20665 DAVIS, PAMELA A Langley Aircraft Landing Dynamics Facility [NASA-RP-1189] p 21 N87-29544 Static mechanical properties of 30 x 11.5 - 14.5, type 8 aircraft tires of bias-ply and radial-belted design p 15 N88-21157 [NASA-TP-2810] DAVIS, RICHARD E. Effects of aerosols and surface shadowing on bidirectional reflectance measurements of deserts p 49 N87-28162 [NASA-TP-2756] DAVIS, W. J. Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application p 19 N88-14987 [NASA-TP-2482] DAVIS, WANDA, L. Exobiology and Future Mars Missions p 59 N89-26334 [NASA-CP-10027] DEATON, JERRY W. The interlaminar fracture toughness of woven graphite/epoxy composites [NASA-TP-2950] p 29 N90-10179 DECKER, A. J. diffuse-illumination holographic Evaluation of cinematography in a flutter cascade [NASA-TP-2593] p 39 N87-13731 DECKER, RAND Mixing and Demixing Processes in Multiphase Flows With Application to Propulsion Systems p 37 N89-11153 [NASA-CP-3006] Constitutive Relationships and Models in Continuum Theories of Multiphase Flows p 38 N90-10385 [NASA-CP-3047] DECKERT, W. H. Powered-lift aircraft technology [NASA-SP-501] p 15 N90-12589 DEFREES, DOUG J. Carbon in the Galaxy: Studies from Earth and Space [NASA-CP-3061] p 73 N90-27562 DEJARNETTE, FRED R. method for calculating approximate three-dimensional inviscid hypersonic flow fields [NASA-TP-3018] p 39 N90-27066 DELAAT, JOHN C Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation p 19 N87-25331 [NASA-TP-2740] Advanced detection, isolation, and accommodation of sensor failures in turbofan engines: Real-time microcomputer implementation p 20 N90-15112 [NASA-TP-2925] DELNORE, V. E. Doppler Radar Detection of Wind Shear p 12 N87-10054 [NASA-CP-2435] Wind shear detection. Forward-looking sensor technology [NASA-CP-10004] DENNIS, BRIAN R. p 12 N88-14970 Rapid Fluctuations in Solar Flares [NASA-CP-2449] p 79 N87-21785 DENTON, JUDITH S. Third Conference on Artificial Intelligence for Space Applications, part 1 p 62 N88-16360 [NASA-CP-2492-Pt-1] Third Conference on Artificial Intelligence for Space Applications, part 2 p 63 N88-24188 [NASA-CP-2492-PT-2] Fourth Conference on Artificial Intelligence for Space Applications p 63 N89-15549 [NASA-CP-3013] DESHPANDE, S. M. On the Maxwellian distribution, symmetric form, and

entropy conservation for the Euler equations [NASA-TP-2583] p 35 p 35 N87-11963 DESHPANDE, SURESH M. A second-order accurate kinetic-theory-based method for inviscid compressible flows [NASA-TP-2613] p 36 N87-18783 DEUTCHMAN, PHILIP A. A general formalism for phase space calculations [NASA-TP-2843] p 66 N89-1 p 66 N89-14053 DEVOL, WILLIAM Cryogenic Fluid Management Technology Workshop. Volume 1: Presentation material and discussion [NASA-CP-10001] p 37 N88-15924 DEYOUNG, RUSSELL J. Second Beamed Space-Power Workshop [NASA-CP-3037] p 27 N90-10140 DICARLO, DANIEL J. Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airolane [NASA-TP-2691] p 14 N87-23614 DIRUSSO, ELISEO

- Experimental evaluation of a tuned electromagnetic damper for vibration control of cryogenic turbopump rotors [NASA-TP-3005] p 18 N90-23403
- DOIRON, SCOTT D. The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714
- The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227]
- p 57 N89-27302 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas
- [NASA-RP-1225] p 57 N89-28983 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 (NASA-RP-1237)
- p 58 N90-23837 DOLLMAN, THOMAS
- Second Conference on Artificial Intelligence for Space Applications [NASA-CP-3007] p 63 N88-29351
- DOMINEK, A. K.
- Theory for computing the field scattered from a smooth inflected surface p 68 N87-13264 [NASA-TP-2632]
- DONN. BERTRAM
- Atlas of Cornet Halley 1910 II p 75 N87-30235 [NASA-SP-488]
- DORSEY, JOHN T. Lightweight structural design of a bolted case joint for the space shuttle solid rocket motor
- [NASA-TP-2851] p 25 N89-12580 DOTSON, KELLY J.
- Development of confidence limits by pivotal functions for estimating software reliability
- [NASA-TP-2709] p 65 N87-23244 Analysis and testing of the SURE program
- p 65 N88-22653 [NASA-TP-2817] DOW, MARVIN B.
- The ACEE program and basic composites research at Langley Research Center (1975 to 1986): Summary and bibliography [NASA-RP-1177]
- p 28 N87-29612 Properties of two composite materials made of toughened epoxy resin and high-strain graphite fiber
- p 28 N88-25480 [NASA-TP-2826] DRACHMAN, RICHARD J.
- Annihilation in Gases and Galaxies [NASA-CP-3058] p 66 N90-18957
- DRESS, DAVID A.
- Drag measurements on a laminar-flow body of revolution in the 13-inch magnetic suspension and balance system [NASA-TP-2895] n 9 N89-19232 DRIES, G. A.
- Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum p 28 N87-10184 [NASA-TP-2612]
- DUGAN, JOANNE BECHTA
- Applications of the hybrid automated reliability predictor: Revised edition (NASA-TP-2760-REV) p 63 N90-11454
- DUKE, EUGENE L. Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft p 15 N88-21153 p 15 N88-21153 User's manual for LINEAR, a FORTRAN program to
  - derive linear aircraft models [NASA-TP-2768] p 65 N88-21740
- Derivation and definition of a linear aircraft model p 19 N89-15123 [NASA-RP-1207]
- User's manual for interactive LINEAR: A FORTRAN program to derive linear aircraft models [NASA-TP-2835] p p 65 N89-16437

DUNHAM, DANA MORRIS

- Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers
- [NASA-TP-2763] p 6 N87-29462 DURBIN, P. A.
- Asymptotic analysis of corona discharge from thin electrodes
- [NASA-TP-2645] p 68 N87-14998 DURIC, NEBOJSA
- A lunar far-side very low frequency array [NASA-CP-3039] p 75 N90-10805
- DWOYER, DOUGLAS L. Efficient solutions to the Euler equations for supersonic
- flow with embedded subsonic regions [NASA-TP-2523] p 3 N87-15183

## Ε÷

EARLS, MICHAEL R.

- Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 p 20 N89-15929
- EBIHARA, BEN
- Design, fabrication, and performance of brazed, graphite electrode, multistage depressed collectors with 500-W, continuous wave, 4.8- to 9.6-GHz traveling-wave tubes
- [NASA-TP-2904] p 35 N89-21171 EBIHARA, BEN T.

Design, fabrication and performance of small, graphite electrode, multistage depressed collectors with 200-W, CW, 8- to 18-GHz traveling-wave tubes

- [NASA-TP-2693] p 35 N87-20474 Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector
- [NASA-TP-2719] p 35 N87-21239 Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube
- [NASA-TP-2788] p 35 N88-15146 Performance of a multistage depressed collector with machined titanium electrodes
- [NASA-TP-2891] p 35 N89-15337 EDWARDS. THOMAS M.
- Galileo probe parachute test program: Wake properties of the Galileo probe at Mach numbers from 0.25 to 0.95 [NASA-RP-1130] p 37 N88-18884 p 37 N88-18884 EHERNBERGER, L. J.
- Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack [NASA-TP-2716] p 14 p 14 N87-29497
- EICHOLD, ALICE
- Space Station Human Factors Research Review. Volume 3: Space Station Habitability and Function: Architectural Research
- [NASA-CP-2426-VOL-3] p 59 N88-19883 EISEMAN, PETER R.
- A time-accurate adaptive grid method and the numerical
- simulation of a shock-vortex interaction [NASA-TP-2998] p 61 N90-21524 ELLIOTT, J. W.
- Advancing-side directivity and retreating-side interactions of model rotor blade-vortex interaction noise p 67 N88-22710 [NASA-TP-2784]
- ELLIS, STEPHEN R. Interactive orbital proximity operations planning system
- [NASA-TP-2839] p 61 N89-18039 Spatial Displays and Spatial Instruments p 61 N90-22918 [NASA-CP-10032]
- ENGLAR, R. J. static investigation Large-scale of
- circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684] p 13 N87-15959
- ENGLERT, GERALD W. Parametric study of power absorption electromagnetic waves by small ferrite spheres from
- p 66 N90-12282 [NASA-TP-2949] EPPEL, J. C.
- static investigation Large-scale of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684] p 13 N87-15959
- ERICKSON, WAYNE D.
- A rapid method for the computation of equilibrium chemical composition of air to 15000 K p 30 N88-16830 [NASA-TP-2792]
- Finite-rate water condensation in combustion-heated wind tunnels
- [NASA-TP-2833] p 22 N88-28075 ESPENAK, F.
- Ten year planetary ephemeris: 1986-1995 [NASA-RP-1176] p 73 p 73 N87-14219

#### **ESPENAK, FRED**

#### ESPENAK, FRED

- Fifty year canon of solar eclipses: 1986 2035 [NASA-RP-1178-REV] p 73 N87-25906 Fifty year canon of lunar eclipses: 1986-2035 [NASA-RP-1216] p 75 N
- p 75 N90-18342 EZELL, LINDA NEUMAN
- NASA historical data book. Volume 2: Programs and projects 1958-1968 p 80 N88-25429 [NASA-SP-4012-VOL-2]
- NASA historical data book. Volume 3: Programs and projects 1969-1978
- [NASA-SP-4012-VOL-3] p 81 N88-25430
  - F

FAIRCHILD, KYLE

- Report of the In Situ Resources Utilization Workshop [NASA-CP-3017] p 72 N89-14188 FARMER, CROFTON B.
- A high-resolution atlas of the infrared spectrum of the sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1 [NASA-RP-1224-VOL-2] p 53 N89-28969
- A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm
- (2.3 to 16 micron). Volume 1: The Sun [NASA-RP-1224-VOL-1] p 53 N90-13893
- FARMER, JEFFREY T. Conceptual design of а synchronous telecommunications satellite
- [NASA-TP-2942] p 78 N90-10814 Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications
- [NASA-TP-3016] p 26 N90-27738 FAST, THOMAS N
- Cells in Space [NASA-CP-10034] p 61 N90-13939 FEIBELMAN, WALTER A.
- International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects [NASA-RP-1203] p 76 N88-28843
- FELDMAN, GENE CARL
- Nimbus-7 data product summary
- [NASA-RP-1215] p 48 N89-22152 FENN, MARTA A
- Summary of along-track data from the Earth radiation budget satellite for several major desert regions
- p 56 N88-20772 [NASA-RP-1197] Summary of along-track data from the earth radiation budget satellite for several representative ocean regions [NASA-RP-1206] p 56 N89-14634
- FERNANDEZ, KEN
- A generalized method for automatic downhand and wirefeed control of a welding robot and positioner [NASA-TP-2807] p 32 N88-17869
- FEW, DAVID D.
- A perspective on 15 years of proof-of-concept aircraft development and flight research at Ames-Moffett by the Rotorcraft and Powered-Lift Flight Projects Division, 1970-1985
- [NASA-RP-1187] p 14 N88-19467 FICHTEL, CARL E.
- The Energetic Gamma-Ray Experiment Telescope (EGRET) Science Symposium [NASA-CP-30711 p 77 N90-23294
- FICHTER, W. B. Measured and predicted root-mean-square errors in square and triangular antenna mesh facets
- [NASA-TP-2896] p 45 N89-17892 FICHTL, GEORGE H. Spacelab 3 Mission Science Review
- [NASA-CP-2429] p 36 N87-22103 FINDLAY, JOHN T.
- OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 FINELLI, GEORGE B.
- A technique for evaluating the application of the pin-level stuck-at fault model to VLSI circuits [NASA-TP-2738] p 42 N87-28025
- FINGER, HERBERT J. Proceedings of a conference on Cardiovascular Bioinstrumentation [NASA-CP-10022] p 59 N89-17997
- FISCHER, JAMES R. Frontiers of Massively Parallel Scientific Computation
- [NASA-CP-2478] p 62 N87-26531 FLEIG. ALBERT J.
- Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's quide
- [NASA-RP-1199] p 48 N88-17096

Nimbus-7 data product summary [NASA-RP-1215]

- p 48 N89-22152 Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide
- p 53 N90-17227 [NASA-BP-1234] FLOCK, WARREN L.
- Propagation effects on satellite systems at frequencies below 10 GHz: A handbook for satellite systems design [NASA-RP-1108/2] p 34 N88-14226
- FLOM, YURY AMSAHTS 1990: Advances in Materials Science and
- Applications of High Temperature Superconductors [NASA-CP-10043] p 29 N90-27792 FOGLEMAN, GUY
- Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview
- [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts,
- candidate experiments and feasibility study p 59 N89-24023 [NASA-CP-10026-VOL-2] FONDA, MARK L.
- Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview
- [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study p 59 N89-24023 [NASA-CP-10026-VOL-2]
- FORCE. DALE A. Calculation of secondary electron trajectories in
- multistage depressed collectors for microwave amplifiers p 34 N87-17991 INASA-TP-26641 Analytical and experimental performance of a dual-mode traveling wave tube and multistage depressed collector
- p 35 N87-25532 [NASA-TP-2752] Spent-beam refocusing analysis and multistage depressed collector design for a 75-W, 59- to 64-GHz coupled-cavity traveling-wave tube
- p 35 N90-27965 [NASA-TP-3039] FOUGHNER, JEROME T., JR.
- Transonic Symposium: Theory, Application, and Experiment, Volume 1, Part 1 p 9 N89-20925
- [NASA-CP-3020-VOL-1-PT-1] Transonic Symposium: Theory, Application, and Experiment, volume 1, part 2
- [NASA-CP-3020-VOL-1-PT-2] p 9 N89-20942 FOUSHEE, H. CLAYTON
- Cockpit Resource Management Training p 12 N87-22634 [NASA-CP-2455]
- FOX. CHARLES H., JR. Subsonic maneuver capability of a supersonic cruise fighter wing concept
- p 3 N87-15184 [NASA-TP-2642] Subsonic longitudinal and lateral-direction characteristics of a forward-swept-wing lateral-directional fighter configuration at angles of attack up to 47 deg p 6 N87-26874 [NASA-TP-2727] Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach
- numbers [NASA-TP-2638] p 37 N88-14299
- FOX. KENNETH First International Conference on Laboratory Research
- for Planetary Atmospheres NASA-CP-30771 p 78 N90-26744
- FRANKLIN, J. A. Powered-lift aircraft technology (NASA-SP.501) p 15 N90-12589
- FRASSINELLI, MARK C. Effect of tail size reductions on longitudinal aerodynamic characteristics of a three surface F-15 model with nonaxisymmetric nozzles
- [NASA-TP-3036] p 11 N90-25938 FREED, ALAN D. Thermoviscoplastic model with application to copper (NASA-TP-2845) p 45 N89-16183
- FREEMAN, MICHAEL S. Third Conference on Artificial Intelligence for Space
- Applications, part 1 p 62 N88-16360 [NASA-CP-2492-PI-1]
- Third Conference on Artificial Intelligence for Space Applications, part 2 [NASA-CP-2492-PT-2] p 63 N88-24188
- FROST, WALTER Atmospheric Turbulence Relative to Aviation, Missile,
- and Space Programs [NASA-CP-24681 p 55 N87-22341
- Wind Shear/Turbulence Inputs to Flight Simulation and Systems Certification [NASA-CP-2474] p 1 N87-25267

Meteorological and Environmental Inputs to Aviation Systems [NASA-CP-2498] p 56 N88-25105

- FUCHS, A. Flight Mechanics/Estimation Theory Symposium
- [NASA-CP-2002] p 22 N78-76855 FUJIKAWA, GENE
- Bit-error-rate testing of high-power 30-GHz traveling wave tubes for ground-terminal applications
- p 33 N87-17971 [NASA-TP-2635] FULLER, CHARLES A.
- Proceedings of a conference on Cardiovascular Bioinstrumentation
- [NASA-CP-10022] p 59 N89-17997 FULLER, W. H., JR.
- Forty-eight-inch lidar aerosol measurements taken at the angley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234 FUNK, JOAN G.
- The effects of simulated space environmental parameters on six commercially available composite materials
- p 29 N89-19385 [NASA-TP-2906] The interlaminar fracture toughness of woven graphite/epoxy composites [NASA-TP-2950] p 29 N90-10179

#### G

GABB, TIMOTHY P.

Heat treatment study of the SiC/	Ti-15-3	3 composit
System	- 20	NO0 1020
	þ 29	1490-1930
Discrete-vortex model for the symmetry	etric-vo	rtex flow o
(NASA-TP-2989)	p 11	N90-2094
GALIMORE, REGINALD N. The 1987 Airborne Antarctic Ozone	e Expe	riment: Th
Nimbus-7 TOMS data atlas	п 49	N88-2071
GALLAGHER, RICHARD H.	<b>P</b>	
Integrated force method versus disp for finite element analysis	blacem	ient metho
[NASA-TP-2937]	p 47	N90-1808
GANAPOL, BARRY D.		
equations: Energy and spatially dependent	dent pi	n transpoi oblems
[NASA-TP-2878]	p 79	N89-1671
BHYNTRN: A baryon transport mode [NASA-TP-2887]	ы р 80	N89-1756
GARDNER, JAMES E.		
National Educators' Workshop: Upda Experiments in Engineering Materia	ate 19 als S	89 Standari cience ani
[NASA-CP-3074]	p 28	N90-2435
GARHART, MATTHEW P.		
International ultraviolet explorer planetary nebulae, central stars, and re	spect elated	ral atlas o objects
[NASA-RP-1203]	p 76	N88-2884
Conceptual design of a syn telecommunications satellite	nchron	ious Mar
[NASA-TP-2942]	p 78	N90-1081
GARRETT, L. BERNARD		
[NASA-CP-10013]	p 63	N89-1140
GATLIN, GREGORY M.		
A review of technologies applicable	to low-	speed fligh
of high-performance aircraft investigat	ed in	the Langle
14- x 22-foot subsonic tunnel [NASA-TP-2796]	p 7	N88-2026
Thrust-reverser flow investigation	onat	win-engine
transport [NASA-TP-2856]	o 9	N89-1421
low-speed high-lift aerodynamic	chara	cteristics o
slender, hypersonic accelerator-type co	onfigur	ations
[NASA-TP-2945]	p 10	N90-1083
The Langley 14- by 22-foot subsonic t flow characteristics, and guide for user	unnel: s	Description
(NASA-TP-3008)	p 12	N90-27649
UELUEH, THOMAS F.	oe dor	ianod for
01-scale model of NASA Lowie Re	63 U83	h Centor's
proposed altitude wind tunnel		oonier:
[NASA-TP-2680]	p 21	N87-2029
Experimental evaluation of turning	vane	designs to

high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel

[NASA-TP-2681]

**B-6** 

p 21 N88-17686

GENTRY, GARL L., JR. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted usher propellers p 6 N87-29462 [NASA-TP-2763] aerodynamic Experimental and theoretical characteristics of a high-lift semispan wing model p 11 N90-20046 [NASA-TP-2990] The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users p 12 N90-27649 [NASA-TP-3008] GEORGE, ALBERT R. Status of sonic boom methodology and understanding [NASA-CP-3027] p 9 N89-23415 GEZARI, DANIEL Y. Infrared source cross-index, first edition p 73 N87-22573 [NASA-RP-1182] Catalog of infrared observations. Part 1: Data [NASA-RP-1196-PT-1-ED-2] p 73 N88-15738 Catalog of infrared observations. Part 2: Appendixes [NASA-RP-1196-PT-2-ED-2] p 74 N88-16615 Far infrared supplement: Catalog of infrared observations, second edition p 74 N88-30545 INASA-BP-12051 Spatial interferometry in optical astronomy [NASA-RP-1245] p 75 N90-28470 GILYARD, GLENN B. A piloted evaluation of an oblique-wing research aircraft motion simulation with decoupling control laws [NASA-TP-2874] p 20 N89-15930 Method for experimental determination of flutter speed by parameter identification p 15 N89-26844 [NASA-TP-2923] GLASS, C. E. Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5 [NASA-TP-2631] p 35 N87-13664 GLASS, CHRISTOPHER E. Aerothermal tests of quilted dome models on a flat plate at a Mach number of 6.5 [NASA-TP-2804] p 37 N88-22325 GLOERSEN, P. User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape [NASA-RP-1210] p 56 N89-14648 GLOERSEN, PER Arctic Sea ice, 1973-1976: Satellite passive-microwave observations INASA-SP-4891 p 58 N87-24870 GNOFFO, PETER A. Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium [NASA-TP-2867] p 38 N89-16115 An upwind-biased, point-implicit relaxation algorithm for viscous, compressible perfect-gas flows [NASA-TP-2953] p 38 N90-17042 GOEBEL. JOHN Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS) p 75 N90-10807 [NASA-BP-1217] **GOLDBERG, BENJAMIN E.** Microgravity crystallization of macromolecules: An nterim report and proposal for continued research p 31 N87-20423 [NASA-TP-2671] GOLDBERG, LEO The M-type stars [NASA-SP-492] p 75 N88-11592 GOLDMAN, LOUIS J. Three component laser anemometer measurements in an annular cascade of core turbine vanes with contoured end wall [NASA-TP-2846] p 8 N89-10844 GONG. LESLIE Finite-element reentry heat-transfer analysis of space shuttle Orbiter [NASA-TP-2657] p 37 N87-29795 GOODRICH, KENNETH H. A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effectors p 20 N89-23468 (NASA-TP-2907) GORDLEY, L. L. Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid p 51 N87-13022 [NASA-TP-2625] GORDON, R. A. An economical semi-analytical orbit theory for micro-computer applications p 66 N89-14052 NASA-TP-28111 GRACIA-SALCEDO, CARMEN M.

Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flames [NASA-TP-2900] p 38 N89-25409 GRANTHAM, WILLIAM D. Piloted simulator study of allowable time delays in large-airplane response [NASA-TP-2652] p 19 N87-16849 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application p 19 N88-14987 [NASA-TP-2482] Comparison of flying qualities derived from in-flight and ground-based simulators for a jet-transport airplane for the approach and landing pilot tasks p 20 N90-11757 [NASA-TP-29621 GRAY, STEPHANIE L. Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polvetherimides [NASA-TP-2928] p 31 N89-25332 **GREELEY, RONALD** Experiments in Planetary and Related Sciences and the Space Station [NASA-CP-2494] p 72 N89-14998 Mars landing site catalog p 78 N90-27607 [NASA-RP-1238] GREEN, ANDREW J. A synchronous data analyzer for the Minimum Delay Data Format (MDDF) and Launch Trajectory Acquisition System (LTAS) [NASA-TP-2743] p 34 N87-24590 GREEN, R. N. Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-27677 Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587 GREENBERG, PAUL S. Microgravity Combustion Diagnostics Workshop [NASA-CP-10017] p 32 N89 p 32 N89-17682 **GRIFFIN, SANDY** First Annual Workshop on Space Operations Automation and Robotics (SOAR 87) [NASA-CP-2491] p 61 N88-17206 Second Annual Workshop on Space Operations Automation and Robotics (SOAR 1988) p 61 N89-19817 [NASA-CP-3019] Graphics Technology in Space Applications (GTSA 1989) [NASA-CP-3045] p 62 N90-20651 Third Annual Workshop on Space Operations Automation and Robotics (SOAR 1989) [NASA-CP-3059] p 62 N90-25503 GRIGORIEV, ANATOLI I. Joint US/USSR study: Comparison of effects of horizontal and head-down bed rest p 60 N90-28965 [NASA-TP-30371 GRODSINSKY, CARLOS M. Development and approach to low-frequency microgravity isolation systems [NASA-TP-2984] p 33 N90-28754 GRUNWALD, ARTHUR J. Interactive orbital proximity operations planning p 61 N89-18039 [NASA-TP-2839] Spatial Displays and Spatial Instruments [NASA-CP-10032] p 61 N90-22918 GUIMARAES, PATRICIA T. The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-23837 GUPTA, ROOP N. Conservation equations and physical models for hypersonic air flows in thermal and chemical nonequilibrium p 38 N89-16115 [NASA-TP-2867] A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 [NASA-RP-1232] p 38 N90-27064 GYEKENYESI, JOHN P. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual

INASA-TP-29161

p 47 N90-28099

HARTUNG, LIN C.

. .

п
HABERLE, ROBERT M.
Proceedings of the Polar Processes on Mars
Workshop
HABING, H. J.
Infrared astronomical satellite (IRAS) catalogs and
atlases. Volume 1: Explanatory supplement (NASA-RP-1190-VOL-1) p 76 N89-14194
HAFTKA, RAPHAEL T.
Sensitivity Analysis in Engineering
HAGAMAN, JANE A.
Space Construction
[NASA-CP-2490] p 25 N88-10870
Advanced turboprop project
[NASA-SP-495] p 18 N89-12565
HAGGARD, K. V. Description of data on the Nimbus 7 LIMS map archive
tape: Ozone and nitric acid
[NASA-TP-2625] p 51 N87-13022
Description of data on the Nimbus 7 LIMS map archive
tape: Water vapor and nitrogen dioxide
[NASA-1P-2761] p 56 N88-14572 HALFORD GARY R
Life prediction of thermomechanical fatigue using total
strain version of strainrange partitioning (SRP): A
[NASA-TP-2779] p 44 N88-15263
HAN, D.
User's guide for the Nimbus 7 Scanning Multichannel Microwave Badiometer (SMMB) CELLALL tape
[NASA-RP-1210] p 56 N89-14648
HAN, DAESOO
[NASA-RP-1215] p 48 N89-22152
HANAWAY, JOHN F.
Space shuttle avionics system
HANDSCHUH, ROBERT F.
Efficiency testing of a helicopter transmission planetary
[NASA-TP-2795] p 41 N88-15224
HANNER, MARTHA S.
Infrared Observations of Comets Halley and Wilson and Properties of the Grains
[NASA-CP-3004] p 74 N89-13330
HANSEN, JAMES R.
Laboratory, 1917-1958
[NASA-SP-4305] p 80 N87-24390
Longitudinal stability and control characteristics of the
Quiet Short-Haul Research Aircraft (QSRA)
[NASA-TP-2965] p 20 N90-17639 HARRINGTON, DOUGLAS E.
Experimental evaluation of wall Mach number
distributions of the octagonal test section proposed for
[NASA-TP-2666] p 21 N87-17717
Experimental evaluation of blockage ratio and plenum
evacuation system flow effects on pressure distribution for bodies of revolution in 0.1 scale model test section
of NASA Lewis Research Center's proposed altitude wind
tunnel
Experimental evaluation of honeycomb/screen
configurations and short contraction section for NASA
[NASA-TP-2692] p.21 N87-23662
HARRIS, CHARLES D.
The NASA Langley Laminar-Flow-Control (LFC)
overview
[NASA-TP-2809] p 8 N88-21117
NASA supercritical airfolis: A matrix of family-related airfolis
[NASA-TP-2969] p 11 N90-16710
HARRIS, E. Broandings of the 5th Appual Users' Conference
[NASA-CP-2399] p 62 N87-10720
HARRIS, ELFRIEDA
Sixth Annual Users' Conference
HARTMAN, EDWARD R.
Mach 6 experimental and theoretical stability and
up to 65 degrees
[NASA-TP-2733] p 5 N87-23592
The effect of interplanetary trajectory options on a
manned Mars aerobrake configuration
INASA-12-30191 0.24 ND0 06006

#### HARVEY, WILLIAM D.

HARVEY, WILLIAM D. The NASA Langley Laminar-Flow-Control (LFC) experiment on a swept, supercritical airfoil: Design [NASA-TP-2809] p8 N88-21117 HATHAWAY, MICHAEL D. Laser anemometer measurements in a transonic axial-flow fan rotor p 38 N90-11245 [NASA-TP-2879] HAYDUK, ROBERT J. Computational Methods for Structural Mechanics and Dynamics, part 1 [NASA-CP-3034-PT-1] p 46 N89-24638 Computational Methods for Structural Mechanics and Dynamics [NASA-CP-3034-PT-2] p 46 N89-24654 HAYES, WALLACE D. Status of sonic boom methodology and understanding p 9 N89-23415 [NASA-CP-3027] HEATH, DONALD F. Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral scan solar irradiance and Earth radiance product user's auide p 48 N88-17096 [NASA-RP-1199] Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's quide [NASA-RP-1234] p 53 N90-17227 HEDGLEY, DAVID R., JR. A general solution to the silhouette problem [NASA-TP-2695] p 61 N88-14629 HEERS, SUSAN Space Station Human Factors Research Review Volume 3: Space Station Habitability and Function: Architectural Research [NASA-CP-2426-VOL-3] p 59 N88-19883 HEFNER, JERRY N. Research in Natural Laminar Flow and Laminar-Flow Control, part 1 [NASA-CP-2487-PT-1] p 10 N90-12503 Research in Natural Laminar Flow and Laminar-Flow Control, part 2 [NASA-CP-2487-PT-2] p 10 N90-12519 Research in Natural Laminar Flow and Laminar-Flow Control, part 3 p 10 N90-12539 [NASA-CP-2487-PT-3] HELLINGS, RONALD W. Relativistic Gravitational Experiments in Space p 77 N90-19940 [NASA-CP-3046] HELOU, GEORGE Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 7: The small scale structure catalog [NASA-RP-1190-VOL-7] p 76 N89-14199 HENDERSON, WILLIAM P. Effect of empennage arrangement on single-engine nozzle/afterbody static pressures at transonic speeds [NASA-TP-2753] p 6 N88-10771 HENDRICKS, ROBERT C. Three-step labyrinth seal for high-performance urbomachines [NASA-TP-1848] p 36 N87-23921 Straight cylindrical seal for high-performance turbomachines [NASA-TP-1850] p 36 N87-23936 Three-step cylindrical seal for high-performance turbomachines p 36 N87-24639 [NASA-TP-1849] HESS, ROBERT W. Steady and unsteady transonic pressure measurements on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895 HEYMAN, JOSEPH S. Electronics reliability and measurement technology [NASA-CP-2472] D 42 N87-27204 HICKEY, JOHN F Nimbus-7 ERB Solar Analysis Tape (ESAT) user's auide [NASA-RP-1211] p 79 N89-30151 HIGGINS, R. H. An electrochemical study of corrosion protection by primer-topcoat systems on 4130 steel with ac impedance and dc methods [NASA-TP-2820] p 30 N89-19406 HILL, ACQUILLA S. CAST-10-2/DOA 2 Airfoil Studies Workshop Results [NASA-CP-3052] p 22 N90-17647 HILL CHARLES K. Spacelab 3 Mission Science Review

[NASA-CP-2429] p 36 N87-22103 HINNANT, HOWARD E.

- Derivation of a tappered p-version beam finite element [NASA-TP-2931] p 46 N89-26255 HINTON, DAVID A.
- A simulation evaluation of a pilot interface with an automatic terminal approach system [NASA-TP-2669] p 16 N87-19393

A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation [NASA-TP-28371 p 13 N89-11726 Piloted-simulation evaluation of escape guidance for microburst wind shear encounters [NASA-TP-2886] p 17 N89-16820 HOAD, DANNY R. Helicopter blade-vortex interaction locations: Scale-model acoustics and free-wake analysis results [NASA-TP-2658] p 4 N87-18537 Rotor induced-inflow-ratio measurements and CAMRAD calculations (NASA-TP-2946) p 11 N90-15882 HOBAN, FRANCIS T. Issues in NASA program and project management NASA-SP-6101) p 69 N89-12479 [NASA-SP-6101] Issues in NASA program and project management p 69 N90-13277 [NASA-SP-6101(02)] HODGE, A. J. An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 HOELL, JAMES M. Future directions for H sub x O sub y detection [NASA-CP-2448] p 51 N87-15528 HOFFMAN, LAWRENCE H. Calculation and accuracy of ERBE scanner measurement locations [NASA-TP-2670] p 72 N87-28471 HOFLUND, G. B. Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver [NASA-TP-2930] p 67 N89-30022 HOFLUND, GAR B. Electron stimulated desorption of atomic oxygen from silver [NASA-TP-2668] p 29 N87-18629 Permeation of oxygen through high purity, large grain silver [NASA-TP-2755] p 30 N87-27024 Low-Temperature CO-Oxidation Catalysts for Long-Life CO2 Lasers [NASA-CP-3076] p 40 N90-24586 HOLT, HENRY E. Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 HONG, B. S. BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562 HONG, BYUNGSIK Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103 HOPSON, P. An Auger electron spectroscopy study of surface-preparation contaminants [NASA-TP-2972] p 33 N90-16968 HOUCK, JACOB A. Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation [NASA-TP-2978] p 13 N90-18378 HOUSNER, JERROLD M. Computational Methods for Structural Mechanics and Dynamics, part 1 [NASA-CP-3034-PT-1] p 46 N89-24638 Computational Methods for Structural Mechanics and **Dvnamics** [NASA-CP-3034-PT-2] p 46 N89-24654 HOWARD, ALAN D. Sapping features of the Colorado Plateau: A comparative planetary geology field guide p 49 N89-10401 NASA-SP-491 HOWARD, BRIAN T. Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462] p 2 N90-20942 HOWELL, LEONARD Probabilistic risk analysis of flying the space shuttle with and without fuel turbine discharge temperature redline protection p 65 N87-27474 NASA-TP-27591 HOWLETT, JAMES T. Calculation of viscous effects on transonic flow for oscillating airfoils and comparisons with experiment [NASA-TP-2731] p 6 N87-27622 HUCK, FRIEDRICH O. Visual Information Processing for Television and Telerobotics [NASA-CP-3053] p 40 N90-16204 HUFFMAN, JARRETT K. Subsonic longitudinal and lateral-dire characteristics of a forward-swept-wing lateral-directional

characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874

Flight and wind-tunnel measurements showing base drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers [NASA-TP-2638] p 37 N88-14299 HUFFMAN, P. D. Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 HUGHES. PETER The 1988 Goddard Conference on Space Applications of Artificial Intelligence INASA-CP-30091 p 64 N88-30330 HULTBERG, BANDY S. Measurements of pressures on the tail and aft fuselage of an airplane model during rotary motions at spin attitudes [NASA-TP-2939] p 10 N90-10829 HUMES, D. H. Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24585 HUNT. GEORGE E Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application [NASA-TP-2482] p 19 N88-14987 HUNT, L. R. Aerothermal tests of spherical dome protuberances on a flat plate at a Mach number of 6.5 [NASA-TP-2631] p 35 N87-13664 HUNT. L. ROANE Aerothermal tests of quilted dome models on a flat plate at a Mach number of 6.5 [NASA-TP-2804] o 37 N88-22325 Aerodynamic pressures and heating rates on surfaces between split elevons at Mach 6.6 [NASA-TP-2855] p 37 N89-12822 Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6 [NASA-TP-2988] p 38 N90-23670 HUNT, W. H. Forty-eight-inch lidar aerosol measurements taken at the angley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234 HUNTER, STANLEY D. The Energetic Gamma-Ray Experiment Telescope (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-23294 HUNTER, WILLIAM F. Research in structures, structural dynamics and materials, 1989 [NASA-CP-10024] p 46 N89-24626 HUNTINGTON, JUDITH L. Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 1: Executive summary and overview [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of particle formation and interactions. Volume 2: Abstracts, candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 55 p 59 N89-24023 HURLEY, EDWARD J. Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152 HUSSAINI, M. YOUSUFF A spectral collocation solution to the compressible stability eigenvalue problem [NASA-TP-2858] p 9 N89-12543 IBRAHIM, K. Y. Payload crew utilization for spacelab missions [NASA-TP-2976] p 24 N90-14256 ILIFF. KENNETH W. Application of parameter estimation to aircraft stability and control: The output-error approach [NASA-RP-1168] p 14 N87-29499 IMBERT, N. Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study [NASA-TP-2616] p 16 N87-10864 IPPOLITO, LOUIS J. Propagation effects handbook for satellite systems design. A summary of propagation impairments on 10 to 100 GHz satellite links with techniques for system

- design [NASA-RP-1082(04)] p 34 N89-17060
- IVANCIC, WILLIAM D. Satellite-matrix-switched, time-division-multiple-access network simulator

INASA-TP-29441

p 34 N90-11915

**B-8** 

#### IVEY, EDWARD W.

Space station structures and dynamics test program [NASA-TP-2710] p 43 N87-20568

J
---

JACHIMOWSKI, CASIMIR J. An analytical study of the hydrogen-air reaction mechanism with application to scramjet combustion p 30 N88-15846 [NASA-TP-2791] JACKMAN, CHARLES H.

- Two-Dimensional Intercomparison of Stratospheric Models [NASA-CP-3042] p 53 N90-11405
- JACOBS, JAMES A. National Educators' Workshop: Update 1989 Standard
- Experiments in Engineering Materials Science and Technology [NASA-CP-3074] p 28 N90-24350
- JALUFKA, N. W. Laser-powered MHD generators for space application p 68 N87-10764 [NASA-TP-2621] Laser production and heating of plasma for MHD
- application [NASA-TP-2798] p 68 N88-18443 JAMES, ODETTE B.
- Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274
- JANSON, BETTE R.
- Astronautics and aeronautics, 1978: A chronology p 80 N88-14062 [NASA-SP-4023]
- Astronautics and aeronautics, 1985: A chronology [NASA-SP-4025] p 81 N89-26803
- Astronautics and Aeronautics. 1979-1984: chronology [NASA-SP-4024]
- p 81 N90-25928 JENKINS, RENALDO V.
- NASA SC(2)-0714 airfoil data corrected for sidewall boundary-layer effects in the Langley 0.3-meter transonic cryogenic tunnel (NASA-TP-2890)
- p 9 N89-17568 JENNETT, LISA A.
- In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data [NASA-TP-2395] p 4 N87-20966
- JENSEN, KENNETH A.
- Secondary electron emission characteristics of untreated and ion-textured titanium [NASA-TP-2902] p 30 N89-17650
- Secondary electron emission characteristics of molybdenum-masked, ion-textured OFHC copper [NASA-TP-2967] p 31 N90-15211
- JOBSON, DANIEL J. Spatial vision processes: From the optical image to the symbolic structures of contour information
- \_ ρ 39 N89-13762 [NASA-TP-2838] JOHNSON, D. L. Upper and Middle Atmospheric Density Modeling
- Requirements for Spacecraft Design and Operations [NASA-CP-2460] p 52 N87-20665
- JOHNSON, HOLLIS RALPH The M-type stars [NASA-SP-492] p 75 N88-11592
- JOHNSON, J. BLAIR Qualitative evaluation of a flush air data system at
- transonic speeds and high angles of attack [NASA-TP-2716] p 14 p 14 N87-29497
- JOHNSON, STEWART
- A lunar far-side very low frequency array [NASA-CP-3039] p 75 p 75 N90-10805 JOHNSON, THOMAS D., JR.
- Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818]
- p 8 N88-23760 JOHNSTON, PATRICK J.
- Mach 6 experimental and theoretical stability and performance of a cruciform missile at angles of attack up to 65 degrees
- (NASA-TP-2733) p 5 N87-23592 JOLLY, J. RALPH. JR.
- Helicopter main-rotor noise: Determination of source contributions using scaled model data p 67 N88-26907 [NASA-TP-2825]
- JONES, FRANK P. Development and flight test of an experimental
- maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 JONES, LISA E.
- Evaluation of energy absorption of new concepts of aircraft composite subfloor intersections p 16 N90-26823 [NASA-TP-2951] JONES. MICHAEL G.
- Experimental validation of a two-dimensional shear-flow model for determining acoustic impedance
- p 66 N87-20798 [NASA-TP-2679]

Measured and calculated acoustic attenuation rates of
tuned resonator arrays for two surface impedance
distribution models with flow
[NASA-TP-2766] p 67 N88-17440
Fluctuating pressures measured beneath a
high-temperature, turbulent boundary layer on a flat plate
at Mach number of 5
[NASA-TP-2947] 0.67 N90-10680
JONES, WILLIAM H.
Combined aerodynamic and structural dynamic problem
emulating routines (CASPER). Theory and
implementation
[NASA.TP.2418] 0.4 N87-17669
Estar oxidation on on eluminum outloon using
chemiluminescence
1000 AN EDANKI JD
Wind typol investigation of a full scale assessed winters
wind-turnet investigation of a full-scale general aviation
airplane equipped with an advanced natural laminar flow
wing
[NASA-1P-27/2] p 6 N88-10009
JOHDAN, STUART
The M-type stars
[NASA-SP-492] p 75 N88-11592
O stars and Wolf-Rayet stars
[NASA-SP-497] p 74 N89-11657
JORDAN, T. M.
Cosmic ray heavy ion LET mapping for aluminum, silicon,
and tissue targets
[NASA-RP-1180] p 79 N87-25984

JUHASZ, AL Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184

#### Κ

KACYNSKI, KENNETH J. Experimental thrust performance of a high-area-ratio rocket nozzle [NASA-TP-2720] p 26 N87-20381 Comparison of theoretical and experimental thrust performance of a 1030:1 area ratio rocket nozzle at a chamber pressure of 2413 kN/m2 (350 psia) p 26 N87-25423 (NASA-TP-2725) Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle [NASA-TP-2726] p 27 N87-25424 KAISER, MARY K. Spatial Displays and Spatial Instruments [NASA-CP-10032] p 61 N90-22918 KANNING, G. General equilibrium characteristics of a dual-lift helicopter system [NASA-TP-2615] p 2 N88-19407 **KATZBERG, STEVE J.** Earth Sciences Requirements for the Information Sciences Experiment System p 50 N90-27140 (NASA-CP-3072) KAUFMAN, BARBARA A. Nimbus-7 data product summary (NASA-RP-1215) p 48 N89-22152 KAZAROFF, JOHN M. Conventionally cast and forged copper alloy for high-heat-flux thrust chambers [NASA-TP-2694] p 30 N87-16902 KEATING, GERALD M. Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite [NASA-TP-2723] p 55 N87-26491 KEETON, L. W. Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis [NASA-TP-2685] p 36 N87-17000 KELLER. V. W. Development testing of large volume water sprays for warm fog dispersal INASA-TP-26071 p 24 N87-12585 KEMMERLY, GUY T. A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel [NASA-TP-2796] p7 N88-20264 Dynamic ground-effect measurements on the F-15 STOL and Maneuver Technology Demonstrator (S/MTD) configuration [NASA-TP-3000] p 11 N90-22531 KEMPEL, ROBERT W. Flight control systems development and flight test experience with the HiMAT research vehicles [NASA-TP-2822] p 20 N89-15929 A piloted evaluation of an oblique-wing research aircraft notion simulation with decoupling control laws

p 20 N89-15930 [NASA-TP-2874]

#### KUDLINSKI, ROBERT A.

KERN, F. A. Introduction to total- and partial-pressure measurements in vacuum systems [NASA-RP-1219] p 40 N90-10412 KHAN, FERDOUS BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562 KHANDELWAL, GOVIND S. Doubly differential cross sections for galactic heavy-ion fragmentation [NASA-TP-2659] p 68 N87-17487 Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 KIBLER, JAMES F. Calculation and accuracy of ERBE scanner measurement locations [NASA-TP-2670] p 72 N87-28471 KHM, KYUN O. Mixed formulation for frictionless contact problems [NASA-TP-2897] p 45 N89-19580 Modeling and analysis of the space shuttle nose-gear tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595 KIM, S. T. User's guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL tape [NASA-RP-1210] p 56 N89 14648 KING, TRACY K. Contamination of liquid oxygen by pressurized gaseous nitrogen [NAŠA-TP-2894] p 38 N89-19499 KIPLINGER, ALAN L. **Rapid Fluctuations in Solar Flares** [NASA-CP-2449] p 79 N87-21785 KLEIN, VLADISLAV Analysis of flight data from a High-Incidence Research Model by system identification methods [NASA-TP-2940] p 20 N90-10074 KLENK. K. F. Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide [NASA-RP-1234] p 53 N90-17227 KNOCKEMUS, WARD W. The corrosion mechanisms for primer coated 2219-T87 aluminum [NASA-TP-2715] p 30 N87-21076 KNOX. C. E. Ground-based time-guidance algorithm for control of airplanes in a time-metered air traffic control environment: A piloted simulation study [NASA-TP-2616] p 16 N87-10864 KO. WILLIAM L. Finite-element reentry heat-transfer analysis of space shuttle Orbiter [NASA-TP-2657] p 37 N87-29795 KOCHEL, R. CRAIG Sapping features of the Colorado Plateau: A comparative planetary geology field guide [NASA-SP-491] p 49 N89-10401 KOSMAHL, HENRY G. Analytical and experimental performance of a dual-mode traveling wave tube and multistage depressed collector [NASA-TP-2752] p 35 N87-25532 p 35 N87-25532 KRAMBEER, KEITH D. Derivation and definition of a linear aircraft model [NASA-RP-1207] p 19 N89-15123 KRIST, STEVEN E. Numerical simulation of channel flow transition. resolution requirements and structure of the hairpin vortex [NASA-TP-2667] p 4 N87-19351 KROPP, JACK Solar-Terrestrial Science Strategy Workshop [NASA-CP-3048] p 73 1 p 73 N90-18329 KRUEGER, ARLIN J. Scientific and Operational Requirements for TOMS Data [NASA-CP-2497] p 47 N88-13774 The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714 The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-23837 KUDLINSKI, ROBERT A.

Digital enhancement of flow field images [NASA-TP-2770] p 6/ p 62 N88-20833

#### KUHI, LEONARD V.

KUHI, LEONARD V.

FGK stars and T Tauri stars: Monograph series on nonthermal phenomena in stellar atmospheres [NASA-SP-502] p 77 N90-18344 KUMAR, AJAY Numerical simulation of scramjet inlet flow fields [NASA-TP-2517] p 8 N88-23735 KUNDE, V. G. The Cassini mission: Infrared and microwave spectroscopic measurements [NASA-RP-1213] p 78 N89-16709 KUNDU, MUKUL Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings [NASA-CP-2439] p 79 N87-19328 KURKOV, ANATOLE P. Optical measurement of propeller blade deflections [NASA-TP-2841] p 39 N88-28286 p 39 N88-28286 KURYLO, M. J. Present state of knowledge of the upper atmosphere 1988: An assessment report INASA-RP-12081 p 52 N88-29233 Present state of knowledge of the upper atmosphere 1990: An assessment report [NASA-RP-1242] p 54 N90-28929 KURZEJA, R. J. Description of data on the Nimbus 7 LIMS map archive tape: Ozone and nitric acid [NASA-TP-2625] p 51 N87-13022 KÜRZEJA, ROBERT J. Description of data on the Nimbus 7 LIMS map archive tape: Water vapor and nitrogen dioxide [NASA-TP-2761] p 56 N88-14572 KUTLER. PAUL Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998 KWON, J. H. Diode laser satellite systems for beamed power transmission [NASA-TP-2992] p 40 N90-24585 KYLE. H. LEE Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152 Nimbus-7 ERB Solar Analysis Tape (ESAT) user's quide (NASA-RP-1211) p 79 N89-30151

### L

LADSON, CHARLES L. Evolution, calibration, and operational characteristics of the two-dimensional test section of the Langley 0.3-meter transonic cryogenic tunnel

[NASA-TP-2749] p 21 N87-28570 LALA, G. G. Development testing of large volume water sprays for

warm fog dispersal [NASA-TP-2607] p 24 N87-12585 LALLMAN, FREDERICK J.

A closed-form trim solution yielding minimum trim drag for airplanes with multiple longitudinal-control effectors [NASA-TP-2907] p 20 N89-23468 LAMAR\_JOHN F

Pressure measurements on a thick cambered and twisted 58 deg delta wing at high subsonic speeds [NASA-TP-2713] p 6 N87-27643

Sensitivity of F-106B leading-edge-vortex images to flight and vapor-screen parameters [NASA-TP-2818] p 8 N88-23760

LAMB, MILTON Aeropropulsive characteristics of isolated combined

turbojet/ramjet nozzles at Mach numbers from 0 to 1.20 [NASA-TP-2814] p 8 N88-23757 Integration effects of pylon geometry on a high-wing transport airplane [NASA-TP-2877] p 9 N89-15888

LAMKIN, S. L BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562

LANCE, D. G. Low velocity instrumented impact testing of four new

damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels

[NASA-TP-3042] p 29 N90-27876

Quantitative analysis of the reconstruction performance of interpolarits

[NASA-TP-2688	1		p 65	N87-22	441
Experiments	in	encoding	multilevel	images	as
quadtrees (NASA-TP-2722	1		p 65	N87-28	367

The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas p 49 N88-20714 [NASA-RP-1201] The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas [NASA-RP-1227] p 57 N89-27302 The 1988 Antarctic ozone monitoring Nimbus-7 TOMS data atlas [NASA-RP-1225] p 57 N89-28983 Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-23837 LARSON, TERRY J. Qualitative evaluation of a flush air data system at transonic speeds and high angles of attack p 14 N87-29497 [NASA-TP-2716] LEATHERWOOD, JACK D. Annoyance response to simulated advanced turboprop aircraft interior noise containing tonal beats [NASA-TP-2689] p 66 N87-24161 LEAVITT, L. D. Static internal performance of single-expansion-ramp nozzles with thrust-vectoring capability up to 60 deg INASA-TP-2364] p 3 N87-10839 LEAVITT, LAURENCE D. Effects of afterbody boattail design and empennage arrangement on aeropropulsive characteristics of a twin-engine fighter model at transonic speeds p 4 N87-21873 [NASA-TP-2704] Static internal performance of a nonaxisymmetric vaned thrust reverser with flow splay capability p 10 N89-27634 [NASA-TP-2933] LECROY, STUART R. Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between 0.4 and 2.2 micrometers [NASA-TP-2643] n 48 N87-22281 LEE. G. Automated Reduction of Data from Images and Holograms [NASA-CP-2477] p 6 N87-29432 LEE, KAM-PUI A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 p 38 N90-27064 [NASA-RP-1232] LEE. LARRY D. quantification of New methods and results for lightning-aircraft electrodynamics [NASA TP-2737] p 4 N87-21871 LEE. MARK C. Noncontact Temperature Measurement [NASA-CP-2503] p 32 N88-23895 LEE, W. S. Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver (NASA-TP-2930) p 67 N89-30022 LEHOCZKY, S. L. Growth of solid solution single crystals p 32 N88-14212 [NASA-TP-2787] LEISAWITZ, DAVID Catalog of open clusters and associated interstellar matter [NASA-RP-1202] p 76 N88-29652 Commentary on interstellar matter associated with 18 open clusters (NASA-RP-1229) p 77 N89-27612 LERCH, BRADLEY A. Heat treatment study of the SiC/Ti-15-3 composite svstem p 29 N90-19302 [NASA-TP-2970] LESNY, GARY G. Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube [NASA-TP-2788] p 35 N88-15146 LEVIN. ALAN D. Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport p 14 N87-20990 [NASA-TP-2678] LEVINE, JOEL S. Space Opportunities for Tropospheric Chemistry Research p 51 N87-18248 [NASA-CP-2450] LEWICKI, DAVID G. Predicted effect of dynamic load on pitting fatigue life for low-contact-ratio sour gears p 41 N87-18095 [NASA-TP-2610] Vibration characteristics of OH-58A helicopter main rotor transmission [NASA-TP-2705] p 41 N87-20555

LARKO, DAVID E.

#### PERSONAL AUTHOR INDEX

LIEBERT, CURT H. Measurement of local high-level, transient surface heat [NASA-TP-2840] p 39 N88-30099 LITVIN, FAYDOR L. Theory of gearing [NASA-RP-1212] p 42 N90-19593 LOHR, GARY W. A simulator investigation of the use of digital data link for pilot/ATC communications in a single pilot operation p 13 N89-11726 [NASA-TP-2837] A piloted simulation study of data link ATC message exchange [NASA-TP-2859] p 13 N89-15900 Delivery performance of conventional aircraft by terminal-area, time-based air traffic control: A real-time simulation evaluation [NASA-TP-2978] p 13 N90-18378 LONG, EDWARD R., JR. Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimides p 27 N87-18611 [NASA-TP-2663] Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polvetherimides [NASA-TP-2928] p 31 N89-25332 LONG, SHEILA ANN T. Spectroscopic comparison of effects of electron radiation on mechanical properties of two polyimides [NASA-TP-2663] p 27 N87-18611 Absorbed dose thresholds and absorbed dose rate limitations for studies of electron radiation effects on polyetherimides [NASA-TP-2928] p 31 N89-25332 LONG, W. RUSS Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184 LOPEZ, MERCEDES C. Static mechanical properties of 30 x 11.5 - 14.5, type 8 aircraft tires of bias-ply and radial-belted design p 15 N88-21157 [NASA-TP-2810] LORD, DOUGLAS R. Spacelab: An international success story p 72 N88-19375 [NASA-SP-487] LOWRY, S. A. Space shuttle main engine high pressure fuel pump aft platform seal cavity flow analysis INASA-TP-26851 p 36 N87-17000 LUERS, J. K. Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 LYONS, VALERIE J. Velocity profiles in laminar diffusion flames p 36 N87-18035 [NASA-TP-2596] Determination of combustion gas temperatures by infrared radiometry in sooting and nonsooting flames [NASA-TP-2900] p 38 N89-25409 Μ MACARAEG, MICHELE G. A spectral collocation solution to the compressible stability eigenvalue problem [NASA-TP-2858] p 9 N89-12543 MACELROY, ROBERT D. Controlled Ecological Life Support System: Regenerative Life Support Systems in Space p 60 N88-12251 [NASA-CP-2480] Controlled Ecological Life Support System. Design, Development, and Use of a Ground-Based Plant Growth Module [NASA-CP-2479] p 60 N88-13852 Report of the 1st Planning Workshop for CELSS Flight Experimentation [NASA-CP-10020] p 60 N89-13898 MACK. ROBERT J. Aerodynamic characteristics of wings designed with a combined-theory method to cruise at a Mach number of 4.5 [NASA-TP-2799] p 7 N88-19420 MACKALL, DALE A. Development and flight test experiences with a flight-crucial digital control system [NASA-TP-2857] p 20 N89-24327 MACKAY, REBECCA A. Heat treatment study of the SiC/Ti-15-3 composite evetem [NASA-TP-2970] p 29 N90-19302 MACPHERSON, GLENN Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274

	MARSHALL, B. T.
Simulated-ainine-service flight tests of laminar-flow	Description of data on the Nimbus 7 LIMS map archive
control with perforated-surface suction system	tape: Water vapor and nitrogen dioxide
[NASA-1P-2966] p 16 N90-17627	[NASA-TP-2761] p 56 N88-14572
MAINE, RICHARD E.	MARTENSEN, ANNA L.
Application of parameter estimation to aircraft stability	The Fault Tree Compiler (FTC): Program and
and control: The output-error approach	mathematics
[NASA-RP-1168] p 14 N87-29499	[NASA-TP-2915] p 64 N89-24815
MAINE, TRINDEL A.	MARTIN, COLIN A.
A piloted evaluation of an oblique-wing research aircraft	Measurements of pressures on the tail and aft fuselage
motion simulation with decoupling control laws	of an airplane model during rotary motions at spin
[NASA-TP-2874] p 20 N89-15930	attitudes
MAINS. RICHARD	[NASA-TP-2939] p 10 N90-10829
Proceedings of a conference on Cardiovascular	MARTIN, GARY L.
Bioinstrumentation	Conceptual design of a synchronous Mars
[NASA-CP-10022] p 59 N89-17997	telecommunications satellite
MAINS RICHARD C	[NASA-TP-2942] p 78 N90-10814
Cells in Space	MARTIN, R. M.
[NASA_CP.10034] D 61 N90.12020	Power cepstrum technique with application to model
	helicopter acoustic data
MAJUR, EUGENE	[NASA-TP-2586] p 66 N87-17479
Nimbus-/ END Solar Analysis Tape (ESAT) users	Correlation of helicopter impulsive noise from
guide	blade-vortex interaction with rotor mean inflow
[NASA-RP-1211] p / 9 N89-30151	[NASA-TP-2650] p 66 N87-18399
MAJOR, JUDITH A.	Advancing-side directivity and retreating-side
Satellite radar altimetry over ice. Volume 1: Processing	interactions of model rotor blade-vortex interaction noise
and corrections of Seasat data over Greenland	[NASA-TP-2784] p 67 N88-22710
[NASA-RP-1233-VOL-1] p 54 N90-20562	MARTIN, THOMAS V.
Satellite radar altimetry over ice. Volume 2: Users' guide	Satellite radar altimetry over ice. Volume 1: Processing
for Greenland elevation data from Seasat	and corrections of Seasat data over Greenland
[NASA-RP-1233-VOL-2] p 54 N90-20563	[NASA-RP-1233-VOL-1] p 54 N90-20562
Satellite radar altimetry over ice. Volume 4: Users' guide	Satellite radar altimetry over ice. Volume 2: Users' guide
for Antarctica elevation data from Seasat	for Greenland elevation data from Seasat
[NASA-RP-1233-VOL-4] p 54 N90-20564	[NASA-RP-1233-VOL-2] p 54 N90-20563
Surface topography of the Greenland Ice Sheet from	Satellite radar altimetry over ice. Volume 4: Users' guide
satellite radar altimetry	for Antarctica elevation data from Seasat
[NASA-SP-503] p 54 N90-22850	[NASA-RP-1233-VOL-4] p 54 N90-20564
MALL. GERALD H.	MASON, M. L.
A simplified method for determining heat of combustion	Interference effects of thrust reversing on horizontal tail
of natural das	effectiveness of twin-engine fighter aircraft at Mach
[NASA-TP-2682] p.39_N87-20514	numbers from 0.15 to 0.90
Finite-rate water condensation in combustion-heated	[NASA-TP-2350] p 19 N87-10870
wind tunnels	MASON, MARY L.
[NASA-TP-2833] D 22 N88-28075	Static performance of an axisymmetric nozzle with
Analysis of positron lifetime spectra in polymers	post-exit vanes for multiaxis thrust vectoring
[NASA-TP-2853] n 63 N89-12237	[NASA-TP-2800] p 8 N88-20280
	Static performance of nonaxisymmetric nozzles with vaw
Limb-darkening functions as derived from along-track	thrust-vectoring vanes
operation of the FRRE scapping radiometer for January	[NASA-TP-2813] D 8 N88-21118
1985	MASON, W. H.
1000	
[NASA-RP-1214] 0.56 N89-17374	Supersonic, nonlinear, attached-flow wing design for
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID JANE M	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Certamics Analysis and Beliability Evaluation of	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation (NASA-TP-2336) p 3 N87-10042
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES) Users and programmers manual	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 MASSEY_D.E.
[NASA-RP-1214] p 56 N89-17374 <b>MANDERSCHEID, JANE M.</b> Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis
[NASA-RP-1214] p 56 N89-17374 MANDERSCHED, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN M J	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer
[NASA-RP-1214] p 56 N89-17374 <b>MANDERSCHEID, JANE M.</b> Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 <b>MANN, M. J.</b> Entroward-swent wing configuration designed for bigh	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718
[NASA-RP-1214] p 56 N89-17374 <b>MANDERSCHEID, JANE M.</b> Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 <b>MANN, M. J.</b> Forward-swept wing configuration designed for high maneurershift by use of a transport computational	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 MASTERS. PHILIP A.
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxycen/kerosene (LOX/RP-1) rocket combustion
[NASA-RP-1214] p 56 N89-17374 <b>MANDERSCHEID, JANE M.</b> Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 <b>MANN, M. J.</b> Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 <b>MANN MICHAEL J.</b>	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic Impributing	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-262] p.27 N89-15979 <b>MASTERS, ROBERT M.</b>
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-event-wing fighter	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attech up to 47 den	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2272] p 6 N82-26874	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-28862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for anabies of subsonic	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MASING: KHIN M</b>
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of winos with flars in	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eiknoal solutions to optical model counted-channel
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or borizontal tail and an	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2860] p.39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-277] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to potimization	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-280] p 68 N88-30402
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-29261] p 11 N90-14187	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 MALING KHIN MAUNG
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2860] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b>
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-277] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Lowspeed aerordynamic characteristics of a twin-engine	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2682] p 27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-280] p 99 N89-25102
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft_uselane_mounted	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2820] p 60 N89-25103
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted public provellars	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-220] p 60 N89-25103 <b>MCANINCH, GERRY L.</b>
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with at-Luselage-mounted pusher propellers	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-278] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2820] p 60 N89-25103 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2820] p 60 N89-25103 <b>MAUNG, GERRY L.</b> Evaluation of a scale-model experiment to investigate long-range acoustic propagation
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Heliconter main-code compared the communication of source	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2800] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2920] p 60 N89-25103 <b>MCANINCH, GERRY L.</b> Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributione using eacled model data	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p 66 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2920] p 80 N89-25103 <b>MCANINCH, GERRY L.</b> Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 <b>MCCASKILL, MARY K.</b>
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data INASA-TP-2930 p 67 N88-26907	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p 33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p 27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2820] p 60 N89-25103 <b>MAAING, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2820] p 60 N89-25103 <b>MCANINCH, GERRY L.</b> Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 <b>MCCASKLL, MARY K.</b> Grammar, punctuation, and capitalization: A handbook
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N88-26907 Airdie cell noise and prediction	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 <b>MASSEY, D. E.</b> Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 <b>MASTERS, PHILIP A.</b> High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 <b>MASTERS, ROBERT M.</b> Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2800] p.39 N89-15380 <b>MAUNG, KHIN M.</b> Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.68 N88-30402 <b>MAUNG, KHIN MAUNG</b> Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 <b>MCANINCH, GERRY L.</b> Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 <b>MCCASKILL, MARY K.</b> Grammar, punctuation, and capitalization: A handbook for technical writers and editors
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2763] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2682] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-RP-1218] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-280] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A.
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2682] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-27861] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2783] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-285] p 67 N88-26907 Airfoi self-noise and prediction [NASA-RP-1218] p 67 N89-25673 MARCUM, DON C., JR. Effect of Bewonds number variation on accodmamicr	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2880] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering {NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2763] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction [NASA-TP-2825] p 67 N89-25673 MARCUIN, DON C., JR. Effect of Reynolds number variation on aerodynamics of a burdence, function managements and an arodynamics of a burdencements and prediction on aerodynamics of a burdencements and prediction on aerodynamics	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2682] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-1054
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-RP-1218] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-128] p 67 N89-25673 MARCOLINI, MICHAEL A. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-RP-129-10 p 5 N87-2972]	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2682] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-280] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-10054 MCCORD, THOMAS B.
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2861] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2880] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2803] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGASON, RICHARD J. The 0.082 Growed Vactor	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to polimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with at-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-RP-1218] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-128] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-RP-1278] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-RP 12016]	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2682] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-280] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-SP-7084] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2727] p 1 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2273] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-CP-1008] p 9 N89-10849	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2880] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-393] p.78 N88-24564 MCCORD(KEM)
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-285] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-285] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-271008] p 9 N89-10849 MARGLE, JANICE M.	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-220] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-SP-7084] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564 MCCORMICK, M. P.
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination to polimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with at-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-285] p 67 N88-26907 Airfoil self-noise and prediction [NASA-TP-285] p 67 N89-25673 MARCULNI, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031 MARCUA, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031 MARGASON, RICHARD J. The 1887 Ground Vortex Workshop [NASA-CP-10008] p 9 N89-10849 MARGLE, JANICE M. Velocity profiles in laminar diffusion flames [NASA-TP-276] p 5 N87-26031	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.66 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-SP-7084] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564 MCCORMICK, M. P. Airborne lidar measurements of El Chichon stratospheric aerosols May 1983
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2727] p 1 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2278] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-278] p 9 N89-10849 MARGLE, JANICE M. Velocity profiles in laminar diffusion flames [NASA-TP-285] p 36 N87-18035 Censervert Eire Sefety.	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p 33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p 27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p 39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2880] p 68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering {NASA-TP-2920] p 60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p 66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p 71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p 12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-393] p 78 N88-24564 MCCORMICK, M. P. Airborne lidar measurements of El Chichon stratospheric aerosols, May 1983 [NASA-RP-1172] p 51 N87-11358
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANULL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with at-fuselage-mounted pusher propellers [NASA-TP-2825] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-278] p 9 N89-10849 MARGLE, JANICE M. Velocity profiles in laminar diffusion fiames [NASA-TP-2596] p 36 N87-18035 Spacecraft Fire Safety [NASA-D 0242]	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2820] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-1054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564 MCCORMICK, M. P. Ariborne lidar measurements of El Chichon stratospheric aerosols, May 1983 [NASA-RP-1172] p.51 N87-11358
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with at-fuselage-mounted pusher propellers [NASA-TP-285] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2783] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGAS.P-1278] p 5 N87-26031 MARGAS.P.12596] p 36 N87-18035 Spacecaraft Fire Safety [NASA-TP-2596] p 24 N88-12520	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2629] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2662] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2800] p.66 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.12 N87-10054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564 MCCORMICK, M. P. Airborne lidar measurements of El Chichon stratospheric aerosols. May 1983 [NASA-RP-1172] p.51 N87-11358 MCCORMICK, M. PATRICK
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic tongitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2727] p 1 N90-14187 MANUEL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers [NASA-TP-2763] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N88-26907 Airfoil self-noise and prediction [NASA-RP-1218] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-2728] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-276] p 9 N89-10849 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-2266] p 36 N87-18035 Spacecrat Fire Safety [NASA-TP-226] p 24 N88-12520 MARRIOTT, RICHARD S.	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2880] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2920] p.60 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.71 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-SP-7084] p.78 N88-24564 MCCORM, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.78 N88-24564 MCCORMICK, M. P. Airborne lidar measurements of El Chichon stratospheric aerosols, May 1983 [NASA-RP-1172] p.51 N87-11358 MCCORMICK, M. PATRICK SAGE aerosol measurements. Volume 3: January 1, 1091 the Journetor 19, 1091
[NASA-RP-1214] p 56 N89-17374 MANDERSCHEID, JANE M. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 MANN, M. J. Forward-swept wing configuration designed for high maneuverability by use of a transonic computational method [NASA-TP-2628] p 3 N87-11702 MANN, MICHAEL J. Subsonic longitudinal and lateral-directional characteristics of a forward-swept-wing fighter configuration at angles of attack up to 47 deg [NASA-TP-2727] p 6 N87-26874 Validation of a computer code for analysis of subsonic aerodynamic performance of wings with flaps in combination with a canard or horizontal tail and an application to optimization [NASA-TP-2961] p 11 N90-14187 MANULL, GREGORY S. Low-speed aerodynamic characteristics of a twin-engine general aviation configuration with atf-fuselage-mounted pusher propellers [NASA-TP-2825] p 6 N87-29462 MARCOLINI, MICHAEL A. Helicopter main-rotor noise: Determination of source contributions using scaled model data [NASA-TP-2825] p 67 N89-25673 MARCUM, DON C., JR. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 [NASA-TP-278] p 5 N87-26031 MARGASON, RICHARD J. The 1987 Ground Vortex Workshop [NASA-TP-2763] p 36 N87-18035 Spacecraft Fire Safety [NASA-CP-10008] p 9 N89-10849 MARGLE, JANICE M. Velocity profiles in laminar diffusion flames [NASA-CP-2476] p 24 N88-12520 MARROLT, RICHARD S. Dutgassing data for selecting spacecraft materials UNDA SA-CP-10001	Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p.3 N87-10042 MASSEY, D. E. Pulse Code Modulation (PCM) data storage and analysis using a microcomputer [NASA-TP-2829] p.33 N87-12718 MASTERS, PHILIP A. High-pressure calorimeter chamber tests for liquid oxygen/kerosene (LOX/RP-1) rocket combustion [NASA-TP-2862] p.27 N89-15979 MASTERS, ROBERT M. Technique for temperature compensation of eddy-current proximity probes [NASA-TP-2880] p.39 N89-15380 MAUNG, KHIN M. Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p.68 N88-30402 MAUNG, KHIN MAUNG Kaon-nucleus scattering [NASA-TP-2820] p.80 N89-25103 MCANINCH, GERRY L. Evaluation of a scale-model experiment to investigate long-range acoustic propagation [NASA-TP-2748] p.66 N88-11450 MCCASKILL, MARY K. Grammar, punctuation, and capitalization: A handbook for technical writers and editors [NASA-SP-7084] p.11 N90-26710 MCCLELLAN, V. A. Doppler Radar Detection of Wind Shear [NASA-CP-2435] p.12 N87-1054 MCCORD, THOMAS B. Reflectance spectroscopy in planetary science: Review and strategy for the future [NASA-SP-493] p.51 N87-11358 MCCORMICK, M. PATRICK SAGE aerosol measurements. Volume 3: January 1, 1981 to November 18, 1981 [NASA-EP 1370]

В. Т.	Airborne lidar measurements of El Chichon stratospheric
on of data on the Nimbus 7 LIMS map archive	aerosols, January 1984
vapor and hitrogen dioxide 2761 l p 56 N88-14572	[NASA-HP-1175] p 51 No7-20003
ANNA L	Annovance caused by advanced turboprop aircraft
It Tree Compiler (FTC): Program and	flyover noise: Single-rotating propeller configuration
s	[NASA-TP-2782] p 67 N88-17441
2915) p 54 N89-24815	Annoyance caused by advanced turboprop aircraft
nents of pressures on the tail and aft fuselage	INASA TP 20271
ane model during rotary motions at spin	MCDANELS, DAVID L.
•	Tungsten fiber reinforced copper matrix composites: A
2939] p 10 N90-10829	review
1YL. al daoign of a gunghronous Mara	[NASA-TP-2924] p 29 N89-27796
ai design of a synchronous mars	MCDOUGAL, DAVID S.
2942] p 78 N90-10814	[NASA-CP-3079] n 58 N90-28224
Α.	MCKAY, CHRISTOPHER P.
epstrum technique with application to model	Microgravity Particle Research on the Space Station
coustic data	[NASA-CP-2496] p 58 N88-15354
poo N87-17479 n of heliconter impulsive noise from	Exobiology and Future Mars Missions
c interaction with rotor mean inflow	MCKINNEY WILLIAM S. JR.
2650] p 66 N87-18399	Optimized resolved rate control of
g-side directivity and retreating-side	seven-degree-of-freedom Laboratory Telerobotic
of model rotor blade-vortex interaction noise	Manipulator (LTM) with application to three-dimensional
2784] p67 N88-22710 MASV	graphics simulation
adar altimetry over ice. Volume 1: Processing	(NASA-17-2938) p 64 N90-10618
ions of Seasat data over Greenland	SAM 2 data user's quide
1233-VOL-1] p 54 N90-20562	[NASA-RP-1200] p 52 N88-25094
adar altimetry over ice. Volume 2: Users' guide	MCMILLIN, NAOMI
nd elevation data from Seasat	Planform effects on the supersonic aerodynamics of
adar altimetry over ice Volume 4: Users' guide	multibody configurations
ca elevation data from Seasat	MCNFILL, WALTER E.
1233-VOL-4] p 54 N90-20564	A piloted evaluation of an oblique-wing research aircraft
-	motion simulation with decoupling control laws
ce effects of thrust reversing on horizontal tail	[NASA-TP-2874] p 20 N89-15930
on 0 15 to 0 90	MCNULTY, MICHAEL J.
2350) p 19 N87-10870	Workshop
Υ L.	(NASA-CP-100071 D 2 N88-27148
rformance of an axisymmetric nozzle with	MCPETERS, R. D.
nes for multiaxis thrust vectoring	Nimbus 7 solar backscatter ultraviolet (SBUV) ozone
2800 j p 8 N88-20280	products user's guide
ring vanes	(NASA-RP-1234) p 53 N90-1/22/
28131 D 8 N88-21118	Infrared source cross-index first edition
l	[NASA-RP-1182] p 73 N87-22573
ic, nonlinear, attached-flow wing design for	Catalog of infrared observations. Part 1: Data
experimental validation	[NASA-RP-1196-PT-1-ED-2] p 73 N88-15738
2336j p.3 N87-10042	Catalog of infrared observations. Part 2: Appendixes
E. In Modulation (PCM) data storage and analysis	[NASA-RP-1196-P1-2-ED-2] p /4 N86-10615 Ear infrared supplement: Catalog of infrared
rocomputer	observations, second edition
2629] p 33 N87-12718	[NASA-RP-1205] p 74 N88-30545
HILIP A.	MEADOR, MICHAEL A.
ssure calorimeter chamber tests for liquid	Ester oxidation on an aluminum surface using
28621 n 27 N89-15979	Chemiluminescence
OBERT M.	MEITNER, PETER L.
e for temperature compensation of	Computer code for predicting coolant flow and heat
t proximity probes	transfer in turbomachinery
2880] p 39 N89-15380	[NASA-TP-2985] p 18 N90-27722
N M.	MENDELL, WENDELL W.
olutions to optical model coupled-channel	[NASA-CP-3017] n 72 NR9-14188
2830) D 68 N88-30402	Future Astronomical Observatories on the Moon
NMAUNG	[NASA-CP-2489] p 74 N89-15810
leus scattering	MENDREK, M. J.
2920] p 80 N89-25103	An electrochemical study of corrosion protection by
GERRY L.	primer-topcoat systems on 4130 steel with ac impedance
n of a scale-model experiment to investigate	[NASA-TP-2820] p 30 N89-19406
acoustic propagation	MERCER, C. E.
MARY K	Forward-swept wing configuration designed for high
punctuation, and capitalization: A handbook	maneuverability by use of a transonic computational
I writers and editors	method
7084] p 71 N90-26710	[NASA-1P-2628] p 3 N87-11702
•	
, V. A.	Advanced detection, isolation and accommodation of
V. A. Radar Detection of Wind Shear	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation
, V. A. ladar Detection of Wind Shear 2435) p 12 N87-10054	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740] p 19 N87-25331
, V. A. tadar Detection of Wind Shear 2435] p 12 N87-10054 IOMAS B. Comparison of the state	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740] p 19 N87-25331 Advanced detection, isolation, and accommodation of
V. A. tadar Detection of Wind Shear 2435] p 12 N87-10054 IOMAS B. ce spectroscopy in planetary science: Review y for the future	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740] Advanced detection, isolation, and accommodation of sensor failures in turbolan engines: Real-time
V. A. hadar Detection of Wind Shear 2435] p 12 N87-10054 OMAS B. Ce spectroscopy in planetary science: Review y for the future 193] p 78 N88-24564	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740] p 19 N87-25331 Advanced detection, isolation, and accommodation of sensor failures in turbotan engines: Real-time microcomputer implementation [NASA-TP-225] p 20 Nan-15112
V. A. hadar Detection of Wind Shear 2435] p 12 N87-10054 IOMAS B. ce spectroscopy in planetary science: Review y for the future 193] p 78 N88-24564 , M. P.	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740] p 19 N87-25331 Advanced detection, isolation, and accommodation of sensor failures in turbotan engines: Real-time microcomputer implementation [NASA-TP-2925] p 20 N90-15112 MEYER.M. B.
V. A.         ladar Detection of Wind Shear         2435]       p 12       N87-10054         OMAS B.         ce spectroscopy in planetary science: Review         y or the future         193]       p 78       N88-24564         M. P.         idar measurements of El Chichon stratospheric	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740]       p 19       N87-25331         Advanced detection, isolation, and accommodation of sensor failures in turbotan engines: Real-time microcomputer implementation [NASA-TP-2925]       p 20       N90-15112         MEYER, M. B.       Development testing of large volume water sprays for
V. A.         hadar Detection of Wind Shear         2435]       p 12       N87-10054         OMAS B.         ce spectroscopy in planetary science: Review y for the future         193]       p 78       N88-24564         , M. P.         idar measurements of El Chichon stratospheric ay 1983	Advanced detection, isolation and accommodation of sensor failures: Real-time evaluation [NASA-TP-2740]       p 19       N87-25331         Advanced detection, isolation, and accommodation of sensor failures in turbotan engines: Real-time microcomputer implementation [NASA-TP-2925]       p 20       N90-15112         MEYER, M. B.       Development testing of large volume water sprays for warm fog dispersal

#### MEYER, ROBERT R., JR.

p 58 N90-28224 ch on the Space Station p 58 N88-15354 . Aissions p 59 N89-26334 rate control of aboratory Telerobotic tion to three-dimensional p 64 N90-10618 p 52 N88-25094 ersonic aerodynamics of p 6 N88-12454 ue-wing research aircraft ng control laws p 20 N89-15930 Methodology Assessment p 2 N88-27148 ultraviolet (SBUV) ozone p 53 N90-17227 irst edition p 73 N87-22573 ons. Part 1: Data p 73 N88-15738 tions. Part 2: Appendixes p 74 N88-16615 Catalog of infrared p 74 N88-30545 luminum surface using p 31 N87-18666 ig coolant flow and heat p 18 N90-27722 ces Utilization Workshop p 72 N89-14188 tories on the Moon p 74 N89-15810 corrosion protection by steel with ac impedance p 30 N89-19406 ration designed for high ansonic computational p 3 N87-11702 and accommodation of ation p 19 N87-25331 and accommodation of engines: Real-time n p 20 N90-15112 volume water sprays for p 24 N87-12585 R, ROBERT R., In-flight surface oil-flow photographs with comparisons to pressure distribution and boundary-layer data [NASA-TP-2395] p4 N87-20966

#### **MEYER, ROBERT T.**

Effects of winglets on a first-generation jet transport wing. 7: Sideslip effects on winglet loads and selected wing loads at subsonic speeds for a full-span model p 7 N88-18567 [NASA-TP-2619] MEYER, ROBERT T. Piloted simulator study of allowable time delays in large-airplane response [NASA-TP-2652] p 19 N87-16849 MEYER, WILLIAM V. NASA Laser Light Scattering Advanced Technology Development Workshop, 1988 [NASA-CP-10033] p 40 N90-17085 **MEYERS, JAMES F.** Frequency domain laser velocimeter signal processor: A new signal processing scheme [NASA-TP-2735] p 40 N87-27994 MIDDEN, RAYMOND E. Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as occurs for a real gas [NASA-TP-2384] p 37 N87-29778 MIDDLETON, DAVID B. Simulator evaluation of a display for a Takeoff Performance Monitoring System p 20 N89-23469 [NASA-TP-2908] MIHALOEW, JAMES R. Rotorcraft flight-propulsion control integration: An eclectic design concept [NASA-TP-2815] p 19 N88-19475 MIKULAS, MARTIN M., JR. Continuum modeling of large lattice structures: Status and projections [NASA-TP-2767] p 25 N88-14115 MILES. THOMAS Comparison of satellite-derived dynamical quantities for the stratosphere of the Southern Hemisphere p 53 N89-25540 [NASA-CP-3044] MILLER, CHARLES G., III Description and calibration of the Langley Hypersonic CF4 tunnel: A facility for simulating low gamma flow as occurs for a real gas [NASA-TP-2384] p 37 N87-29778 MILLER, D. S. Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 MILLER, DAVID S. Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] D 4 N87-20233 MILLER, IRVIN M. Closed-Cycle, Frequency-Stable CO2 Laser Technology [NASA-CP-2456] p 40 N87-20522 MILLER, TERESA Y. Continuous flow electrophoresis system experiments on shuttle flights STS-6 and STS-7 [NASA-TP-2778] p 32 N88-10978 MIN. BYUNG-JIN Mixed finite element models for free vibrations of thin-walled beams [NASA-TP-2868] p 45 N89-19579 MINNIS, P. Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation (NASA-RP-1184) p 56 N88-27677 MITCHELL, A. M. Testing of UH-60A helicopter transmission in NASA Lewis 2240-kW (3000-hp) facility p 41 N87-10391 INASA-TP-26261 MITCHELL, KERRY Proceedings of the 1985 NASA Ames Research Center's Ground-Effects Workshop [NASA-CP-2462] p 5 N87-24410 MOITRA, ANUTOSH On minimizing the number of calculations in design-by-analysis codes [NASA-TP-2706] p 5 N87-23586 A performance index approach to aerodynamic design with the use of analysis codes only [NASA-TP-2805] p 7 N88-18552 MONTGOMERY, H. E. ensor performance analysis p 50 N90-23780 [NASA-RP-1241] MOORE, CARLETON J. Space station structures and dynamics test program INASA-TP-27101 p 43 N87-20568 SRM propellant and polymer materials structural test rogram p 44 N88-25013 NASA-TP-28211 SRM (Solid Rocket Motor) propellant and polymer materials structural modeling [NASA-TP-2824] p 45 N88-28343

MOORE, ROYCE D. Experimental evaluation of two turning vane designs for fan drive corner of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2646] p 21 N87-18576 Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2680] p 21 N87-20295 Experimental evaluation of turning vane designs for high-speed and coupled fan-drive corners of 0.1-scale model of NASA Lewis Research Center's proposed altitude wind tunnel [NASA-TP-2681] p 21 N88-17686 MOOREHEAD, ROBERT W. Space shuttle avionics system [NASA-SP-504] p 24 N90-25160 MOOREHEAD, T. W. A Study of Space Station Contamination Effects p 72 N88-25390 [NASA-CP-3002] MOOREHEAD, TAUNA W. Double Layers in Astrophysics p 72 N87-23313 [NASA-CP-2469] MORALES, WILFREDO Ester oxidation on an aluminum surface using chemiluminescence [NASA-TP-2611] p 31 N87-18666 Surface catalytic degradation study of two linear perfluoropolyalkylethers at 345 C [NASA-TP-2774] p 27 N88-12543 Degradation and crosslinking of perfluoroalkyl polyethers under X-ray irradiation in ultrahigh vacuum [NASA-TP-2910] p 31 N89-21103 Reaction of perfluoroalkylpolyethers (PFPE) with 440C steel in vacuum under sliding conditions at room temperature p 31 N89-26091 [NASA-TP-2883] MORI, SHIGEYUKI Degradation and crosslinking of perfluoroalkyl polyethers under X-ray irradiation in ultrahigh vacuum [NASA-TP-2910] p 31 N89-21103 Reaction of perfluoroalkylpolyethers (PFPE) with 440C steel in vacuum under sliding conditions at room temperature [NASA-TP-2883] p 31 N89-26091 MORRELL, FREDERICK R. Joint University Program for Air Transportation Research, 1983 p 1 N87-18520 [NASA-CP-2451] Joint University Program for Air Transportation Research, 1984 [NASA-CP-2452] p 1 N87-22604 Joint University Program for Air Transportation Research, 1985 p 1 N87-27596 [NASA-CP-2453] Joint University Program for Air Transportation Research 1986 [NASA-CP-2502] p 2 N88-23715 Joint University Program for Air Transportation Research, 1987 [NASA-CP-3028] p 2 N89-19230 Joint University Program for Air Transportation Research, 1988-1989 [NASA-CP-3063] p 2 N90-20921 MORRISON, DENNIS R. Space Bioreactor Science Workshop [NASA-CP-2485] p 58 N88-17168 MORROW, G. The 1985 Goddard Space Flight Center Battery Workshop [NASA-CP-2434] p 34 N87-11072 MORROW, GEORGE W. The 1986 Goddard Space Flight Center Battery Workshop [NASA-CP-2486] p 35 N88-11021 MOSIER, FRANCES L. The 1986 Get Away Special Experimenter's Symposium p 22 N87-20302 [NASA-CP-2438] The 1987 Get Away Special Experimenter's Symposium p 22 N88-17691 [NASA-CP-2500] The 1988 Get Away Special Experimenter's Symposium [NASA-CP-3008] p 22 N89-10902 MURRI, DANIEL G. Wind-tunnel investigation of a full-scale general aviation airplane equipped with an advanced natural laminar flow wina [NASA-TP-2772] p 6 N88-10009

#### PERSONAL AUTHOR INDEX

Ν

NAGARAJA, K. S. Effects of winglet on transonic flutter characteristics of
a cantilevered twin-engine-transport wing model
[NASA-TP-2627] p 43 N87-13789
Satellite-matrix-switched, time-division-multiple-access
network simulator
[NASA-TP-2944] p 34 N90-11915 NAIDU, DESINENI S.
Singular perturbations and time scales in the design of
digital flight control systems
[NASA-1P-2044] p 19 N69-12009 NAMKUNG, J. S.
Atlas of absorption lines from 0 to 17900 cm (sup)-1
[NASA-RP-1188] p 49 N87-28955 NATAUPSKY MARK
Effects of combining vertical and horizontal information
into a primary flight display
[NASA-19-2763] p 17 N66-12487 NATHAL. MICHAEL V.
Compatability of dispersion-strengthened platinum with
resistojet propellants (NASA-TP-2765) p 27 N88-12538
NEALY, JOHN E.
Solar-flare shielding with Regolith at a lunar-base site
BRYNTRN: A baryon transport model
[NASA-TP-2887] p 80 N89-17562
Radiation exposure for manned Mars surface missions
Improved model for solar cosmic ray exposure in manned
Earth orbital flights
[NASA-TP-2987] p 80 N90-25031
comparison of dose estimates using the buildup-factor method and a Barvon transport code (BRYNTRN) with
Monte Carlo results
[NASA-TP-3021] p 80 N90-29290
NEMETH, MICHAEL P. Buckling and postbuckling behavior of square
compression-loaded graphite-epoxy plates with circular
cutouts
[NASA-TP-3007] p 29 N90-20077 Buckling and postbuckling behavior of
compression-loaded isotropic plates with cutouts
[NASA-TP-3024] p 47 N90-28859
NEMETH, NOEL N. Ceramics Analysis and Beliability Evaluation of
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099         NETLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual         [NASA-TP-2916]       p 47         N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing         of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new         damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 NEUGEBAUER, G.
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 NEUGEBAUER, G. Infrared astronomical satellite (IRAS) catalogs and
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 NEUGEBAUER, G. Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-TP-1190-V01-1] p 76 N80-14104
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 NEUGEBAUER, G. Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 N89-14194 NEUMAN. HARVEY E.
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916]       p.47       N90-28099         NETTLES, A. T.       Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981]       p.29       N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029]       p.29       N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042]       p.29       N90-27876         NEUEBAUER, G.       Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-R-1190-VOL-1]       p.76       N89-14194         NEUMAN, HARVEY E.       Laser-velocimeter-measured flow field around an
NEMETH, NOEL N. Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099 NETTLES, A. T. Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007 Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198 An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876 NEUGEBAUER, G. Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 N89-14194 NEUMAN, HARVEY E. Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 (NASA-R 2462)
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual         [NASA-TP-2916]       p 47         NPTTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25098         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared a stronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         N90-20942
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-2509]       p 29         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27676         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBUMAN, HARVEY E.       Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NASA/DOD Controls-Structures Interaction Technology
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-26099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing         of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new         damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBUMAN, HARVEY E.       Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-26099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NB-14194         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p 26         Nego. Kim CHI
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-26099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBV-14194         NEUGEBAUER, G.         [NASA-RP-1190-VOL-1]       p 76         NBV-14194         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBVASAWAR       NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p 26         N90-21062       N90-21062
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-26099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         N89-14194         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p 26         NOG, KIM CHI       Contamination of liquid oxygen by pressurized gaseous nitrogen
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing         of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         N90-16007         Low velocity instrumented impact testing of four new         damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBVMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NSA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p 26         NGO, KIM CHI       Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38         NBSA-TP-2894]       p 38
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Cramics Analysis and Programmers manual         [NASA-TP-2916]       p.47         NSTTLES, A. T.         Instrumented impact and residual tensile strength testing         of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p.29         Low velocity instrumented impact testing of four new         damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p.29         An examination of impact damage in glass-phenolic and         aluminum honeycomb core composite panels         [NASA-TP-3042]       p.29         NBUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and         atlases. Volume 1: Explanatory supplement         [NASA-TP-190-VOL-1]       p.76         NBS-14194         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an         advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p.2         NASA/DOD Controls-Structures Interaction Technology         1889       [NASA-CP-3041]         p.26       N90-21062         NGO, KIM CHI       p.38         Contamination of liquid oxygen by pressurized gaseous nitrogen
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Cramics Analysis and Programmers manual         [NASA-TP-2916]       p.47         Nettures (CARES). Users and programmers manual         [NASA-TP-2916]       p.47         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p.29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p.29         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p.29         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-TP-190-VOL-1]       p.76         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p.2         NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p.26         Netword interior of liquid oxygen by pressurized gaseous nitrogen       p.38         [NASA-TP-2894]       p.38         NASA-TP-2894]       p.38         Nethype-scale       static
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual [NASA-TP-2916]       p.47       N90-28099         NETTLES, A. T.       Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981]       p.29       N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029]       p.29       N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042]       p.29       N90-27876         NEUGEBAUER, G.       Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1]       p.76       N89-14194         NEUMAN, HARVEY E.       Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462]       p.2       N90-20942         NEWSOM, JERRY R.       NASA/DOD Controls-Structures Interaction Technology 1989       [NASA-CP-3041]       p.26       N90-21062         NGO, KIM CHI       Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2884]       p.38       N89-19499         NICHOLS, J. H., JR.       Large-scale static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2884]       p.13       N87-15959
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual [NASA-TP-2916]       p 47       N90-28099         NETTLES, A. T.       Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981]       p 29       N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029]       p 29       N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042]       p 29       N90-27876         NEUGEBAUER, G.       Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1]       p 76       N89-14194         NEUMAN, HARVEY E.       Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462]       p 2       N90-21062         NEWSOM, JERRY R.       NASA/DOD Controls-Structures Interaction Technology 1989       p 26       N90-21062         NGO, KIM CHI       Contamination of liquid oxygen by pressurized gaseous nitrogen       NASA-TP-2894]       p 38       N89-19499         NICHOLS, J. H., JR.       Large-scale       static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684]       p 13       N87-15959
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of Structures (CARES). Users and programmers manual [NASA-TP-2916] p 47 N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981] p 29 N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-3029] p 29 N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042] p 29 N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1] p 76 N89-14194         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462] p 2 N90-20942         NEWSOM, JERRY R.         NASA/DOD Controls-Structures Interaction Technology 1989         NGO, KIM CHI Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2894] p 38 N89-19499         NICHOLS, J. H., JR.         Large-scale       static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684] p 13 N87-15959         NICHOLSBOHLIN, JOY       International ultraviolet explorer spectral atlas of planetome ophyde costed state opticet at definite opticet.
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual [NASA-TP-2916]       p 47       N90-28099         NETTLES, A. T.       Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens [NASA-TP-2981]       p 29       N90-16007         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems [NASA-TP-2081]       p 29       N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels [NASA-TP-3042]       p 29       N90-27876         INEGEBAUER, G.       Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement [NASA-RP-1190-VOL-1]       p 76       N89-14194         NEUMEMA, HARVEY E.       Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462]       p 2       N90-20942         NEWSOM, JERRY R.       NASA/DOD Controls-Structures Interaction Technology 1989       p 26       N90-21062         NGO, KIM CHI       Contamination of liquid oxygen by pressurized gaseous nitrogen [NASA-TP-2843]       p 38       N89-19499         NICHOLS, J. H., JR.       Large-scale       static investigation of circulation-control-wing concepts applied to upper surface-blowing aircraft [NASA-TP-2684]       p 13       N87-15959         NICHOLSBOHLIN, JOY       International ultraviolet explorer spectral a
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         N89-14194         NEUGEBAUER, G.         [NASA-RP-100-VOL-1]       p 76         NB9-14194         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2661]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-CP-3041]       p 26         NGO, KIM CHI       Contamination of liquid oxygen by pressurized gaseous n
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Structures (CARES). Users and programmers manual         [NASA-TP-2916]       p 47         N90-28099         NETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-190-VOL-1]       p 76         N8D-27876         NEUGAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         N90-21062         NGO, KIM CHI         Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38         N89         NICHOLS, J. H., JR.         Large-scale       static< investigation
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         NettleS, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Low velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         N90-25198         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         N90-27876         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-190-VOL-1]       p 76         NBCUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2662]       p 2         N90-21062         NGO, KIM CHI         Contamination of liquid oxygen by pressurized gaseous nitrogen         [NASA-TP-2894]       p 38         N87-15959         NICHOLS, J. H., JR.         Large-scale       static< investigation
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         NPATLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         Novelocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3029]       p 29         NBO-25098         An examination of impact damage in glass-phenolic and aluminum honeycomb core composite panels         [NASA-TP-3042]       p 29         NBUERBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlases. Volume 1: Explanatory supplement         [NASA-RP-190-VOL-1]       p 76         NEUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2642]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989         NCHOLS, J. H., JR.       Large-scale         Large-scale       static         introgen       investigation         (INASA-TP-2894]       p 38         N85-1998       p 13         INCHOLS, J. H., JR.       Large-scale         Large-scale
NEMETH, NOEL N.         Ceramics Analysis and Reliability Evaluation of         Creamics Analysis and Programmers manual         [NASA-TP-2916]       p 47         NPETTLES, A. T.         Instrumented impact and residual tensile strength testing of eight-ply carbon eopoxy specimens         [NASA-TP-2981]       p 29         New velocity instrumented impact testing of four new damage tolerant carbon/epoxy composite systems         [NASA-TP-3042]       p 29         NBO-27676         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlasse. Volume 1: Explanatory supplement         [NASA-TP-3042]       p 29         N90-27676         NEUGEBAUER, G.         Infrared astronomical satellite (IRAS) catalogs and atlasse. Volume 1: Explanatory supplement         [NASA-RP-1190-VOL-1]       p 76         NBUMAN, HARVEY E.         Laser-velocimeter-measured flow field around an advanced, swept, eight-blade propeller at Mach 0.8         [NASA-TP-2462]       p 2         NASA/DOD Controls-Structures Interaction Technology 1989         [NASA-TP-2894]       p 38         NASA/DDD Controls-Structures Interaction of circulation-control-wing concepts applied to upper surface-blowing aircraft         [NASA-TP-2884]       p 13         NASA-TP-2884]       p 13 <t< td=""></t<>

#### NISSIM. E.

- Control surface spanwise placement in active flutter suppression systems [NASA-TP-2873] p 45 N89-16196
- Method for experimental determination of flutter speed by parameter identification p 15 N89-26844 [NASA-TP-2923]
- Effect of control surface mass unbalance on the stability of a closed-loop active control system

p 47 N90-12042 [NASA-TP-2952] NISSIM. ELI

- The effectiveness of vane-aileron excitation in the experimental determination of flutter speed by parameter identification
- [NASA-TP-2971] p 16 N90-15100 NIXON, MARK W.
- Preliminary structural design of composite main rotor blades for minimum weight
- [NASA-TP-2730] p 28 N87-25435 NOLL, CAREY E.
- Crustal Dynamics Project: Catalogue of site information INASA-BP-11981 p 52 N88-19037
- NOONAN, KEVIN W. Aerodynamic characteristics of two rotorcraft airfoils
- designed for application to the inboard region of a main rotor blade [NASA-TP-3009] p 11 N90-24239
- NOOR, AHMED K. Exploiting symmetries in the modeling and analysis of
- tires [NASA-TP-2649] p 13 N87-17690 Continuum modeling of large lattice structures: Status
- and projections p 25 N88-14115 [NASA-TP-2767] Advances in contact algorithms and their application to
- tires [NASA-TP-2781] p 44 N88-21456 Partitioning strategy for efficient nonlinear finite element
- dynamic analysis on multiprocessor computers p 45 N89-16170 [NASA-TP-2850] Mixed finite element models for free vibrations of
- thin-walled beams [NASA-TP-2868] p 45 N89-19579
- Mixed formulation for frictionless contact problems [NASA-TP-2897] p 45 N89-19580 Research in structures, structural dynamics and
- materials, 1989 [NASA-CP-10024] p 46 N89-24626 Modeling and analysis of the space shuttle nose-gear
- tire with semianalytic finite elements p 42 N90-19595 [NASA-TP-2977] NORBURY, JOHN W.
- Doubly differential cross sections for galactic heavy-ion fragmentation
- p 68 N87-17487 [NASA-TP-2659] Possible complementary cosmic-ray systems: Nuclei and antinuclei [NASA-TP-2741] p 68 N87-24977
- A general formalism for phase space calculations [NASA-TP-2843] p 66 N89-14053 Calculation of two-neutron multiplicity in photonuclear
- reactions [NASA-TP-2968] p 68 N90-14890
- NORMAN, SUSAN D. Flight deck automation: Promises and realities
- p 17 N90-13384 [NASA-CP-10036] NORTON, ROBERT H.
- A high-resolution atlas of the infrared spectrum of the sun and the earth atmosphere from space. A compilation of ATMOS spectra of the region from 650 to 4800 cm-1 (2.3 to 16 microns). Volume 2: Stratosphere and mesosphere, 650 to 3350 cm-1
- [NASA-RP-1224-VOL-2] p 53 N89-28969 A high-resolution atlas of the infrared spectrum of the Sun and the Earth atmosphere from space: A compilation of ATMOS spectra of the region from 650 to 4800 cm (2.3 to 16 micron). Volume 1: The Sun p 53 N90-13893
- [NASA-RP-1224-VOL-1] NORUM, THOMAS D.
- Shock structure and noise of supersonic jets in simulated flight to Mach 0.4
- [NASA-TP-2785] p 67 N88-16510 NOTESTINE, KRISTOPHER K.
- Aerodynamic pressure and heating-rate distributions in tile gaps around chine regions with pressure gradients at a Mach number of 6.6 [NASA-TP-2988] p 38 N90-23670
- NOWAK, ROBERT J.
- Gas-jet and tangent-slot film cooling tests of a 12.5 deg cone at Mach number of 6.7 p 39 N90-28806 [NASA-TP-2786]

- NUGENT, JACK
  - Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds
  - [NASA-TP-2588] p 6 N88-10765

NUTTER, S. T.

- Nimbus-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide [NASA-RP-1221] p 53 N89-26304
- 0 OAKES, ARNOLD G. Nimbus-7 data product summary [NASA-RP-1215] p 48 N89-22152 **ODELL, STEPHEN L.** Fourth Conference on Artificial Intelligence for Space Applications [NASA-CP-3013] p 63 N89-15549 ODELL STEVE L Fifth Conference on Artificial Intelligence for Space Applications [NASA-CP-3073] p 63 N90-27275 OLIVERSEN, NANCY A. International ultraviolet explorer spectral atlas of planetary nebulae, central stars, and related objects p 76 N88-28843 [NASA-ÁP-1203] OLSEN, GEORGE C. Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites [NASA-TP-1063] p 28 N88-70029 ONEILL, ALAN Comparison of satellite-derived dynamical guantities for the stratosphere of the Southern Hemisphere p 53 N89-25540 [NASA-CP-3044] ORANGE, THOMAS W. Stress intensity and crack displacement for small edge cracks [NASA-TP-2801] p 44 N88-17095 ORLADY, HARRY W. Cockpit Resource Management Training p 12 N87-22634 [NASA-CP-2455] Flight deck automation: Promises and realities p 17 N90-13384 [NASA-CP-10036] ORMES, JONATHAN F. **Essays in Space Science** [NASA-CP-2464] p 72 N87-24247 ORMOND, F. M. Present state of knowledge of the upper atmosphere 1990: An assessment report p 54 N90-28929 [NASA-RP-1242] ORWIG, LARRY E. **Rapid Fluctuations in Solar Flares** p 79 N87-21785 [NASA-CP-2449] OSBORN. M. T. Airborne lidar measurements of El Chichon stratospheric aerosols, May 1983 [NASA-RP-1172] p 51 N87-11358 Airborne lidar measurements of El Chichon stratospheric aerosols, January 1984 [NASA-RP-1175] p 51 N87-20663 SAM 2 data user's guide p 52 N88-25094 [NASA-RP-1200] Forty-eight-inch lidar aerosol measurements taken at the Langley Research Center, May 1974 to December 1987 [NASA-RP-1209] p 52 N88-29234 OSLIK. N. Nimbus-7 Stratospheric and Mesospheric Sounder (SAMS) experiment data user's guide [NASA-RP-1221] p 53 N89-26304
- OSSA, WILLIAM A.
- Material characterization of superplastically formed titanium (Ti-6Al-2Sn-4Zr-2Mo) sheet [NASA-TP-2674] p 30 N87-20407
- OSTROFF, AARON J.
- Integrated tools for control-system analysis [NASA-TP-2885] p 20 N89-19309 OSTROW, H.
- Sensor performance analysis [NASA-RP-1241] p 50 N90-23780 OSWALD, F. B. Testing of UH-60A helicopter transmission in NASA Lewis 2240-kW (3000-hp) facility [NASA-TP-2626] p 41 N87-10391
- OSWALD, FRED B.
- Gear tooth stress measurements on the UH-60A helicopter transmission [NASA-TP-2698] p 41 N87-22235
- Dynamic analysis of multimesh-gear helicopter transmissions p 41 N88-17045 [NASA-TP-2789] **OTTENSTEIN, LAURA**
- Workshop on Two-Phase Fluid Behavior in a Space Environment [NASA-CP-3043] p 38 N89-26184

## OUTLAW, R. A.

PATTERSON, JAMES C., JR.

Electron stimulated desorption of atomic oxygen from silvor

p 29 N87-18629 [NASA-TP-2668] Permeation of oxygen through high purity, large grain silver p 30 N87-27024 [NASA-TP-2755] Auger electron intensity variations in oxygen-exposed large grain polycrystalline silver [NASA-TP-2930] p 67 N89-30022 Introduction to total- and partial-pressure measurements in vacuum systems [NASA-RP-1219] p 40 N90-10412 An Auger electron spectroscopy study of surface-preparation contaminants p 33 N90-16968 [NASA-TP-2972] OWEN, ROBERT B. Liquid drop stability for protein crystal growth in microgravity [NASA-TP-2724] p 58 N87-20727 OWENS, D. BRUCE

Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration p 20 N90-19239 [NASA-TP-2982]

#### P

PACK, HOMER C., JR. Solar array flight experiment/dyn	amic a	ugmentation
experiment		-
[NASA-TP-2690]	p 26	N87-20380
PALUMBO, DANIEL L.		
A technique for evaluating the applic	ation of	the pin-level
stuck-at fault model to VLSI circuits		
[NASA-TP-2738]	p 42	N87-28025
PARK, J. H.		
Atlas of absorption lines from 0 to	17900	) cm (sup)-1
[NASA-RP-1188]	p 49	N87-28955
PARK, STEPHEN K.		
Quantitative analysis of the reconstr	ruction	performance
of interpolants		
[NASA-TP-2688]	p 65	N87-22441
Digital enhancement of flow field in	nages	
[NASA-TP-2770]	p 62	N88-20833
Visual Information Processing for	or Tele	evision and
Telerobotics		
[NASA-CP-3053]	p 40	N90-16204
PARKINSON, CLAIRE L.		
Arctic Sea ice, 1973-1976: Satellite	passivo	e-microwave
ODSERVATIONS	n 69	NO7 34970
	h 20	1107-24070
Storooppin duoing offorte on	hoveri	n.turbulence
Stereopsis cueing effects on	HOVEI -	In turbulerice
INASA TO 20201	n 17	NO0-21004
Determination of depth-viewing w	n dumes	for stereo
three-dimensional graphic displays	Jumos	
(NASA_TP_29991	n 61	N90-22965
PARROTT TONY I	P 01	100 22000
Experimental validation of a two-dim	ension	al shear-flow
model for determining acoustic imped	ance	
[NASA-TP-2679]	p 66	N87-20798
Evaluation of a scale-model experi	ment to	investigate
long-range acoustic propagation		
[NASA-TP-2748]	p 66	N88-11450
Measured and calculated acoustic	attenua	tion rates of
tuned resonator arrays for two s	urface	impedance
distribution models with flow		
[NASA-TP-2766]	p 67	N88-17440
Fluctuating pressures measur	ed t	eneath a
high-temperature, turbulent boundary	layer or	n a flat plate
at Mach number of 5		
[NASA-TP-2947]	p6/	N90-10680
PARSONS, C. L.		
MARA (MUILINOUE AIRDONE Raua	r Altime	eter) system
documentation. Volume 1: MARA sy	r Altime stem re	eter) system equirements
documentation. Volume 1: MARA sy document	r Altime stem ro	eter) system equirements
documentation. Volume 1: MARA sy documentation. Volume 1: MARA sy document [NASA-RP-1226]	r Altime stem ro p 39	eter) system equirements N89-26209
documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N.	r Altime stem ro p 39	eter) system equirements N89-26209
documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite plement analysis	r Altime stem ro p 39 splacem	eter) system equirements N89-26209 nent method
MARA (Mullinude Autorine hava documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937]	r Altime stem ro p 39 splacem	eter) system equirements N89-26209 hent method N90-18081
MARA (Multilitide Autorite Hadai documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2037] DATTEPCON BEJAN P	r Altime stem ro p 39 splacen p 47	eter) system equirements N89-26209 hent method N90-18081
MARA (Multilitide Alborne hadai documentation, Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937] PATTERSON, BRIAN P. User's manual for LINFAR a FOR	r Altime stem ro p 39 splacen p 47 STRAN	eter) system equirements N89-26209 hent method N90-18081
MARA (Mullillode Alborne havai documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models	r Altime stem ro p 39 splacem p 47 RTRAN	eter) system equirements N89-26209 hent method N90-18081 program to
MARA (Multilitide Alborne hadal documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models [NASA-TP-2768]	r Altime stem r p 39 splacen p 47 RTRAN p 65	eter) system equirements N89-26209 hent method N90-18081 program to N88-21740
MARA (Multilitude Autorine hadai documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2037] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models [NASA-TP-2768] User's manual for interactive LIN	r Altime stem ro p 39 splacen p 47 RTRAN p 65 EAR: A	eter) system equirements N89-26209 hent method N90-18081 program to N88-21740 S FORTRAN
MARA (Multilide Alborne havai documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-237] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models [NASA-TP-2768] User's manual for interactive LIN program to derive linear aircraft mode	r Altime stem ro p 39 splacen p 47 RTRAN p 65 EAR: <i>A</i>	eter) system equirements N89-26209 hent method N90-18081 program to N88-21740 FORTRAN
MARA (Multilude Autorite hada documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models [NASA-TP-2768] User's manual for interactive LIN program to derive linear aircraft mode [NASA-TP-2835]	p 39 splacen p 47 RTRAN p 65 EAR: A sp 65	eter) system equirements N89-26209 hent method N90-18081 program to N88-21740 K FORTRAN N89-16437
MARA (willinitide Andorne hadai documentation. Volume 1: MARA sy document [NASA-RP-1226] PATNAIK, SURYA N. Integrated force method versus dis for finite element analysis [NASA-TP-2937] PATTERSON, BRIAN P. User's manual for LINEAR, a FOF derive linear aircraft models [NASA-TP-2768] User's manual for interactive LIN program to derive linear aircraft model [NASA-TP-2835] PATTERSON, JAMES C., JR.	r Altime stem ro p 39 splacen p 47 q 47 RTRAN p 65 EAR: <i>A</i> Is p 65	eter) system equirements N89-26209 hent method N90-18081 program to N88-21740 FORTRAN N89-16437

ing-tip-mounted pusher turboprop on a semispan wing p 14 N87-26041 [NASA-TP-2739]

#### PATTON, JAMES M., JR.

PATTON, JAMES M., JR. Mixed finite element models for free vibrations of Flight investigation of the effect of tail configuration on thin-walled beams [NASA-TP-2868] stall, spin, and recovery characteristics of a low-wing general aviation research airplane PHILLIPS, JAMES D. [NASA-TP-26441 p 13 N87-16815 Modal control of an oblique wing aircraft Flight investigation of the effects of an outboard [NASA-TP-2898] modification wing-leading-edge stall/spin on PHILLIPS, PAMELA S. characteristics of a low-wing, single-engine, T-tail light aimlane methodology [NASA-TP-2691] p 14 N87-23614 PAULSON, JOHN W., JR. A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel [NASA-TP-2796] p 7 N88-20264 PAVLI, ALBERT J. Experimental thrust performance of a high-area-ratio rocket nozzle [NASA-TP-2720] p 26 N87-20381 Comparison of theoretical and experimental thrust performance of a 1030:1 area ratio rocket nozzle at a chamber pressure of 2413 kN/m2 (350 psia) p 26 N87-25423 [NASA-TP-2725] Experimental evaluation of heat transfer on a 1030:1 area ratio rocket nozzle (NASA-TP-2726) p 27 N87-25424 PECKER, JEAN-CLAUDE The M-type stars [NASA-SP-492] p 75 N88-11592 PEET. SHELLY Traveling-wave-tube efficiency improvement by a low-cost technique for deposition of carbon on multistage depressed collector [NASA-TP-2719] p 35 N87-21239 Performance of a small, graphite electrode, multistage depressed collector with a 500-W, continuous wave, 4.8to 9.6-GHz traveling wave tube [NASA-TP-2788] p 35 N88-15146 PENARANDA, F. E. Aeronautical facilities assessment (NASA-RP-1146) p 21 N87-10876 PENDERGRAFT, ODIS C., JR. An experimental investigation of an advanced turboprop installation on a swept wing at subsonic and transonic sheeds [NASA-TP-2729] p 6 N87-26883 Comparison of wind tunnel and flight test afterbody and nozzle pressures for a twin-jet fighter aircraft at transonic speeds INASA-TP-25881 p 6 N88-10765 PENLAND, JIM A. Effect of Reynolds number variation on aerodynamics of a hydrogen-fueled transport concept at Mach 6 NASA TP-27281 p 5 N87-26031 PENN, LANNING M. The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas [NASA-RP-1201] p 49 N88-20714 The 1989 Airborne Arctic Stratospheric Expedition Nimbus-7 TOMS data atlas p 57 N89-27302 [NASA-RP-1227] The 1988 Antarctic ozone monitoring Nimbus-7 TOMS p 57 N89-28983 [NASA-RP-1225] Nimbus-7 TOMS Antarctic ozone atlas: August through November, 1989 [NASA-RP-1237] p 58 N90-23837 PERALA, RODNEY A. New methods and results for quantification of lightning-aircraft electrodynamics [NASA-TP-2737] p 4 N87-21871 PEREGOY. W. K. Electron stimulated desorption of atomic oxygen from silver [NASA-TP-2668] p 29 N87-18629 Permeation of oxygen through high purity, large grain silver [NASA-TP-2755] p 30 N87-27024 PEREYDA, MARGARITA Time-Variable Phenomena in the Jovian System [NASA-SP-494] p 78 N89-28474 PERSON, LEE H., JR. Piloted simulator study of allowable time delays in large-airplane response [NASA-TP-2652] p 19 N87-16849 Handling qualities of a wide-body transport airplane utilizing Pitch Active Control Systems (PACS) for relaxed static stability application p 19 N88-14987 [NASA-TP-2482] Simulator evaluation of a display for a Takeoff Performance Monitoring System [NASA-TP-2908] p 20 N89-23469 PETERS, JEANNE M.

Partitioning strategy for efficient nonlinear finite element

p 45 N89-16170

dynamic analysis on multiprocessor computers

[NASA-TP-2806] p 7 N88-17614 PICKETT, H. M. Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 PIERCE. ALLAN D. Status of sonic boom methodology and understanding [NASA-CP-3027] p 9 N89-23415 PILKEY, BARBARA F. The 58th Shock and Vibration Symposium, volume 1 [NASA-CP-2488-VOL-1] p 43 N88-13609 The 58th Shock and Vibration Symposium, volume 2 [NASA-CP-2488-VOL-2] p 44 N88-18948 PILKEY, WALTER D. The 58th Shock and Vibration Symposium, volume 1 [NASA-CP-2488-VOL-1] p 43 N88-13609 The 58th Shock and Vibration Symposium, volume 2 [NASA-CP-2488-VOL-2] p 44 N88-18948 PILTCH, NANCY D. Microgravity Combustion Diagnostics Workshop p 32 N89-17682 [NASA-CP-10017] PIROUZ. P. Indentation plasticity and fracture in silicon [NASA-TP-2863] p 30 N89-10996 PITTMAN, J. L Supersonic, nonlinear, attached-flow wing design for high lift with experimental validation [NASA-TP-2336] p 3 N87-10042 PITTS, FELIX L. New methods and results for quantification of lightning-aircraft electrodynamics D 4 N87-21871 (NASA-TP-2737) PLESCIA, JEFF L. Planetary geosciences, 1988 [NASA-SP-498] p 48 N89-26274 PÒLAND, ARTHUR I. Coronal and Prominence Plasmas [NASA-CP-2442] p 79 N87-20871 POLITES, M. E. A general-purpose balloon-borne pointing system for solar scientific instruments [NASA-TP-3013] p 33 N90-21219 POLITES, MICHAEL E. Modeling digital control systems with MA-prefiltered measurements [NASA-TP-2732] p 32 N87-22870 A new approach to state estimation in deterministic digital control systems p 32 N87-24585 [NASA-TP-2745] Exact state reconstruction in deterministic digital control systems [NASA-TP-2757] p 32 N87-27067 Further developments in exact state reconstruction in deterministic digital control systems [NASA-TP-2812] p 32 N88-18751 More on exact state reconstruction in deterministic digital control systems p 33 N88-28177 [NASA-TP-2847] The estimation error covariance matrix for the ideal state reconstructor with measurement noise [NASA-TP-2881] p 63 N89-13994 Further developments in modeling digital control systems with MA-prefiltered measurements [NASA-TP-2909] p 33 N89-24507 A new state reconstructor for digital controls systems using weighted-average measurements p 33 N89-27039 [NASA-TP-2936] Rotating-unbalanced-mass devices for scanning balloon-borne experiments, free-flying spacecraft, and space shuttle/space station experiments p 33 N90-25255 [NASA-TP-3030] POPE, D. STUART Airfoil self-noise and prediction p 67 N89-25673 [NASA-RP-1218] PORTER F. NASA/MSFC FY-85 Atmospheric Processes Research Review (NASA-CP-2402) p 55 N87-13043 POWELL, CLEMANS A. Status of sonic boom methodology and understanding (NASA-CP-30271 p 9 N89-23415 FAA/NASA En Route Noise Symposium p 67 N90-24853 [NASA-CP-3067] POWELL RICHARD W. The effect of interplanetary trajectory options on a manned Mars aerobrake configuration [NASA-TP-3019] p 24 N90-26036

p 45 N89-19579

p 20 N89-16845

design

wing

transonic-small-disturbance

#### PERSONAL ALITHOR INDEX

POWELL, W. R. Pulse Code Modulation (PCM) encoder handbook for
Aydin Vector MMP-600 series system (NASA-RP-1171) p 33 N87-11916
POWERS, SHERYLL GOECKE
drag reduction provided by a trailing disk for high Reynolds number turbulent flow for subsonic and transonic Mach numbers
[NASA-TP-2638] p 37 N88-14299 Influence of base modifications on in-flight base drag in the presence of let exhaust for Mach numbers from
0.7 to 1.5 [NASA.TD 2802]
PRABHU, RAMADAS K.
A rapid method for the computation of equilibrium chemical composition of air to 15000 K
[NASA-TP-2792] p 30 N88-16830 Finite-rate water condensation in combustion-heated
[NASA-TP-2833] p 22 N88-28075
PRASAD, CHUNCHU B. A Protection And Detection Surface (PADS) for damage
tolerance [NASA-TP-3011] p 29 N90-27788
PRATHER, M. J. Present state of knowledge of the upper atmosphere 1999: An accomment report
[NASA-RP-1208] p 52 N88-29233
Present state of knowledge of the upper atmosphere 1990: An assessment report [NASA-RP-1242] p. 54 N90-28929
PRATHER, MICHAEL J.
An assessment model for atmospheric composition [NASA-CP-3023] p 57 N89-20588 Two-Dimensional Intercomparison of Stratospheric
Models [NASA-CP-3042] p.53 N90-11405
PRICE, DOUGLAS B.
digital flight control systems
[NASA-IP-2844] p 19 N89-12569 PRICE, HAROLD G.
High-pressure calorimeter chamber tests for liquid
[NASA-TP-2862] p 27 N89-15979
PROFFITT, MELISSA S. Integrated tools for control-system analysis
[NASA-TP-2885] p 20 N89-19309 PURGOLD G CARLTON
Surface bidirectional reflectance properties of two southwestern Arizona deserts for wavelengths between
0.4 and 2.2 micrometers [NASA-TP-2643] p 48 N87-22281
Q
QUERCI, FRANCOIS R.
[NASA-SP-492] p 75 N88-11592
QUILLEN, DIANA T. First International Conference on Laboratory Research
for Planetary Atmospheres
QUINN, ROBERT D.
Finite-element reentry heat-transfer analysis of space shuttle Orbiter
[NASA-TP-2657] p 37 N87-29795 QUINTO, P. FRANK

QL Low-speed aerodynamic characteris tics of a twin-engine general aviation configuration with aft-fuselage-mounted pusher propellers

- [NASA-TP-2763] p 6 N87-29462 A review of technologies applicable to low-speed flight of high-performance aircraft investigated in the Langley 14- x 22-foot subsonic tunnel p 7 N88-20264 [NASA-TP-2796] Thrust-reverser flow investigation on a twin-engine ansport p 9 N89-14213 (NASA-TP-2856) The Langley 14- by 22-foot subsonic tunnel: Description, flow characteristics, and guide for users
- [NASA-TP-3008] p 12 N90-27649

### R

RAHE, JUERGEN

Atlas of Comet Halley 1910 II [NASA-SP-488] p 75 N87-30235 RAHE, JURGEN

Time-Variable Phenomena in the Jovian System p 78 N89-28474 [NASA-SP-494]

(NASA-TP-2850)

HAMAPHIYAN, H. K.		_
Proceedings of the Scientific F	ata Comercian	R
Workshop	Jala Compression	
[NASA-CP-3025]	p 63 N89-22332	
RAMATY, REUVEN	p 00 1100 22002	
Essays in Space Science		
[NASA-CP-2464]	p 72 N87-24247	R
RAMINS, PETER		
Performance of textured carbon of	n copper electrode	
multistage depressed collectors wi	th medium-power	_
traveling wave tubes		Я
[NASA-TP-2665]	p 34 N87-17990	
Design, fabrication and performance	e of small, graphite	-
electrode, multistage depressed colle	ectors with 200-W,	H
CW, 8- to 18-GHz traveling-wave tube	S	
[NASA-1P-2093]	p 35 N87-20474	
Iraveling-wave-tube efficiency in	mprovement by a	
depressed collector	aroon on multistage	
(NASA-TP-2719)	0.35 N97 21220	
Analytical and experimental performs		
traveling wave tube and multistage (	tepressed collector	B
INASA-TP-27521	n 35 N87-25532	
Performance of a small graphite et	ectrode multistane	
depressed collector with a 500-W. co	ntinuous wave. 4.8-	
to 9.6-GHz traveling wave tube		R
[NASA-TP-2788]	p 35 N88-15146	
Performance of a multistage depre	ssed collector with	
machined titanium electrodes		
[NASA-TP-2891]	p 35 N89-15337	R
Design, fabrication, and performance	of brazed, graphite	
electrode, multistage depressed coll	ectors with 500-W,	_
continuous wave, 4.8- to 9.6-GHz tr	aveling-wave tubes	R
[NASA-TP-2904]	p 35 N89-21171	
Spent-beam refocusing analysis	and multistage	
depressed collector design for a /5-	W, 59- to 64-GHZ	
Coupled-cavity traveling-wave tube	D 25 NOO 27065	
	p 35 Ma0-27905	
Analysis of quasi-hybrid solid rocke	t booster concepts	
for advanced earth-to-orbit vehicles		
[NASA-TP-2751]	p 27 N87-25425	B
RASH, JAMES		
The 1988 Goddard Conference on	Space Applications	
of Artificial Intelligence		R
[NASA-CP-3009]	p 64 N88-30330	
The 1989 Goddard Conference on	Space Applications	
OF ARTIFICIAL Intempence	D 64 N90 26578	
BASH JAMES I	p 04 1103-20070	F
The 1990 Goddard Conference on	Space Applications	
of Artificial Intelligence		_
INACA CD 20691	p 64 N90-22294	
[NASA-CP-3000]		n
RAY, EDWARD J.		H
Evolution, calibration, and operation	al characteristics of	-
[NX3A-CF-3000] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the	al characteristics of Langley 0.3-meter	R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel	al characteristics of Langley 0.3-meter	R
[NASA-CF-306] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749]	al characteristics of Langley 0.3-meter p 21 N87-28570	R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transnoic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-2052]	al characteristics of Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647	R
[NASA-CP-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, ROMALD J.	al characteristics of Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647	R
[NASA-CF-306] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on	R
[NASA-CF-306] <b>RAY, EDWARD J.</b> Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] <b>RAY, RONALD J.</b> Evaluation of various thrust calcula an F404 engine	al characteristics of a Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tition techniques on	R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001]	al characteristics of a Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134	R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transnoic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F.	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134	R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2700A 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a	R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele-	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evaled temperature	R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921]	al characteristics of a Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tition techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034	- R R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transnoic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E. E.	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034	n A A
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2700A 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E. E. Description of data on the Nimbus 7 tage: Ozne and mitric acid	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive	n R R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-27DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at elu [NASA-TP-2921] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2925]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 2 LIMS map archive p 51 N87-13022	n R R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E.	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tition techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022	R R R R
[NASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 ' LIMS map archive p 51 N87-13022 ' LIMS map archive	R R R R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, ROMALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 7 LIMS map archive e	R R R R
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-270DA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 7 LIMS map archive p 51 N87-13022 7 LIMS map archive e p 56 N88-14572	R R R R
[NASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, EL. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-265] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A.	al characteristics of a Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572	R R R R
[NASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transnoic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evaled temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive p 56 N88-14572 copper alloy for	R R R
[NASA-CP-2066] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3051] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 7 LIMS map archive e p 56 N88-14572 copper alloy for	F A A
[NASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-270DA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at elu [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2894] DESSIER C. B.	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902	F A A A
[INASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-265] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sonst performance analysis	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 Ition techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 7 LIMS map archive p 51 N87-13022 7 LIMS map archive p 56 N88-14572 copper alloy for p 30 N87-16902	R R R R
[NASA-CF-3066] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E.L. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2594] RESSLER, G. M. Sensor performance analysis [NASA-RP-1241]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 ' LIMS map archive p 51 N87-13022 ' LIMS map archive p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780	R R R R
[NASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3051] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2021] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-RP-1241]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780	н А А А А
[INASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-270DA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at elu [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-225] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-RP-1241] REUBUSH, DAVID E. Elfects of afterbody boattail desid	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 yn and empennage	н А А А А А
[INASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-3001] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-RP-1241] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 7 LIMS map archive p 51 N87-13022 7 LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 n and empennage iaracteristics of a	R R R R
[INASA-CF-3006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [INASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [INASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [INASA-TP-2921] REMSBERG, E.L. Description of data on the Nimbus 7 tape: Ozone and nitric acid [INASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [INASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [INASA-TP-2694] RESSLER, G. M. Sensor performance analysis [INASA-RP-1241] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evaled temperature p 46 N89-28034 ' LIMS map archive p 51 N87-13022 ' LIMS map archive p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 m and empennage aracteristics of a speeds	R R R R
[INASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3052] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] RESSLER, G. M. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-RP-1241] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [NASA-TP-2704]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 in and empennage aracteristics of a speeds p 4 N87-21873	F F F F
[INASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [INASA-TP-2749] CAST-10-27DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [INASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [INASA-TP-3001] REMSBERG, E. E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [INASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [INASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [INASA-TP-2694] RESSLER, G. M. Sensor performance analysis [INASA-RP-1241] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [INASA-TP-2704] Static internal performance of a	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 LIMS map archive p 51 N87-13022 LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 m and empennage aracteristics of a speeds p 4 N87-21873 two-dimensional	н А А А А А
[INASA-CF-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-3001] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-TP-1241] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [NASA-TP-2704] Static internal performance of a convergent-divergent nozzle with thrust	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 7 LIMS map archive p 51 N87-13022 7 LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 m and empennage aracteristics of a speeds p 4 N87-21873 t two-dimensional st wectoring	A A A A A A
[NASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-2/DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2921] REMSBERG, E.L. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] REPAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [NASA-TP-2694] RESSLER, G. M. Sensor performance analysis [NASA-TP-2704] REUBUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [NASA-TP-2721]	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evaled temperature p 46 N89-28034 ' LIMS map archive p 51 N87-13022 ' LIMS map archive p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 m and empennage taracteristics of a speeds p 4 N87-21873 t wo-dimensional st vectoring p 5 N87-2432	
[NASA-CP-206] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [NASA-TP-2749] CAST-10-270DA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [NASA-TP-3052] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [NASA-TP-2021] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [NASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [NASA-TP-2761] RESSLER, G. M. Sensor performance analysis [NASA-TP-2764]] REUSUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [NASA-TP-2771] Static internal performance of a convergent-divergent nozzle with thrus [NASA-TP-2721] Effects of the installation and oper- there is the installation and oper- term waverse to the installation and oper- term	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 in and empennage aracteristics of a speeds p 4 N87-21873 t two-dimensional st vectoring p 5 N87-24432 ation of jet-exhaust lateral-directional	
[INASA-CP-2006] RAY, EDWARD J. Evolution, calibration, and operation the two-dimensional test section of the transonic cryogenic tunnel [INASA-TP-2749] CAST-10-27DOA 2 Airfoil Studies [NASA-CP-3052] RAY, RONALD J. Evaluation of various thrust calcula an F404 engine [INASA-TP-3001] REARDON, LAWRENCE F. Evaluation of a strain-gage load low-aspect-ratio wing structure at ele [INASA-TP-3001] REMSBERG, E.E. Description of data on the Nimbus 7 tape: Ozone and nitric acid [INASA-TP-2625] REMSBERG, ELLIS E. Description of data on the Nimbus 7 tape: Water vapor and nitrogen dioxid [INASA-TP-2761] REAS, GEORGE A. Conventionally cast and forged high-heat-flux thrust chambers [INASA-TP-2764] RESSLER, G. M. Sensor performance analysis [INASA-RP-1241] REDUSH, DAVID E. Effects of afterbody boattail desig arrangement on aeropropulsive ch twin-engine fighter model at transonic [INASA-TP-2721] Static internal performance of a convergent-divergent nozzle with thrus [INASA-TP-2721] Effects of the installation and oper yaw vanes on the longitudinal and characteristics of the E-14 aiminane	al characteristics of b Langley 0.3-meter p 21 N87-28570 Workshop Results p 22 N90-17647 tion techniques on p 16 N90-25134 calibration on a evated temperature p 46 N89-28034 'LIMS map archive p 51 N87-13022 'LIMS map archive e p 56 N88-14572 copper alloy for p 30 N87-16902 p 50 N90-23780 m and empennage aracteristics of a speeds p 4 N87-21873 t wo-dimensional st vectoring p 5 N87-24432 ation of jet-exhaust lateral-directional	н А А А А А А А

RUODER REPORT	
Prenarative electrophoresis for space	
[NASA-TP-2777] p 32 N88-10977	
Continuous flow electrophoresis system experiments on	
shuttle flights STS-6 and STS-7	
[NASA-1P-2778] p 32 N88-10978 RICHARDS W R	
Propagation of sound waves in tubes of noncircular cross	
section	
[NASA-TP-2601] p 3 N87-14284	
Atlas of absorption lines from 0 to 17900 cm (sup)-1	
[NASA-RP-1188] 0 49 N87-28955	
RICHMOND, R. J.	
Advanced Earth-to-Orbit Propulsion Technology 1986,	
(NASA-UP-243/-VOL-2) p 27 N89-12626	
Advanced Earth-to-Orbit Propulsion Technology 1988.	
volume 1	
[NASA-CP-3012-VOL-1] p 27 N90-28611	
RIEBE, GREGORY D.	
fighter wing concept	
[NASA-TP-2642] p 3 N87-15184	
RILEY, CHRISTOPHER J.	
An approximate method for calculating	
INASA-TP-30181	
RINSLAND. C. P.	
Atlas of absorption lines from 0 to 17900 cm (sup)-1	
[NASA-RP-1188] p 49 N87-28955	
RISING, J. J.	
Handling qualities of a wide-body transport airplane	
static stability application	
[NASA-TP-2482] p 19 N88-14987	
RITCHIE, ELEANOR H.	
Astronautics and Aeronautics, 1979-1984: A	
[NASA-SP-4024] 0.81 N90-25928	
ROBERTS. WILLIAM T.	
Solar-Terrestrial Science Strategy Workshop	
[NASA-CP-3048] p 73 N90-18329	
ROBINSON, MARTHA P.	
Cornering characteristics of the main-gear tire of the space shuttle orbiter	
[NASA-TP-2790] p 14 N88-18583	
RODDIER, CLAUDE	
Spatial interferometry in optical astronomy	
[NASA-HP-1245] p 75 N90-28470	
Soatial interferometry in optical astronomy	
[NASA-RP-1245] p 75 N90-28470	
RODGERS, C. D.	
Nimbus-7 Stratospheric and Mesospheric Sounder	
(SAMS) experiment data user's guide	
BOGERS IANES I	
A knowledge-based tool for multilevel decomposition of	
a complex design problem	
[NASA-TP-2903] p 63 N89-23181	
Finisher testing of a belicenter transmission planetary	
reduction stage	
[NASA-TP-2795] p 41 N88-15224	
ROMAN, ROBERT F.	
Secondary electron emission characteristics of	
[NASA-TP-2967] p 31 N90-15211	
ROMANOFSKY, ROBERT R.	
Universal test fixture for monolithic mm-wave integrated	
circuits calibrated with an augmented TRD algorithm	
[NASA-IP-28/5] p 34 N89-1//6/	
propagation characteristics of millimeter-wave gallium	
arsenide microstrip lines	
[NASA-TP-2899] p 35 N89-21169	
RONCOLI, RALPH B.	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable success	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 ROSHOLT, ROBERT L.	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 ROSHOLT, ROBERT L. NASA historical data book. Volume 1: NASA resources	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA 5P 4012 VOL 1]	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 POTHMAN L S	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 <b>ROTHMAN, L S.</b> Atlas of absorption lines from 0 to 17900 cm (sup)-1	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 <b>ROTHMAN, L S.</b> Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 <b>ROTHMAN, L. S.</b> Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 <b>ROTHMANN, BETH</b>	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 60 N88-25428 <b>ROTHMAN, L. S.</b> Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 <b>ROTHMANN, BETH</b> Applications of the hybrid automated reliability predictor: Device definion	
Development and flight test of an experimental maneuver autopilot for a highly maneuverable aircraft [NASA-TP-2618] p 15 N88-21153 <b>ROSHOLT, ROBERT L.</b> NASA historical data book. Volume 1: NASA resources 1958-1968 [NASA-SP-4012-VOL-1] p 80 N88-25428 <b>ROTHMAN, L S.</b> Atlas of absorption lines from 0 to 17900 cm (sup)-1 [NASA-RP-1188] p 49 N87-28955 <b>ROTHMANN, BETH</b> Applications of the hybrid automated reliability predictor: Revised edition [NASA-TP-2760-REV] p 63 N90-11454	

### SATRAN, D. R.

ROYSTER, DICK M. Material characterization of supe	rplastic	cally form	ed
titanium (Ti-6AI-2Sn-4Zr-2Mo) sheet	- 20	107 20	07
RUDOLPH, TERENCE H.	p 30	N87-204	107
New methods and results for lightning-aircraft electrodynamics	quan	tification	to.
[NASA-TP-2737] RUHLIN, C. L.	p 4	N87-218	371
Effects of winglet on transonic flutte a cantilevered twin-engine-transport w	ing mo	acteristics del	of
[NASA-TP-2627]	p 43	N87-13	789
Controlled Ecological Life Support Development, and Use of a Ground-B	Syste ased F	m. Desi Plant Gro	gn, wth
Module [NASA-CP-2479]	p 60	N88-138	352
RUSSELL, J. M., III Description of data on the Nimbus 7	LIMS	map arch	ive
tape: Ozone and nitric acid [NASA-TP-2625]	p 51	N87-130	)22
RUSSELL, JAMES M., III Description of data on the Nimbus 7	LIMS	map arch	ive
tape: Water vapor and nitrogen dioxide [NASA-TP-2761]	а р 56	N88-14	572
RUTAN, DAVID	r radia	tion deriv	-
from Nimbus 6 earth radiation budget	data s	et, July 19	975
[NASA-RP-1230]	p 57	N90-14	741
Atlas of albedo and absorbed sola from Nimbus 7 Earth radiation budget	r radia data se	ition deriv it, Novern	/ed ber
1978 to October 1985 [NASA-RP-1231]	p 57	N90-172	233
RUTTLEDGE, D. C. G. Rotorcraft flight-propulsion cont	rol int	egration:	An
eclectic design concept [NASA-TP-2815]	p 19	N88-194	175
RYAN, ROBERT S. Structural Dynamics and Control Int	eractio	n of Flex	ble
Structures [NASA-CP-2467-PT-1]	p 23	N87-22	702
Structural Dynamics and Control Int	eractio	n of Flex	ible
[NASA-CP-2467-PT-2]	p 23	N87-22	729
[NASA-TP-2893]	p 24	N89-18	504
Indentation plasticity and fracture in	silicon		
[NASA-TP-2863]	p 30	N89-10	996
S			
SABO, FRANCES E. Besearch in Natural Laminar Flow	and L	aminar-F	low
Control, part 1	- 10	NO0 10	
Research in Natural Laminar Flow	and L	aminar-F	low
Control, part 2 [NASA-CP-2487-PT-2]	p 10	N90-12	519
Research in Natural Laminar Flow Control, part 3	and L	aminar-F	low
[NASA-CP-2487-PT-3] SALTSMAN, JAMES F.	p 10	N90-12	539
Life prediction of thermomechanical strain version of strainrange part	fatigu	e using to (SRP):	otal A
[NASA-TP-2779]	p 44	N88-152	263
Atlas of galaxies useful for measurin	g the c	osmolog	ical
[NASA-SP-496]	p 74	N89-12	513
Joint US/USSR study: Comparis	on of	effects	of
(NASA-TP-3037)	p 60	N90-28	965
Emittance, catalysis, and dynamic and the second se	nic o	xidation	of
[NASA-TP-2955]	p 31	N90-10	248
SANKAHAN, SANKAHA N. Oxidation characteristics of Ti-144	1-21N	ingot a	loy
[NASA-TP-3012] SANTORO, GILBERT J.	p 31	N90-252	206
Microgravity Combustion Diagnostic	s Work	shop	:22

[NASA-CP-10017] p 32 N89-17682 SANZ, JOSE M. Lewis inverse design code (LINDES): Users manual [NASA-TP-2676] p 4 N87-20238 SATRAN, D. R. Wind-tunnel investigation of the flight characteristics of . a canard general-aviation airplane configuration [NASA-TP-2623] p 3 N87-10039

#### SCANLON, CHARLES H.

SCANLON, CHARLES H. Universal test fixture for monolithic mm-wave integrated Effect of motion cues during complex curved approach circuits calibrated with an augmented TRD algorithm and landing tasks; A piloted simulation study (NASA-TP-2875) INASA-TP-27731 p 14 N88-12480 SHALKHAUSER, MARY JO SCHAFER, CHARLES F. Satellite-matrix-switched\_time-division-multiple-access Mixing and Demixing Processes in Multiphase Flows network simulator With Application to Propulsion Systems [NASA-TP-2944] [NASA-CP-3006] n 37 N89-11153 SHALKHAUSER, MARY JO W. SCHIESS, JAMES R. Digitally modulated bit error rate measurement system An algorithm for surface smoothing with rational for microwave component evaluation solines [NASA-TP-2912] [NASA-TP-2708] p 65 N87-22447 SHARPE, DAVID L. SCHLESINGER, BARRY M. An experimental investigation of the flap-lag-torsion Nimbus 7 Solar Backscatter Ultraviolet (SBUV) spectral aeroelastic stability of a small-scale hingeless helicopte scan solar irradiance and Earth radiance product user's rotor in hover auide [NASA-TP-2546] p 48 N88-17096 [NASA-RP-1199] SHEARIN, JOHN G. Nimbus 7 solar backscatter ultraviolet (SBUV) ozone Shock structure and noise of supersonic jets in simulated products user's guide flight to Mach 0.4 [NASA-RP-1234] p 53 N90-17227 [NASA-TP-2785] SCHLICKENMAIER, HERBERT SHEN, CHIH-PING Airborne Wind Shear Detection and Warning Systems: Low-energy gamma ray attenuation characteristics o First Combined Manufacturers' and Technologists' aviation fuels Conference [NASA-TP-2974] [NASA-CP-10006] p 12 N88-17616 SHINN, JUDY L. SCHMIDLIN, F. J. Conservation equations and physical models fo Preliminary estimates of radiosonde thermistor errors [NASA-TP-2637] p 55 N87-12086 hypersonic air flows in thermal and chemica SCHMITZ, MARION nonequilibrium (NASA-TP-2867) Infrared source cross-index, first edition [NASA-RP-1182] p 73 N87-22573 Improved model for solar cosmic ray exposure in manned Catalog of infrared observations. Part 1: Data Earth orbital flights p 73 N88-15738 [NASA-RP-1196-PT-1-ED-2] [NASA-TP-2987] Catalog of infrared observations. Part 2: Appendixes Comparison of dose estimates using the buildup-factor p 74 N88-16615 [NASA-RP-1196-PT-2-ED-2] method and a Baryon transport code (BRYNTRN) with Far infrared supplement: Catalog of infrared Monte Carlo results observations, second edition [NASA-TP-3021] [NASA-RP-1205] p 74 N88-30545 SHORT, NICHOLAS M. SCHOCK, R. W. Geomorphology from space: A global overview of Solar array flight dynamic experiment regional landforms p 23 N87-12581 (NASA-TP-2598 [NASA-SP-486] SCHRYER, DAVID R. SHOVLIN. M. D. Low-Temperature CO-Oxidation Catalysts for Long-Life Large-scale CO2 Lasers circulation-control-wing concepts applied to uppe [NASA-CP-3076] p 40 N90-24586 surface-blowing aircraft SCHULTZ K-L INASA.TP-26841 Advancing-side directivity and retreating-side SHUART, MARK J. interactions of model rotor blade-vortex interaction n A Protection And Detection Surface (PADS) for damage p 67 N88-22710 [NASA-TP-2784] tolerance SCHWARTZ, DEBORAH E. [NASA-TP-3011] Microgravity Particle Research on the Space Station SHYNE, RICKEY J. p 58 N88-15354 INASA-CP-24961 Experimental evaluation of two turning vane designs for Gas-Grain Simulation Facility: Fundamental studies of fan drive corner of 0.1-scale model of NASA Lewis particle formation and interactions. Volume 1: Executive Research Center's proposed altitude wind tunnel summary and overview [NASA-TP-2646] [NASA-CP-10026-VOL-1] p 59 N89-24022 Gas-Grain Simulation Facility: Fundamental studies of Detailed flow surveys of turning vanes designed for a 0.1-scale model of NASA Lewis Research Center's particle formation and interactions. Volume 2: Abstracts, proposed altitude wind tunnel candidate experiments and feasibility study [NASA-CP-10026-VOL-2] p 59 N89-24023 [NASA-TP-2680] SCOFIELD, HAROLD N. Experimental evaluation of turning vane designs for Structural Dynamics and Control Interaction of Flexible high-speed and coupled fan-drive corners of 0.1-scale Structures model of NASA Lewis Research Center's proposed altitude [NASA-CP-2467-PT-1] p 23 N87-22702 wind tunnel Structural Dynamics and Control Interaction of Flexible [NASA-TP-2681] Structures SIBONGA, JEAN D. [NASA-CP-2467-PT-2] p 23 N87-22729 Cells in Soace SCOTT. J. HOLLAND. JR. [NASA-CP-10034] Investigation of the misfueling of reciprocating piston SIEMERS, PAUL M., III aircraft engines Qualitative evaluation of a flush air data system a p 12 N88-21144 [NASA-TP-2803] transonic speeds and high angles of attack SEALS, ROBERT K., JR. (NASA-TP-2716) Two-Dimensional Intercomparison of Stratospheric SIM. A. G. Models In-flight total forces, moments and static aeroelastic [NASA-CP-3042] p 53 N90-11405 characteristics of an oblique-wing research airplane SEASHOLTZ, RICHARD G. [NASA-TP-2224] Three component laser anemometer measurements in Flight-determined aerodynamic derivatives of the AD-1 an annular cascade of core turbine vanes with contoured oblique-wing research airplane end wall [NASA-TP-2222] (NASA.TP.2846) p 8 N89-10844 SIM. ALEX G. SECHRIST, FRANK S. Flight characteristics of the AD-1 oblique-wing research The 1987 Airborne Antarctic Ozone Experiment: The Nimbus-7 TOMS data atlas aircraft [NASA-TP-2223] [NASA-RP-1201] p 49 N88-20714 SELF, MATTHEW SIMON, FREDERICK F. Jet model for slot film cooling with effect of free-stream Automatic classification of spectra from the Infrared and coolant turbulence Astronomical Satellite (IRAS) [NASA-TP-2655] [NASA-RP-1217] p 75 N90-10807 SERAFINI, JOHN A. SIMONSEN, LISA C. Laser-velocimeter-measured flow field around an Radiation exposure for manned Mars surface missions [NASA-TP-2979] advanced, swept, eight-blade propeller at Mach 0.8 [NASA-TP-2462] p 2 N90-20942 SINGER, BART A. SHALKHAUSER, KURT A. Interactions of Tollmien-Schlichting waves and Dear vortices. Comparison of direct numerical simulation and

static

a weakly nonlinear theory

[NASA-TP-2919]

investigation

p 10 N89-25118

[NASA-TP-2678]

p 14 N87-20990

Bit-error-rate testing of high-power 30-GHz traveling wave tubes for ground-terminal applications p 33 N87-17971 [NASA-TP-2635]

nm-wave integrated TRD algorithm	SINGH, J. J. Investigation of the effects of cobalt ions on epoxy
p 34 N89-17767	properties {NASA-TP-2639} p 31 N87-12680
ion-multiple-access	SINGH, JAG J. A simplified method for determining heat of combustion
p 34 N90-11915	of natural gas [NASA-TP-2682] p 39 N87-20514
easurement system	Nuclear techniques in studies of condensed matter (NASA-RP-1195) p 68 N88-13015
p 23 N89-28545	[NASA-TP-2853] p 63 N89-12237
ne flap-lag-torsion ningeless helicopter	aviation fuels (NASA-TP-2974) p 63 N90-18882
p 7 N88-20257	SINHA, SUJIT A study to evaluate STS heads-up ascent trajectory
onic jets in simulated	performance employing a minimum-Hamiltonian optimization strategy
p 67 N88-16510	[NASA-IP-2793] p 23 N88-15820 SLEEPER, ROBERT K.
n characteristics of	atmospheric turbulence [NASA-TP-2963] p 58 N90-19718
p 63 N90-18882	SLIWA, STEVEN M. Flight investigation of the effect of tail configuration or
ysical models for al and chemical	stall, spin, and recovery characteristics of a low-wing general aviation research airplane
- 00 100 10115	[NASA-TP-2644] p 13 N87-16815
p 38 N89-16115	A closed-form trim solution yielding minimum trim drag
exposure in manned	TOT AITPIANES WITH MULTIPLE longitudinal-control effectors
p 80 N90-25021	[1945A-19-2907] p 20 N89-23468 SMERNOFE, DAVID T
a the buildup-factor	Controlled Ecological Life Support System
e (RRYNTRN) with	Regenerative Life Support Systems in Space
	[NASA-CP-2480] p 60 N88-12251
p 80 N90-29290	Controlled Ecological Life Support System. Design,
global overview of	Development, and Use of a Ground-Based Plant Growth Module
p 47 N87-18139	[NASA-CP-2479] p 60 N88-13852 SMITH, DONALD L.
	touchened enoxy resin and high-strain graphite fiber
estigation of applied to upper	[NASA-TP-2826] p 28 N88-25480 SMITH. G. L.
p 13 N87-15959	Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation
(PADS) for damage	[NASA-RP-1184] p 56 N88-27677 Angular radiation models for earth-atmosphere system.
p 29 N90-27788	Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587
ng vane designs for	Atlas of wide-field-of-view outgoing longwave radiation
of NASA Lewis	derived from Nimbus 6 Earth radiation budget data set,
wind tunnel	July 1975 to June 1978
p 21 N8/-185/6	[NASA-RP-1185] p 55 N87-26489
nes designed for a	Atlas of wide-field-of-view outgoing longwave radiation
research centers	November 1978 to October 1985
p 21 N87-20295	[NASA-RP-1186] p 55 N88-10451
vane designs for	Limb-darkening functions as derived from along-track
orners of 0.1-scale	operation of the EHBE scanning radiometer for January
s proposeo annude	(NASA-BP-1214) p.56 N89-17374
p 21 N88-17686	Atlas of albedo and absorbed solar radiation derived
	trom Nimbus 6 earth radiation budget data set, July 19/5 to May 1978
p 01 1490-13939	Atlas of albedo and absorbed solar radiation derived
ir data system at	from Nimbus 7 Earth radiation budget data set, November
p 14 N87-29497	(NASA-RP-1231) p 57 N90-17233
static aeroelastic	Effects of variables upon pyrotechnically induced shock
arch airplane	response spectra
p 19 N87-10103	[NASA-TP-2603] p 43 N87-12921
atives of the AD-1	SMITH, JAMES LEE Effects of variables upon pyrotechnically induced shock
p 19 No/-108/1	[NASA-TP-2872] p 45 N89-13814
o 19 N87-18570	Software Reuse Issues
flect of free-stream	SMITH, PAUL M. Piloted simulator study of allowable time delaye in
0.36 N87.19034	large-airplane response
	SMITH, R. E.
p 80 N90-18357	Requirements for Spacecraft Design and Operations [NASA-CP-2460] p 52 N87-20665
waves and Dean	SMITH, RONALD C.
cal simulation and	Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport

**B-16** 

SMITH, TAMARA A. Experimental thrust performance of a high area rat	S
rocket nozzle (NSA-TP-2720) n 26 N87-203	10
Comparison of theoretical and experimental thru	st S
performance of a 1030:1 area ratio rocket nozzle at chamber pressure of 2413 kN/m2 (350 psia)	a
[NASA-TP-2725] p 26 N87-254	23
Experimental evaluation of heat transfer on a 1030 area ratio rocket nozzle	:1 S
[NASA-TP-2726] p 27 N87-2542	24
SNYDER, ROBERT S.	in
microgravity	
[NASA-TP-2724] p 58 N87-2072 Preparative electrophoresis for space	27
[NASA-TP-2777] p 32 N88-109	77
Continuous flow electrophoresis system experiments of shuttle flights STS-6 and STS-7	on Si
[NASA-TP-2778] p 32 N88-109	78
SOBIESKI, J. Recent Experiences in Multidisciplinary Analysis ar	nd
Optimization, part 1	S
Recent Experiences in Multidisciplinary Analysis a	nd
Optimization, part 2	50 <b>S</b>
SPADY, AMOS A., JR.	50 0
Airborne Wind Shear Detection and Warning System	IS:
Conference	່ <b>S</b>
[NASA-CP-10006] p 12 N88-176	16
Influence of the deposition conditions on radiofrequen	су
magnetron sputtered MoS2 films [NASA-TP-2994] n.33 N90-212	10 5
SPANN, J. F.	
A Study of Space Station Contamination Effects [NASA-CP-3002] p 72 N88-253	90 S
SPANN, JAMES F.	
Space Station Induced Monitoring [NASA-CP-3021] p 73 N89-157	90
SPICER, D. S.	
2	s, 3
[NASA-CP-2483] p 79 N88-116	09
SPLETISTUESSER, W. N.	
Advancing-side directivity and retreating-side	de S
Advancing-side directivity and retreating-side interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] 0 07 N88-227	de S se 10
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R.	de S se 10
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122:	de S se 10 S 37
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi: [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics	de S se 10 5 37 of
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1888	de S se 10 537 of 82 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1886 SPUDIS, PAUL D. Genescience and a Lunar Base: A Comprehensive Pit	de S se 10 37 of 82 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi: [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration	de S se 10 37 of 82 S an
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi: [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188i SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W.	de S se 10 37 of 82 S an 30 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP 2020]	de S se 10 37 of 82 82 82 82 82 83 83 83 83 83 83 83 83 83 83 83 83 83
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-1227 Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188i SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-2507 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-1537 SREEKUMAR, PARAMESWARAN	de S se 10 37 of 82 S an 30 S 54 54
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1884 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-2503 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-1533 SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium	de S se 10 37 of 82 82 S an 30 54 S 54 S 54 S 54 S 54 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1884 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-2503 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-1533 SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj [EGRET] Science Symposium [NASA-CP-3071] p 77 N90-2325	de S se 10 S 37 of 82 S an 30 S 54 S 54 S 59 S
Advancing-side       directivity       and       retreating-side         interactions of model rotor blade-vortex interaction nois       [NASA-TP-2784]       p 67       N88-227         SPRINKLE, DANNY R.       Analysis of positron lifetime spectra in polymers       [NASA-TP-2784]       p 63       N89-122:         Low-energy gamma ray attenuation characteristics aviation fuels       [NASA-TP-2974]       p 63       N90-188:         SPUDIS, PAUL D.       Geoscience and a Lunar Base: A Comprehensive Platfor Lunar Exploration       [NASA-CP-3070]       p 78       N90-250:         SOUYRES, STEVEN W.       Microgravity Particle Research on the Space Statis       [NASA-CP-2496]       p 58       N88-153:         SREEKUMAR, PARAMESWARAN       The Energetic Gamma-Ray Experiment Telescoj       [EGRET] Science Symposium       [NASA-CP-3071]       p 77       N90-232:         SRIMIVASAN, S.       Simplified curve fits for the thermodynamic propertide       Simplified curve fits for the thermodynamic propertide	de S se 10 S 37 S 61 S 82 S 84 S 54 S 54 S 54 S 54 S 54 S 54 S 54 S 5
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188/ SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statik [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRIMVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-DP-1181] p 36 N87-2630	de S se 10 37 57 82 82 82 82 84 54 54 54 54 54 54 54 55 85 54 55 55 56 56 57 57 57 57 57 57 57 57 57 57 57 57 57
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1884 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-2503 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-1533 SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-2324 SRIMIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-2630	de S se 10 37 37 37 30 82 30 30 54 54 54 54 54 54 54 54 55 54 55 54 55 54 55 55
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRINIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-2631 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Takec Performance Monitoring System	de S se 10 37 37 37 37 37 37 38 28 37 30 54 54 54 54 55 94 55 95 95 95 95 95 95 95 95 95 95 95 95
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122 Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRIDIVASAN, S. Simplified curve fits for the thermodynamic propertio of equilibrium air [NASA-RP-1181] p 36 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taked Performance Monitoring System [NASA-TP-2908] p 20 N89-234	de S se 30 37 S 37 of 33 30 S 54 S 59 S 94 S 59 S 59 S 59 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122 Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-250; SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153; SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj [EGRET] Science Symposium [NASA-CP-3071] p 77 N90-232; SRINIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taked Performance Monitoring System [NASA-TP-2908] p 20 N89-234 STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1	de S se 310 37 S 37 of 337 382 S 382 S 380 S 54 S 594 S 599 S 599 S 599 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122. Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188i SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SQUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SIMIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taket Performance Monitoring System [NASA-TP-2908] p 20 N89-234i STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-1439: STALLINGS, ROBERT L. JR.	de         S           30         S           37         Of           32         S           34         S           350         S           360         S           370         S           370         S           370         S           371         S           372         S           373         S           374         S           375         S           376         S           377         S           378         S           379         S           379         S           379         S           370         S           370         S           370
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1880 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pla for Lunar Exploration [NASA-CP-3070] p 78 N90-2500 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statio [NASA-CP-2496] p 58 N88-1530 SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescop [EGRET] Science Symposium [NASA-CP-3071] p 77 N90-2320 SRIIVIASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taked Performance Monitoring System [NASA-CP-2397] p 1 N88-1490 STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-1490 STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor	de S se S 37 S 37 of S 32 S an S 50 S 54 S 59 S 59 S 59 S 59 S 59 S 59 S 59 S 59
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-1227 Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-1880 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-2500 SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statik [NASA-CP-2496] p 58 N88-1530 SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj [EGRET] Science Symposium [NASA-CP-3071] p 77 N90-2320 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taked Performance Monitoring System [NASA-CP-2397] p 1 N88-1490 STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-1490 STALINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2683] p 5 N87-2260	de S se S 37 S 37 S 37 S 30 S 54 S 54 S 54 S 54 S 54 S 54 S 54 S 55 S 54 S 55 S 55 S 56 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2783] p 63 N89-122; Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188; SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250; SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153; SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232; SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Takec Performance Monitoring System [NASA-RP-239] p 20 N89-234; STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-149; STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2683] p 5 N87-263; STASSINOPOULOS, E. G. Consmic ray heavy on LET mapping for a taken participants and the supersor speeds	de S se S 37 of S 37 of S 30 S 54 S 54 S 54 S 54 S 54 S 55 S 54 S 55 S 55 S 55 S 56 S 56 S 56 S 57 S 58 S 59 S 59 S 59 S 50 S
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2783] p 63 N89-122; Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188; SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250; SOUYRES, STEVEN W. Microgravity Particle Research on the Space Stati [NASA-CP-2496] p 58 N88-153; SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232; SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taked Performance Monitoring System [NASA-TP-2908] p 20 N89-234; STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-TP-2908] p 1 N88-149; STALLINGS, ROBERT L, JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2683] p 5 N87-263; STASSINOPOULOS, E. G. Cosmic ray heavy on LET mapping for aluminum, silico and tissue targets	de S se 37 37 37 30 30 54 54 59 54 59 54 59 54 59 59 59 59 59 59 59 59 59 59 59 59 59
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188/ SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statik [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRIMIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-TP-181] p 36 N87-2630 SRIVATSAN, RAGHAVACHARI SIMUATSAN, RAGHAVACHARI SIMUATSAN, RAGHAVACHARI SIMUATSAN, RAGHAVACHARI SIMUATSAN, RAGHAVACHARI SIMUATS, SA-TP-2908] p 20 N89-2344 STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2833] p 5 N87-2663 STASINOPOULOS, E. G. Cosmic ray heavy on LET mapping for aluminum, silicc and tissue targets [NASA-RP-1180] p 79 N87-2591	de S se 37 37 37 37 30 30 54 54 50 54 54 50 54 50 54 50 54 50 54 50 54 50 54 50 54 50 54 50 54 50 54 55 50 55 50 56 50 56 50 56 50 56 50 56 50 56 57 57 57 57 57 57 57 57 57 57 57 57 57
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188/ SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-CP-2908] p 20 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taket Performance Monitoring System [NASA-CP-2397] p 1 N88-149; STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-283] p 5 N87-2630 STALSINOPOULOS, E. G. Cosmic ray heavy on LET mapping for aluminum, silicc and tissue targets [NASA-TP-2180] p 79 N87-2590 STAYLOR, W. F. Angular radiation models for Earth-atmosphere system	de S se 30 37 S 37 of 33 30 S 54 S 59 S 59 S 59 S 59 S 59 S 59 S 59 S 50 S 5
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi: [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188: SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statit [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRINIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-CP-307] p 1 N87-2630 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Taker Performance Monitoring System [NASA-CP-2397] p 1 N88-1493 STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-RP-1863] p 5 N87-2265 STASINOPOULOS, E. G. Cosmic ray heavy on LET mapping for aluminum, silicc and tissue targets [NASA-RP-1180] p 79 N87-2590 STALLING, W. F. Angular radiation models for Earth-atmosphere systel Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-2767	de S se 10 37 57 582 S 582 S 58 59 59 59 59 59 59 59 59 59 59
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122: Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188 SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pli for Lunar Exploration [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-3070] p 78 N90-250: SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153: SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj (EGRET) Science Symposium [NASA-CP-3071] p 77 N90-232: SRINIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-263 SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Takec Performace Monitoring System [NASA-CP-2397] p 1 N88-149: STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2683] p 5 N87-226; STASIMOPOULOS, E. G. Cosmic ray heavy ion LET mapping for aluminum, silicc and tissue targets [NASA-RP-1184] p 56 N88-276; STAYLOR, W. F. Angular radiation models for Earth-atmosphere systef Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-276; STEVEN R. J. Specific Conference: Support ti Fitteenth Space Simulation Conference: Support ti Fitteenth Space Simulation Conference: Support	de S 10 37 37 37 30 30 54 55 59 54 55 59 55 59 56 56 56 56 56 56 56 56 56 56
Advancing-side directivity and retreating-si interactions of model rotor blade-vortex interaction noi [NASA-TP-2784] p 67 N88-227 SPRINKLE, DANNY R. Analysis of positron lifetime spectra in polymers [NASA-TP-2853] p 63 N89-122; Low-energy gamma ray attenuation characteristics aviation fuels [NASA-TP-2974] p 63 N90-188; SPUDIS, PAUL D. Geoscience and a Lunar Base: A Comprehensive Pk for Lunar Exploration [NASA-CP-3070] p 78 N90-250; SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-3070] p 78 N90-250; SOUYRES, STEVEN W. Microgravity Particle Research on the Space Statis [NASA-CP-2496] p 58 N88-153; SREEKUMAR, PARAMESWARAN The Energetic Gamma-Ray Experiment Telescoj [EGRET] Science Symposium [NASA-CP-3071] p 77 N90-232; SRINIVASAN, S. Simplified curve fits for the thermodynamic properti of equilibrium air [NASA-RP-1181] p 36 N87-263; SRIVATSAN, RAGHAVACHARI Simulator evaluation of a display for a Takec Performance Monitoring System [NASA-CP-2397] p 1 N88-143; STACK, SHARON H. Langley Symposium on Aerodynamics, volume 1 [NASA-CP-2397] p 1 N88-143; STALLINGS, ROBERT L., JR. Experimental cavity pressure distributions at supersor speeds [NASA-TP-2883] p 5 N87-226; STASSINOPOULOS, E. G. Cosmic ray heavy ion LET mapping for aluminum, silicc and tissue targets [NASA-RP-1180] p 79 N87-259; STAYLOR, W. F. Angular radiation models for Earth-atmosphere syster Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-276; STECHER, JOSEPH Fifteenth Space Through Testing HMC64 OF 2014	de S se S 10 37 37 37 30 54 50 54 50 54 50 54 50 54 50 55 55 55 55 55 55 55 55 55

TECHER, JOSEPH L., III Fourteenth Space Simulation Conference: Testing for a Permanent Presence in Space [NASA-CP-2446] p 25 N88-10829 TECKER, FLOYD W. The Energetic Gamma-Ray Experiment Telescope (EGRET) Science Symposium (NASA-CP-3071) p 77 N90-23294 TEIN, BLAND A. NASA/SDIO Space Environmental Effects on Materials Workshop, part 1 [NASA-CP-3035-PT-1] p 27 N89-23528 NASA/SDIO Space Environmental Effects on Materials Workshop, part 2 [NASA-CP-3035-PT-2] p 28 N89-23547 Proceedings of the LDEF Materials Data Analysis Workshop [NASA-CP-10046] p 28 N90-26075 TEIN, PETER A. Lightweight structural design of a bolted case joint for the space shuttle solid rocket motor [NASA-TP-2851] p 25 N89-12580 TEINKE, RONALD J. Design of 9.271-pressure-ratio 5-stage core compressor and overall performance for first 3 stages p 17 N87-17699 [NASA-TP-2597] TEINMANN, PIERRE A. Influence of the deposition conditions on radiofrequency magnetron sputtered MoS2 films [NASA-TP-2994] p 33 N90-21210 TEINMETZ, G. G. Development and evaluation of an airplane electronic display format aligned with the inertial velocity vector [NASA-TP-2648] p 16 N87-13438 TEINMETZ, GEORGE G. Effects of combining vertical and horizontal information into a primary flight display [NASA-TP-2783] p 17 N88-12487 TENGLE, THOMAS Flight Mechanics/Estimation Theory Symposium 1988 [NASA-CP-3011] p 23 N89-15934 Flight Mechanics/Estimation Theory Symposium, 1989 [NASA-CP-30501 p 23 N90-13413 TEPHENS, J. BRISCOE System study of the carbon dioxide observational platform system (CO-OPS): Project overview p 23 N87-18588 [NASA-TP-26961 TEPHENS, R. M. An Auger electron spectroscopy study of surface-preparation contaminants [NASA-TP-2972] p 33 N90-16968 TEPHENSON, JACK D. Longitudinal stability and control characteristics of the Quiet Short-Haul Research Aircraft (QSRA) [NASA-TP-2965] p 20 N90-17639 TEWART, E. C. Piloted simulation study of the effects of an automated trim system on flight characteristics of a light twin-engine airplane with one engine inoperative [NASA-TP-26331 p 3 N87-10843 TEWART, ERIC C. Evaluation of the ride quality of a light twin engine airplane using a ride quality meter [NASA-TP-2913] p 2 N89-22568 TIEF, LOUIS J. First International Conference on Laboratory Research for Planetary Atmospheres [NASA-CP-3077] p 78 N90-26744 TITT, LEONARD E. Exhaust nozzles for propulsion systems with emphasis on supersonic cruise aircraft [NASA-RP-1235] p 18 N90-21037 TOAKLEY, D. M.

- investigation of the effects of cobalt ions on epoxy properties [NASA-TP-2639]
- p 31 N87-12680 TOUGH, H. PAUL, III Flight investigation of the effect of tail configuration on stall, spin, and recovery characteristics of a low-wing general aviation research airplane p 13 N87-16815 [NASA-TP-2644]
- Flight investigation of the effects of an outboard wing-leading-edge modification on stall/spin characteristics of a low-wing, single-engine, T-tail light airplane
- [NASA-TP-2691] p 14 N87-23614 TOWE, L. L.
- Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-27677
- Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2]
  - p 57 N89-20587

#### TANNER, JOHN A.

STRAUS, DAVID		
Five year global dataset: NMC op (1978 to 1982)	eratior	ial analyses
[NASA-RP-1194]	p 55	N87-29996
Laser anemometer measurements	ini	a transonic
axial-flow fan rotor	- 70	NO0 11245
STREETT, CRAIG L	p 38	N90-11245
A spectral collocation solution to t	he co	mpressible
[NASA-TP-2858]	р9	N89-12543
STROUD, W. JEFFERSON	ol Mo	obanica and
Dynamics, part 1	a we	charnes and
[NASA-CP-3034-PT-1] Computational Methods for Structure	p 46	N89-24638
Dynamics	a mo	chanics and
[NASA-CP-3034-PT-2] STUBBS: SANDY M.	p 46	N89-24654
Measurements of flow rate and tra	ajector	y of aircraft
tire-generated water spray [NASA-TP-2718]	p 14	N87-24458
Langley Aircraft Landing Dynamics F	acility	NOT 005 44
Cornering characteristics of the ma	p 21 lin-qea	r tire of the
space shuttle orbiter		NO0 40500
STUTZ, JOHN	p 14	N88-18583
Automatic classification of spectra	from 1	the Infrared
[NASA-RP-1217]	p 75	N90-10807
SUDER, KENNETH L.	in	a transonio
axial-flow fan rotor	5 111	
[NASA-TP-2879]	p 38	N90-11245
Hydroburst test of a carbon-carbon	involu	ite exit cone
[NASA-TP-2556] SUNG, C. C.	p 24	N88-14112
Mode-medium instability and its	corre	ction with a
[NASA-TP-3023]	p 68	N90-25673
SUTTLES, J. T. Angular radiation models for Earth-a	tmosol	here system
Volume 1: Shortwave radiation		
[NASA-HP-1184] Angular radiation models for earth-at	p 56 tmospl	N88-27677 nere system.
Volume 2: Longwave radiation	n 57	NR0-20587
SUTTLES, JOHN T.	p 57	1103-20007
Limb-darkening functions as derived operation of the ERBE scanning radio	d from	for January
1985	- 50	NOD 47074
SWANSON, THEODORE D.	b po	N09-1/3/4
Workshop on Two-Phase Fluid Bel	navior	in a Space
[NASA-CP-3043]	p 38	N89-26184
SYKES, GEORGE F., JR. The effects of simulated space	ce er	nvironmental
parameters on six commercially a	vailable	e composite
[NASA-TP-2906]	p 29	N89-19385
SYKES, NANCY P. NASA Workshop on Compute	ational	Structural
Mechanics 1987, part 1	- 40	NO0 00770
[NASA-CP-10012-P1-1] NASA Workshop on Compute	p 46 ational	N89-29773 Structural
Mechanics 1987, part 2 (NASA-CP-10012-PT-2)	n 46	N89-29789
NASA Workshop on Compute	itional	Structural
Mechanics 1987, part 3 [NASA-CP-10012-PT-3]	p 46	N89-29799
SZCZUR, M.	' Con	loronoo
[NASA-CP-2399]	ρ 62	N87-10720
SZCZUR, MARTHA Sixth Annual Users' Conference		
[NASA-CP-2463]	p 62	N87-23156
Growth of solid solution single crysta	als	
[NASA-TP-2787]	p 32	N88-14212
Т		
TANNEHILL, J. C.		

IANNERILL, J. U.			
Simplified curve fits for	the thermodyn	amic	properties
of equilibrium air			
[NASA-RP-1181]	p	36	N87-26309
TANNER, JOHN A.			
Exploiting symmetries in	n the modeling	and	analysis of
tiree	-		

[NASA-TP-2649] p 13 N87-17690

Langley Aircraft Landing Dynamics Facility [NASA-RP-1189] p 21 N87-29544

- Advances in contact algorithms and their application to tirne
- [NASA-TP-2781] p 44 N88-21456 Computational Methods for Structural Mechanics and Dynamics, part 1
- [NASA-CP-3034-PT-1] p 46 N89-24638 Computational Methods for Structural Mechanics and
- **Dynamics** [NASA-CP-3034-PT-2] p 46 N89-24654 Modeling and analysis of the space shuttle nose-gear
- tire with semianalytic finite elements [NASA-TP-2977] p 42 N90-19595
- TANNER, TRIEVE
- Space Station Human Factors Research Review. Volume 4: Inhouse Advanced Development and Research
- [NASA-CP-2426-VOL-4] p 59 N88-24148 TARTER. JILL C.
- Carbon in the Galaxy: Studies from Earth and Space [NASA-CP-3061] p 73 N90-27562 p 73 N90-27562 TAUBER, MICHAEL E.
- Trajectory characteristics and heating of hypervelocity projectiles having large ballistic coefficients p7 N88-19412 [NASA-TP-2614]
- A review of high-speed, convective, heat-transfer computation methods [NASA-TP-2914] p 38 N89-27116
- TAYLOR, F. W. Nimbus-7 Stratospheric and Mesospheric Sounder
- (SAMS) experiment data user's guide [NASA-RP-1221] p 53 N89-26304
- TAYLOR, G. JEFFREY A lunar far-side very low frequency array p 75 N90-10805 [NASA-CP-30391
- Geoscience and a Lunar Base: A Comprehensive Plan for Lunar Exploration [NASA-CP-3070] p 78 N90-25030
- TAYLOR, JOHN G. two-dimensional Static investigation of a convergent-divergent exhaust nozzle with multiaxis thrust-vectoring capability
- p 11 N90-19193 [NASA-TP-2973] Internal performance of two nozzles utilizing gimbal concepts for thrust vectoring
- [NASA-TP-2991] p 11 N90-19200 TAYLOR, STEVEN L.
- Nimbus 7 solar backscatter ultraviolet (SBUV) ozone products user's guide [NASA-RP-1234] p 53 N90-17227
- TAYLOR, V. R. Angular radiation models for Earth-atmosphere system.
- Volume 1: Shortwave radiation p 56 N88-27677 [NASA-RP-1184] Angular radiation models for earth-atmosphere system. Volume 2: Longwave radiation [NASA-RP-1184-VOL-2] p 57 N89-20587
- TAYLOR, WILLIAM Automatic classification of spectra from the Infrared Astronomical Satellite (IRAS)
- [NASA-RP-1217] p 75 N90-10807 TEICHMAN, LOUIS A.
- NASA/SDIO Space Environmental Effects on Materials Workshop, part 1
- [NASA-CP-3035-PT-1] p 27 N89-23528 NASA/SDIO Space Environmental Effects on Materials Workshop, part 2
- (NASA-CP-3035-PT-21 p 28 N89-23547 THEON, JOHN S.
- Spacelab 3 Mission Science Review p 36 N87-22103 [NASA-CP-2429] THIELE, OTTO W.
- On requirements for a satellite mission to measure tropical rainfall [NASA-RP-1183] p 55 N87-20701
- THOMAS, JAMES L Three-dimensional multigrid algorithms for the flux-split Euler equations
- [NASA-TP-2829] p 65 N89-12316 THOMAS, LAWRENCE R. The 1986 Get Away Special Experimenter's Symposium
- [NASA-CP-2438] p 22 N87-20302 The 1988 Get Away Special Experimenter's Symposium [NASA-CP-3008] p 22 N89-10902 THOMAS RICHARD The M-type stars

p 75 N88-11592

p 74 N89-11657

- THOMPSON, RICHARD A.
  - A review of reaction rates and thermodynamic and transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000
  - [NASA-RP-1232] p 38 N90-27064
  - THOMPSON, WILBUR E. System study of the carbon dioxide observational
  - platform system (CO-OPS): Project overview [NASA-TP-2696] p 23 N87-18588
  - THURSTON, GAYLEN A. Application of Newton's method to the postbuckling of rings under pressure loadings
  - [NASA-TP-2941] p 46 N89-29811 Modal interaction in postbuckled plates. Theory
  - [NASA-TP-2943] p 47 N90-27121 TIFFANY, SHERWOOD H.
- Nonlinear programming extensions to rational function approximation methods for unsteady aerodynamic forces p 15 N88-24623 [NASA-TP-2776] TILTON, JAMES C.
- LANDSAT-4 and LANDSAT-5 multispectral scanner coherent noise characterization and removal p 49 N89-12114 [NASA-TP-2595-REV]
- TINGAS STEPHEN A Piloted simulator study of allowable time delays in
- large-airplane response [NASA-TP-2652] p 19 N87-16849
- TOMPKINS, S. S.
- Effects of thermal cycling on graphie-fiber-reinforced 6061 aluminum p 28 N87-10184 (NASA-TP-2612)
- TOMPKINS, STEPHEN S.
- Effects of continuous and cyclic thermal exposures on boron- and borsic-reinforced 6061 aluminum composites [NASA-TP-1063] p 28 N88-70029 TORR. DOUGLASS
- into the thermosphere: The atmosphere explorers p 52 N88-18084 [NASA-SP-490]
- TORR, M. R.
- A Study of Space Station Contamination Effects INASA-CP-30021 p 72 N88-25390 TORR, MARSHA R.
- Space Station Induced Monitoring [NASA-CP-3021] p 73 N89-15790
- TORRES, PABLO D. Stress corrosion study of PH13-8Mo stainless steel using
- the Slow Strain Rate Technique [NASA-TP-2934] p 30 N89-26976
- TOWNSEND, DENNIS P.
- Dynamic analysis of multimesh-gear helicopter transmissions [NASA-TP-2789] p 41 N88-17045
- TOWNSEND, JOHN S.
- Space station structures and dynamics test program [NASA-TP-2710] p 43 N87-20568 Dynamic characteristics of a vibrating beam with periodic
- variation in bending stiffness INASA-TP-26971 p 44 N88-23988 TOWNSEND, LAWRENCE W.
- Doubly differential cross sections for galactic heavy-ion fragmentation
- [NASA-TP-2659] p 68 N87-17487 Possible complementary cosmic-ray systems: Nuclei and antinuclei
- p 68 N87-24977 (NASA-TP-27411 Eikonal solutions to optical model coupled-channel
- equations [NASA-TP-2830] p 68 N88-30402
- A general formalism for phase space calculations p 66 N89-14053 [NASA-TP-2843]
- Solar-flare shielding with Regolith at a lunar-base site [NASA-TP-2869] p 79 N89-14210 Benchmark solutions for the galactic ion transport
- equations: Energy and spatially dependent problems [NASA-TP-2878] p 79 N89-16714 BRYNTRN: A baryon transport model
- [NASA-TP-2887] p 80 N89-17562 Calculation of two-neutron multiplicity in photonuclear reactions
- [NASA-TP-2968] p 68 N90-14890 Radiation exposure for manned Mars surface missions p 80 N90-18357 INASA-TP-29791 Improved model for solar cosmic ray exposure in manned
- Earth orbital flights [NASA-TP-2987] p 80 N90-25031 TRAVIS, LARRY D.
- The Jovian Atmospheres [NASA-CP-2441] p 77 N87-17598 TREMOR, JOHN W.
- Report of the 1st Planning Workshop for CELSS Flight Experimentation [NASA-CP-10020] p 60 N89-13898

[NASA-TP-2760-REV] TROLINGER, JAMES D. Automated Reduction of Data from Images and Holograms

Applications of the hybrid automated reliability predictor:

- [NASA-CP-2477] p 6 N87-29432 TURNER, STEVEN G.
- Low-speed wind-tunnel investigation of the flight dynamic characteristics of an advanced turboprop business/commuter aircraft configuration p 20 N90-19239 [NASA-TP-2982]

### U

UNDERHILL, ANNE B. O stars and Wolf-Rayet stars

TRIVEDI, KISHOR

**Revised** edition

- [NASA-SP-497] p 74 N89-11657 UNNAM, JALAIAH
- Oxidation characteristics of Ti-14Al-21Nb ingot alloy [NASA-TP-3012] p 31 N90-25206

#### ν

Nimbus-7 ERB Solar Analysis Tape (ESAT) user's

VALLETTE, BRENDA J.

[NASA-RP-1211]	p 79	N89-30151
VANNIMMEN, JANE	·	
NASA historical data book. Volume	1: NAS	SA resources
1958-1968		
[NASA-SP-4012-VOL-1]	p 80	N88-25428
VAUGHAN, OTHA H.	F	
Spacelah 3 Mission Science Review	v	
[NASA-CP-2429]	n 36	N87-22103
VALIGHAN W W	p 00	1107 22100
NASA/MSEC EV.85 Atmospheric P	rocaee	e Besearch
Roview	100633	C3 HO3CAICH
	o 66	N97-12042
VEATCH DONALD W	p 55	107-13043
VEATCH, DUNALD W.	1	flight to at
Analog signal conditioning	IOF	night-test
Instrumentation		
[NASA-RP-1159]	p 17	N87-29533
VERDERAIME, V.		
Weld stresses beyond elastic	limit	: Materials
discontinuity		
(NASA-TP-2935)	p 46	N89-27214
VEREEN, MARY		
Third Conference on Artificial Inte	elligenc	e for Space
Applications, part 1		
[NASA-CP-2492-Pt-1]	p 62	N88-16360
Third Conference on Artificial Intel	lligence	e for Space
Applications, part 2		
[NASA-CP-2492-PT-2]	p 63	N88-24188
Fourth Conference on Artificial Inte	elligenc	e for Space
Applications	-	•
[NASA-CP-3013]	p 63	N89-15549
VICROY, DAN D.	•	
Influence of wind shear on	the a	aerodynamic
characteristics of airolanes		
[NASA-TP-2827]	0.12	N88-26344
VOGLEB WILLIAM A	P 12	
Evaluation of two transport aircraft	and se	veral pround
test vehicle friction measurements of	htsinor	for various
rupway surface types and conditions		many of test
roculte from joint EAA/NASA Purpus	- Sun	tion Program
INACA TO 00171	- 10	NOO 15000
[NASA-TP-2917]	p 10	190-15902
VOIGT, SUSAN J.		
Sonware Heuse Issues		NO0
[NASA-CP-3057]	p 63	N90-14789
VOLK, KEVIN		
Automatic classification of spectra	a from	the Infrared
Astronomical Satellite (IRAS)		
[NASA-RP-1217]	p 75	N90-10807
VRABEL, DEBORAH		

- p 18 N89-12565 [NASA-SP-495] VYKUKAL, H. C.
- Volume 1: EVA Research and Development

WAGGO	DNER, EDGAR G.		
Α	transonic-small-disturbance	wing	g design
metho	dology		
[NAS/	A-TP-2806]	р7	N88-17614
WAHLS	DEBORAH M.		

Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications p 26 N90-27738 [NASA-TP-3016]

#### PERSONAL AUTHOR INDEX

p 63 N90-11454

[NASA-SP-492]

[NASA-SP-497]

O stars and Wolf-Rayet stars

Advanced turboprop project Space Station Human Factors Research Review. p 59 N88-24145 [NASA-CP-2426-VOL-1] W

١

١

VALKER, D. W.	Surface flow and heating distributions on a cylinder in
Infrared astronomical satellite (IRAS) catalogs and	near wake of Aeroassist Flight Experiment (AFE)
atlases. Volume 7: The small scale structure catalog	configuration at incidence in Mach 10 Air
[NASA-HP-1190-VOL-7] p 76 N89-14199	[NASA-1P-2954] p 38 N90-14493
VALKER, G. H.	WEST, RUBERT A.
Utode laser satellite systems for beamed power	Inte-vanable Phenomena in the Jovian System
	WHALEN MARGARET V
	Compatability of dispersion-strengthened platinum with
VALKEN, FIELEN	resistoiet propellants
Automatic classification of spectra from the infrared	[NASA-TP-2765] p.27 N88-12538
[NASA_RP-1217] n 75 Non-10807	WHIPPLE, DANIEL Y.
	Laser-velocimeter-measured flow field around an
Angular radiation models for Earth-atmosphere system	advanced, swept, eight-blade propeller at Mach 0.8
Volume 1: Shortwave radiation	[NASA-TP-2462] p 2 N90-20942
[NASA-RP-1184] p 56 N88-27677	WHITCOMB, JOHN D.
Annular radiation models for earth-atmosphere system	Three-dimensional analysis of a postbuckled embedded
Volume 2: Longwave radiation	delamination
[NASA-RP-1184-VOL-2] p 57 N89-20587	[NASA-1P-2823] p 44 N88-26684
VALKER IRA	WHITE, ALLAN L.
Limb-darkening functions as derived from along-track	SURE reliability analysis: Program and mathematics
operation of the ERBE scanning radiometer for January	WHITEHEAD VICTOR C
1985	Bemote Sensing in Polarized Light
[NASA-RP-1214] p 56 N89-17374	[NASA-CP-3014] n Polarized Light
VALLER, MARVIN C.	WHITFIELD, DAVID L
A piloted simulation study of data link ATC message	Three-dimensional multigrid algorithms for the flux-split
exchange	Euler equations
[NASA-TP-2859] p 13 N89-15900	[NASA-TP-2829] p 65 N89-12316
VALTERS, R. W.	WHITLOCK, CHARLES H.
Some path-following techniques for solution of nonlinear	Surface bidirectional reflectance properties of two
equations and comparison with parametric differentiation	southwestern Arizona deserts for wavelengths between
[NASA-TP-2654] p 64 N87-14054	0.4 and 2.2 micrometers
WALTERS, ROBERT W.	[NASA-TP-2643] p 48 N87-22281
Efficient solutions to the Euler equations for supersonic	WHITMORE, STEPHEN A.
flow with embedded subsonic regions	Qualitative evaluation of a flush air data system at
[NASA-TP-2523] p 3 N87-15183	transonic speeds and high angles of attack
VANG, CHI R.	[NASA-TP-2716] p 14 N87-29497
Application of turbulence modeling to predict surface	WIEDEMANN, K. E.
heat transfer in stagnation flow region of circular cylinder	Emittance, catalysis, and dynamic oxidation of
[NASA-TP-2758] p 37 N87-27161	TH14AI-21Nb
VARSHAWSKY, ISIDORE	[NASA-TP-2955] p 31 N90-10248
Foundations of measurement and instrumentation	WIEDEMANN, KARL E.
[NASA-HP-1222] p 40 N90-21351	Oxidation characteristics of Ti-14Al-21Nb ingot alloy
Shuth of log side flows over espicelly combered delta	[NASA-TP-3012] p 31 N90-25206
study of lee-side nows over conically campeled delta	WIELICKI, B. A.
(NASA-TP-2660-PT-1) p.5 N87-23597	Angular radiation models for Earth-atmosphere system.
Study of lee-side flows over conically cambered Delta	Volume 1: Shortwave radiation
wings at supersonic speeds, part 2	[NA3A-RP-1164] p 56 N86-2/6//
[NASA-TP-2660-PT-2] p 5 N87-25301	Angular radiation models for earth-atmosphere system.
NATSON, R. T.	Volume 2: Longwave radiation
Present state of knowledge of the upper atmosphere	[NASA-HF-1104-VOL-2] p 57 N89-20587
1988: An assessment report	WILCOX, FLOYD J., JR.
[NASA-RP-1208] p 52 N88-29233	Experimental cavity pressure distributions at supersonic
Present state of knowledge of the upper atmosphere	(NASA TD 2692) A 5 N97 22626
1990: An assessment report	Drog modeuroments of blust starse tensesticity means
[NASA-RP-1242] p 54 N90-28929	on a flat plate at suppressio apoedo
VATSON, WILLIE R.	[NASA-TP-2742] 0.6 N87-27626
Experimental validation of a two-dimensional shear-flow	
model for determining acoustic impedance	Baman intensity as a proba of concentration near a
[NASA-1P-2079] p to No7-20798	covistal growing in solution
Tis accompanies and accustion test: A report and data	[NASA-TP-2865] n 39 N89-16139
The aerodynamics and acoustics test. A report and data	WILLETTS DAVID V
[NASA_RP-1179] D.9 N89-17579	Closed-Cycle Frequency-Stable CO2 Laser
VEAVER W.A.	Technology
Handling gualities of a wide-body transport airplane	[NASA-CP-2456] D 40 N87-20522
utilizing Pitch Active Control Systems (PACS) for relaxed	WILLEY, C. S.
static stability application	Handling qualities of a wide-body transport airplane
[NASA-TP-2482] p 19 N88-14987	utilizing Pitch Active Control Systems (PACS) for relaxed
VEAVER, WILLIAM L	static stability application
Calculation and accuracy of ERBE scanner	[NASA-TP-2482] p 19 N88-14987
measurement locations	WILLIAMS, ALTON C.
[NASA-TP-2670] p 72 N87-28471	Double Layers in Astrophysics
VEBSTER, K. L.	[NASA-CP-2469] p 72 N87-23313
Mode-medium instability and its correction with a	WILLIAMS, DAVID H.
Gaussian reflectivity mirror	Jet transport flight operations using cockpit display of
[NASA-1F-3023] D 68 N90-25673	traffic information during instrument meteorological
Pericen, J. D. Devland crow utilization for encoded missions	conditions: Simulation evaluation
[NASA_TP-2976] n 24 NQ0.1/256	[NASA-TP-2567] p 12 N87-29469
VFILMUENSTER. K. J.	WILLIAMS, LOUIS J.
Simplified curve fits for the thermodynamic properties	Laminar Flow Aircraft Certification
of equilibrium air	[NASA-CP-2413] p 8 N88-23737
[NASA-RP-1181] p 36 N87-26309	WILLIAMS, M. D.
VELLS, DOUGLAS C.	Analysis of Nd3 + glass, solar-pumped, high-powr laser
Jet transport flight operations using cockpit display of	Systems
traffic information during instrument meteorological	[NASA-1P-2905] p 40 N89-17855
conditions: Simulation evaluation	Diode laser satellite systems for beamed power
[NASA-TP-2567] p 12 N87-29469	TRAISMISSION
VELLS, WILLIAM L.	UNA 34-LE-29921 D 40 N90-24585
Measured and predicted aerodynamic coefficients and	WILLIAMS, RICHARD J.
Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE)	WILLIAMS, RICHARD J. Experiments in Planetary and Related Sciences and the Same Station
Measured and predicted aerodynamic coefficients and shock shapes for Aeroassist Flight Experiment (AFE) configuration	WILLIAMS, RICHARD J. Experiments in Planetary and Related Sciences and the Space Station (NASA-CP-2404)

#### WOOD, RICHARD M.

WILLIAMS, STEVEN P. Stereopsis cueing effects on hover-in-turbulence performance in a simulated rotorcraft [NASA-TP-2980] p 17 N90-21004 Determination of depth-viewing volumes for stereo three-dimensional graphic displays [NASA-TP-2999] p 61 N90-22965 WILLSHIRE, K. F. Effects of background noise on total noise annoyance [NASA-TP-2630] p 66 N87-14120 WILMOTH, RICHARD G. Multiscale turbulence effects in supersonic jets exhausting into still air p 36 N87-24672 [NASA-TP-2707] WILSON, JEFFREY D. Revised NASA axially symmetric ring model for coupled-cavity traveling-wave tubes p 35 N87-22923 [NASA-TP-2675] Spent-beam refocusing analysis and multistage depressed collector design for a 75-W, 59- to 64-GHz coupled-cavity traveling-wave tube [NASA-TP-3039] p 35 N90-27965 WILSON, JOHN W. Possible complementary cosmic-ray systems: Nuclei and antinuclei [NASA-TP-2741] p 68 N87-24977 Eikonal solutions to optical model coupled-channel equations [NASA-TP-2830] p 68 N88-30402 Solar-flare shielding with Regolith at a lunar-base site [NASA-TP-2869] p 79 N89-14210 Benchmark solutions for the galactic ion transport equations: Energy and spatially dependent problems [NASA-TP-2878] p 79 N89-16714 BRYNTRN: A baryon transport model [NASA-TP-2887] p 80 N89-17562 Kaon-nucleus scattering p 80 N89-25103 [NASA-TP-2920] Radiation exposure for manned Mars surface missions [NASA-TP-2979] p 80 N90-18357 Improved model for solar cosmic ray exposure in manned Earth orbital flights [NASA-TP-2987] p 80 N90-25031 Comparison of dose estimates using the buildup-factor method and a Baryon transport code (BRYNTRN) with Monte Carlo results [NASA-TP-3021] p 80 N90-29290 WILSON, R. GALE Earth Sciences Requirements for the Information Sciences Experiment System [NASA-CP-3072] p 50 N90-27140 WILSON, ROBERT M. Statistical aspects of solar flares p 79 N87-20947 [NASA-TP-2714] On the statistics of El Nino occurrences and the relationship of El Nino to volcanic and solar/geomagnetic activity [NASA-TP-2948] p 79 N90-12456 WINDMILLER, MARY JO Unique bit-error-rate measurement system for satellite communication systems [NASA-TP-2699] p 33 N87-20448 WINGET, CHARLES M. Cells in Space [NASA-CP-10034] p 61 N90-13939 WISLICENUS, GEORGE F. Preliminary design of turbopumps and related machinerv [NASA-RP-1170] p 3 N87-17665 WOOD, GEORGE M., JR. Frequency-Stable Closed-Cycle, CO2 Laser Technology p 40 N87-20522 [NASA-CP-2456] WOOD, JERRY R. Laser anemometer measurements in a transonic axial-flow fan rotor p 38 N90-11245 [NASA-TP-2879] WOOD, RICHARD D. Summary of studies to reduce wing-mounted propfan installation drag on an M = 0.8 transport p 14 N87-20990 [NASA-TP-2678] WOOD, RICHARD M. Investigation of leading-edge flap performance on delta and double-delta wings at supersonic speeds [NASA-TP-2656] p 4 N87-20233 Study of lee-side flows over conically cambered delta wings at supersonic speeds, part 1 [NASA-TP-2660-PT-1] p 5 N87-23597 Study of lee-side flows over conically cambered Delta wings at supersonic speeds, part 2 [NASA-TP-2660-PT-2] p 5 N87-25301 Planform effects on the supersonic aerodynamics of multibody configurations p 6 N88-12454 [NASA-TP-2762] Supersonic aerodynamics of delta wings p 7 N88-17615 [NASA-TP-2771]

#### WOODGATE, BRUCE

WOODGATE, BRUCE Energetic Phenomena on the Sun: The Solar Maximum Mission Flare Workshop. Proceedings [NASA-CP-2439] p 79 N87-19328 WOODS, CLAUDIA M. Modification of the SHABERTH bearing code to incorporate RP-1 and a discussion of the traction model INASA-TP-30171 p 42 N90-28066 WOODWARD, RICHARD P. Comparison between design and installed acoustic characteristics of NASA Lewis 9- by 15-foot low-speed wind tunnel acoustic treatment p 22 N90-19242 [NASA-TP-2996] WRIGHT, ROBERT I NASA/DOD Control/Structures Interaction Technology, 1986 [NASA-CP-2447-PT-1] p 24 N87-16014 . NASA/DOD Control/Structures Interaction Technology, 1986 p 25 N87-24495 [NASA-CP-2447-PT-2] OEXP Analysis Tools Workshop [NASA-CP-10013] p 63 N89-11407 Earth Science Geostationary Platform Technology [NASA-CP-30401 p 24 N90-19249 Thermal-distortion analysis of an antenna strongback for geostationary high-frequency microwave applications p 26 N90-27738 [NASA-TP-3016] WÙ, D. An Auger electron spectroscopy study surface-preparation contaminants [NASA-TP-2972] p 33 N90-16968 WŪ, S. T. Advanced Earth-to-Orbit Propulsion Technology 1986, volume 2 [NASA-CP-2437-VOL-2] p 27 N89-12626 Advanced Earth-to-Orbit Propulsion Technology 1988, volume 1 [NASA-CP-3012-VOL-1] p 27 N90-28611 WUNSCHEL, ALFRED J. Piloted-simulation study of effects of vortex flaps on low-speed handling qualities of a Delta-wing airplane [NASA-TP-2747] p 19 N87-26922 WYNNE, ELEANOR C. Steady and unsteady transonic pressure measurements

òf

on a clipped delta wing for pitching and control-surface oscillations [NASA-TP-2594] p 8 N88-28895

### Υ

#### YAGER, THOMAS J.

Evaluation of two transport aircraft and several ground test vehicle friction measurements obtained for various runway surface types and conditions. A summary of test results from joint FAA/NASA Runway Friction Program p 16 N90-15902 [NASA-TP-2917]

#### YEE. HELEN

Supercomputing in Aerospace [NASA-CP-2454] p 5 N87-25998

YEH, FREDERICK C. Application of turbulence modeling to predict surface heat transfer in stagnation flow region of circular cylinder p 37 N87-27161 [NASA-TP-2758]

YENNI, K. R. Piloted simulation study of the effects of an automated trim system on flight characteristics of a light twin-engine airplane with one engine inoperative [NASA-TP-2633] p 3 N87-10843

YI, THOMAS Y.

The 1986 Goddard Space Flight Center Battery Workshon [NASA-CP-2486] p 35 N88-11021

YIP,	LONG P.		•	

Wind-tunnel free-flight investigation of a 0.15-scale model of the F-106B airplane with vortex flaps [NASA-TP-2700] p 4 N87-21855

YOS, JERROLD M. A review of reaction rates and thermodynamic and

transport properties for an 11-species air model for chemical and thermal nonequilibrium calculations to 30000 p 38 N90-27064 [NASA-RP-1232]

YOUNG, D. F.

Angular radiation models for Earth-atmosphere system. Volume 1: Shortwave radiation [NASA-RP-1184] p 56 N88-27677

YOUNG, DAVID F. Calibration of the spin-scan ozone imager aboard the dynamics Explorer 1 satellite

p 55 N87-26491 [NASA-TP-2723] YOUNG, LEIGHTON E.

Solar array flight experiment/dynamic augmentation experiment [NASA-TP-2690] p 26 N87-20380 YOUNG, PHILIP R. Proceedings of the LDEF Materials Data Analysis Workshop

- [NASA-CP-100461 p 28 N90-26075 YÙ, Y. H. Automated Reduction of Data from Images and Holograms [NASA-CP-2477] p 6 N87-29432
  - Ζ

ZAKRAJSEK. JAMES J.
Comparison study of gear dynamic computer programs
at NASA Lewis Research Center
[NASA-TP-2901] p 41 N89-21243
ZANG, THOMAS A.
Numerical simulation of channel flow transition,
resolution requirements and structure of the hairpin
vortex
[NASA-TP-2667] p 4 N87-19351
Interactions of Tollmien-Schlichting waves and Dean
vortices. Comparison of direct numerical simulation and
a weakly nonlinear theory
(NASA-TP-2919) p 10 N89-25118
ZAPATA, L. E.
Analysis of Nd3+:glass, solar-pumped, high-powr laser
systems
[NASA-TP-2905] p 40 N89-17855
ZARETSKY, ERWIN V.
Liquid lubrication in space
[NASA-RP-1240] p 42 N90-28063
ZUBER, MARIA T.
Planetary geosciences, 1988
[NASA-SP-498] p 48 N89-26274
ZUCKERWAR, ALLAN J.
Contamination of liquid oxygen by pressurized gaseous
nitrogen
[NASA-TP-2894] p 38 N89-19499
ZURAWSKI, ROBERT L.
Analysis of quasi-hybrid solid rocket booster concepts
for advanced earth-to-orbit vehicles
[NASA-TP-2751] p 27 N87-25425
ZWALLY, H. JAY
Arctic Sea ice, 1973-1976: Satellite passive-microwave
ODSERVATIONS
[NASA-5P-489] p 58 N8/-246/0
Polar microwave originaless temperatures from
Nimbus-7 SMMM: time series of daily and monthly maps
(NACA DD 1000) 0 49 NB0 36275
Satallita radas altimatas mar ina Valuma 1: Processing
and corrections of Social data over Greenland
INASA PR-1222 VOL.11 p.54 NG0-20562
Satellite radar altimate over ice Volume 2: Users' quide
for Greenland elevation data from Seasat
(NASA-BP-1233-VOL-2) n 54 N90-20563
Satellite radar attimetry over ice Volume 4: Users' duide
for Antarctica elevation data from Seasat
[NASA-RP-1233-VOL-4] p 54 N90-20564
Surface topography of the Greenland Ice Sheet from
satellite radar altimetry
[NASA-SP-503] p 54 N90-22850

#### PERSONAL AUTHOR INDEX

# **REPORT NUMBER INDEX**

NASA Scientific and Technical Publications 1987-1990

#### Typical Report Number Index Listing



Listings in this index are arranged alphanumerically by report number. The page number indicates the page on which the citation is located. The accession number denotes the number by which the citation is identified.

NASA-CP-10001	p 37	N88-15924
NASA-CP-10003-SESS-1	D 18	N88-1669
NASA-CP-10003-SESS-2	0.18	N88-1578
NASA-CP-10003-SESS-3	n 18	N88-1579
NASA-CP-10003-SESS-4	p 19	NPR 1570
NAGA-OF-10003-3E33-4	p 16	1000-1579
NASA-CP-10003-SESS-5	p 18	N88-15800
NASA-CP-10003-SESS-6	p 18	N88-1580
NASA-CP-10004	p 12	N88-14970
NASA-CP-10000	p 12	N80-1/010
NASA-CP-10007	p 2	N00-2/140
NASA-CP-10008	p 9	N89-10848
NASA-CP-10009	p 3/	N88-2059
NASA-CP-10010	p 44	N00-21490
NASA-CP-10011	p 61	N88-21040
NASA-CF-10012-F1-1	p 40	N69-29/73
NASA CD 10012-P1-2	p 40	N09-29/0
NASA-CP-10012-P1-3	p 40	N89-2979
NASA-CP-10013	p 63	N89-11407
NASA-CP-10014	p 51	N89-1450
NASA-CP-10015	p /4	N89-13310
NASA-CP-10016	p 2/	N90-2179:
NASA-CP-10017	p 32	N89-17682
NASA-CP-10018	p 69	N89-14642
NASA-CP-10019	p 31	N89-13642
NASA-CP-10020	p 60	N89-13898
NASA-CP-10021	p /8	N89-18373
NASA-CP-10022	p 59	N89-1799
NASA-CP-10024	p 40	N89-24620
NASA-CP-10026-VOL-1	b 2a	N89-24022
NASA-CP-10020-VOL-2	p 59	N89-2402
NASA-CP-10027	p 59	N09-20334
NASA-CP-10029	p 50	N89-22982
NASA-OP-10032	p 61	N90-22910
NASA-CP-10033	p 40	N90-1708:
NASA-CP-10034	p 61	N90-1393
NASA-CP-10036	p 1/	N90-13384
NASA-CP-10041	p 16	N90-14220
NASA-CP-10043	p 29	N90-27792
NASA-CP-10046	p 28	N90-2007:
NASA-CP-2002	p 22	N/8-/080:
NASA-CP-2040	p 62	N/8-/465
NASA-CP-2327-P1-1	p 13	N67-1171
NASA-CP-2327-P1-2	p 13	N87-11750
NASA-CP-2339	p 43	N87-11180
NASA-CP-2397	P 1	N88-1492
NASA-CP-2399	p 62	N87-10720
NASA-CP-2402	p 55	N87-13043
NASA-CP-2405	p 43	N68-11140
NASA-CP-2407	p 75	N88-2023
NASA-CP-2413	p 8	N88-2373
NASA-CP-2423-REV	p 43	N87-1632
NASA-CP-2426-VOL-1	p 59	N88-2414
NASA-CP-2426-VOL-3	p 59	N88-1988
NASA-CP-2426-VOL-4	p 59	N88-2414
NASA-CP-2427	p 31	N88-2387

NASA-CP-2429	p 36	N87-22103
NASA-CP-2431	p 39	N87-10263
NASA-CP-2432	p7	N88-17586
NASA-CP-2433	p 17	N87-20267
NASA-CP-2434	p 34	N87-11072
NASA-CP-2435	p 12	N87-10054
NASA-CP-2437-VOL-2	p 27	N89-12626
NASA-CP-2438	p 22	N87-20302
NASA-CP-2439	p 79	N87-19328
NASA-CP-2441	́р 77	N87-17598
NASA-CP-2442	р 79	N87-20871
NASA-CP-2443	p 41	N87-22199
NASA-CP-2444	p 45	N89-12876
NASA-CP-2446	. p 25	N88-10829
NASA-CP-244/-P1-1	p 24	N87-16014
NASA-CP-2447-P1-2	. p 25	N87-24495
NA5A-CP-2448	p 51	N87-15528
NASA-CP-2449	. p / 9	N07-21/00
NAGA CD 2451	. p 51	N97 10240
NAGA-CP-2451	. p i	N87-22604
NASA-CP-2453	. p (	N87-27506
NASA-CP-2456	. p .	N87-25998
NASA-CP-2455	0 12	N87-22634
NASA-CP-2456	n 40	N87-20522
NASA-CP-2457	p 43	N87-18855
NASA-CP-2458	D 41	N87-18821
NASA-CP-2459-VOL-1	D 62	N87-19931
NASA-CP-2459-VOL-2	D 62	N87-19932
NASA-CP-2460	. p 52	N87-20665
NASA-CP-2462	p 5	N87-24410
NASA-CP-2463	. p 62	N87-23156
NASA-CP-2464	. p 72	N87-24247
NASA-CP-2465	. p 32	N87-21141
NASA-CP-2466	. р73	N87-24266
NASA-CP-2467-PT-1	p 23	N87-22702
NASA-CP-2467-PT-2	. p 23	N87-22729
NASA-CP-2468	p 55	N87-22341
NASA-CP-2469	p 72	N87-23313
NASA-CP-2470	. p 43	N87-29858
NASA-CP-2471	. р 26	. N87-22766
NASA-CP-2472	p 42	N87-27204
NASA-CP-2473	p 25	N88-10084
NASA-CP-24/4	. p 1	N87-25267
NASA-CP-2475	. p 50	N99 12520
NASA-0P-2470	. p 24	N87 20422
NASA-OF-2477	. po	N87-26521
NASA-CP-2470	n 60	N88-13852
NASA-CP-2480	n 60	N88-12251
NASA-CP-2481	p 43	N87-27231
NASA-CP-2483	p 79	N88-11609
NASA-CP-2484	p 50	N87-29914
NASA-CP-2485	D 58	N88-17168
NASA-CP-2486	p 35	N88-11021
NASA-CP-2487-PT-1	p 10	N90-12503
NASA-CP-2487-PT-2	p 10	N90-12519
NASA-CP-2487-PT-3	p 10	N90-12539
NASA-CP-2488-VOL-1	. p 43	N88-13609
NASA-CP-2488-VOL-2	p 44	N88-18948
NASA-CP-2489	.ρ74	N89-15810
NASA-CP-2490	p 25	N88-10870
NASA-CP-2491	. p 61	N88-17206
NASA-CP-2492-Pt-1	р 62	N88-16360
NASA-CP-2492-P1-2	р 63	N88-24188
NASA-OP-2493	. p 45	N09-1/290
NASA-OF-2494	p / 2	N88-16625
NASA-CP-2495-VOL-2	ο 1	N88-16632
NASA-CP-2495-VOL-3	01	N88-16650
NASA-CP-2496	0 58	N88-15354
NASA-CP-2497	D 47	N88-13774
NASA-CP-2498	p 56	N88-25105
NASA-CP-2499	p 59	N88-14623
NASA-CP-2500	p 22	N88-17691
NASA-CP-2502	p 2	N88-23715
NASA-CP-2503	p 32	N88-23895
NASA-CP-2504	p 60	N88-23370
NASA-CP-2505	р 44	N88-20652
NASA-CP-2506	р 44	N88-21468
NASA-CP-3002	p 72	N88-25390
NASA-CP-3003-VOL-1	p 44	N88-23226
NASA-CP-3003-VOL-2	D 44	N88-22382
	-	

NASA-CP-3003-	VOL-3	р	44	N88-22408
NASA-CP-3004		р	74	N89-13330
NASA-CP-3005		P	78	N88-26279
NASA-CP-3006	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Ρ	37	N89-11153
NASA-CP-3007		p	63 22	N88-29351 N89-10902
NASA-CP-3009		p	64	N88-30330
NASA-CP-3011		P	23	N89-15934
NASA-CP-3012-	VOL-1	ρ	27	N90-28611
NASA-CP-3013		P	63	N89-15549
NASA-CP-3015		2	25	N89-12582
NASA-CP-3016		p	22	N89-11760
NASA-CP-3017		ρ	72	N89-14188
NASA-CP-3019		P	61	N89-19817
NASA-CP-3020-	VOL-1-PT-2	P	9	N89-20925 N89-20942
NASA-CP-3021		p	73	N89-15790
NASA-CP-3022-	PT-1	р	9	N89-19234
NASA-CP-3022-	PT•2	P	9	N89-19247
NASA-CP-3025		9	63	N89-22332
NASA-CP-3026		p	41	N89-22891
NASA-CP-3027		р	9	N89-23415
NASA-CP-3028		Ρ	2	N89-19230
NASA-CP-3029		P	50	N89-22940 N89-24704
NASA-CP-3031	PT-1	þ	15	N89-25146
NASA-CP-3031-	PT-2	p	15	N89-25173
NASA-CP-3031	PT-3	Ρ	15	N89-25201
NASA-CP-3032		P	46	N89-23892
NASA-CP-3033 NASA-CP-3034		P	46	N89-20578 N89-24638
NASA-CP-3034	PT-2	6	46	N89-24654
NASA-CP-3035	PT-1	p	27	N89-23528
NASA-CP-3035	PT-2	p	28	N89-23547
NASA-CP-3037		P	27	N90-10140
NASA-CP-3039	•••••••••••••••••••••••••••••••••••	P	24	N90-10805
NASA-CP-3041		þ	26	N90-21062
NASA-CP-3042		p	53	N90-11405
NASA-CP-3043		P	38	N89-26184
NASA-CP-3044	•••••	p	53 62	N89-25540
NASA-CP-3046		p	77	N90-19940
NASA-CP-3047	•••••	p	38	N90-10385
NASA-CP-3048		P	73	N90-18329
NASA-CP-3050		P	23	N90-17647
NASA-CP-3053		p	40	N90-16204
NASA-CP-3056		р	50	N90-20454
NASA-CP-3057	••••••	P	63	N90-14789
NASA-CP-3058	······	P	62	N90-18957
NASA-CP-3061		þ	73	N90-27562
NASA-CP-3062		p	47	N90-22079
NASA-CP-3063		Р	2	N90-20921
NASA-CP-3067	······	P	67	N90-24853
NASA-CP-3068		P	47	N90-22294
NASA-CP-3070		p	78	N90-25030
NASA-CP-3071		p	77	N90-23294
NASA-CP-3072	•••••••	P	50	N90-27140
NASA-CP-3073	••••••	P	28	N90-2/2/5
NASA-CP-3075		5	48	N90-22824
NASA-CP-3076		p	40	N90-24586
NASA-CP-3077		Ρ	78	N90-26744
NASA-CP-30/9		P	17	N90-28224
14404-01-0001-		۲	.,	100 20000
NASA-RP-1082	(04)	р	34	N89-17060
NASA-RP-1108	/2	Ρ	34	N88-14226
NASA-RP-1124	••••••	p	28	N88-19994
NASA-RP-1130		P	21	N87-10876
NASA-RP-1159		p	17	N87-29533
NASA-RP-1168	••••••	P	14	N87-29499
NASA-RP-1170	······	P	3	N87-17665
NASA-RP-1171	•••••••	P	33	N87-11916
NASA-RP-1173		ч р	51	N87-17417
		5	51	N87-20663

### NASA-RP-1176

#### REPORT NUMBER INDEX

	. D /3	N87-14219	NASA-SP-494	p 78	N89-28474	NASA-TP-2610	. p 41	N87-18095
NASA-RP-1177	D 28	N87-29612	NASA-SP-495	p 18	N89-12565	NASA-TP-2611	. p 31	N87-18666
NASA-RP-1178-REV	. p 73	N87-25906	NASA-SP-496	D 74	N89-12513	NASA-TP-2612	. p 28	N87-10184
NASA-RP-1179	. p 9	N89-17579	NASA-SP-497	p 74	N89-11657	NASA-TP-2613	.р36	N87-18783
NASA-RP-1180	.ρ79	N87-25984	NASA-SP-498	p 48	N89-26274	NASA-TP-2614	.p7	N88-19412
NASA-RP-1181	. p 36	N87-26309	NASA-SP-501	p 15	N90-12589	NASA-TP-2615	.p2	N88-19407
NASA-RP-1182	. р73	N87-22573	NASA-SP-502	p 77	N90-18344	NASA-TP-2616	.p.16	N87-10864
NASA-RP-1183	. p 55	N87-20701	NASA-SP-503	p 54	N90-22850	NASA-TP-2618	.p.15	N88-21153
NASA-RP-1184-VOL-2	. р 57	N89-20587	NASA-SP-504	p 24	N90-25160	NASA-TP-2619	. р7	N88-18567
NASA-RP-1184	. p. 56	N88-27677	NASA-SP-6101(02)	p 69	N90-13277	NASA-TP-2621	. p 68	N87-10764
NASA-RP-1185	. p 55	N87-26489	NASA-SP-6101	p 69	N89-12479	NASA-TP-2623	. рЗ	N87-10039
NASA-RP-1186	.р55	N88-10451	NASA-SP-7011(293)	p 59	N87-18976	NASA-TP-2624	. p 3	N87-12541
NASA-RP-1187	.p14	N88-19467	NASA-SP-7011(302)	p 59	N87-30041	NASA-TP-2625	. p 51	N87-13022
NASA-RP-1188	.р.49	N87-28955	NASA-SP-7011(306)	p 60	N88-18180	NASA-TP-2626	. p 41	N87-10391
NASA-RP-1189	. p 21	N87-29544	NASA-SP-7011(315)	p 60	N88-30281	NASA-1P-2627	. p 43	N87-13789
NASA-RP-1190-VOL-1	. p 76	N89-14194	NASA-SP-7011(327)	p 60	N89-29951	NASA-1P-2628	. p 3	N87-11702
NASA-RP-1190-VOL-2	. p 76	N89-14197	NASA-SP-7011(340)	p 60	N90-28963	NASA-TP-2029	. p 33	N07-12/10
NASA-RP-1190-VOL-3	. p 77	N89-14201	NASA-SP-7037(217)	p 1	N87-2/613	NASA-1P-2030	. p oo	N07-14120
NASA-RP-1190-VOL-4	. p 76	N89-14196	NASA-SP-7037(222)	p 7	N88-19416	NASA-TP-2031	. µ 33	N87-13264
NASA-HP-1190-VOL-5	. p /6	N89-14195	NASA-SP-7037(229)	p 2	N88-2/163	NASA-TP-2002	. p 00	N97-10843
NASA-HP-1190-VOL-6	. p /o	N89-14198	NASA-SP-7037(242)	p2	N89-29304	NASA-TP-2005	. p 3	N87-17971
NASA-RP-1190-VOL-7	. p /o	N09-14199	NASA-SP-7037(255)	p 2	N90-2/040	NASA-TP-2637	n 55	N87-12086
NASA-NP-1194	. µ 55	N98-13015	NASA-SP-7038(04)	p 72	N07-70420	NASA-TP-2638	. p 37	N88-14299
NASA-NP-1195	. p co	NO9 15729	NASA-SP-7039(31)-Sect-1	p 70	NO7-23023	NASA-TP-2639	0.31	N87-12680
NASA PD 1106 PT 2 ED 2	. p 73	N00-13/30	NASA-SP-7039(31)-SEC1-2	p 70	N00 15700	NASA-TP-2641	0.36	N87-18782
NASA DD 1107	. p /4	NPP 20772	NASA-SP-7039(32)-SECT-1	p 70	N00-10/32	NASA-TP-2642	n 3	N87-15184
NASA-RP-1197	. µ 50	NOD-20772	NASA-SP-7039(32)-SEC1-2	p 70	NOD-10311	NASA-TP-2643	n 48	N87-22281
NASA-RP-1199	n 49	N88-17096	NASA-SD-703035)-3EU1-1	p 71	N89.20264	NASA-TP-2644	. p 13	N87-16815
NASA-RP-1200	0.52	N88-25094	NASA-SD-7039/271-SECT-1	0.71	N90-25698	NASA-TP-2645	. p 68	N87-14998
NASA-RP-1201	D 40	N88-20714	NASA-SP-7030/371-9E01-1	D 71	N90-26700	NASA-TP-2646	. p 21	N87-18576
NASA-RP-1202	. µ 49 n 76	N88-29652	NASA-SP-7041(54)	D / 1	N87-27315	NASA-TP-2648	p 16	N87-13438
NASA-RP-1203	D 76	N88-28843	NASA-SP-7041(57)	D 40	N88-23314	NASA-TP-2649	. p 13	N87-17690
NASA-RP-1204	p 52	N89-10420	NASA-SP.7041(62)	D 50	N89-29825	NASA-TP-2650	. p 66	N87-18399
NASA-RP-1205	. p 74	N88-30545	NASA-SP-7041(62)	n 50	N90-12091	NASA-TP-2652	. p 19	N87-16849
NASA-RP-1206	. p 56	N89-14634	NASA-SP-7046(17)	n 22	N87-29576	NASA-TP-2653	. p 3	N87-15174
NASA-BP-1207	. p 19	N89-15123	NASA-SP-7046(18)	n 22	N88-27214	NASA-TP-2654	. p 64	N87-14054
NASA-RP-1208	n 52	N88-29233	NASA-SP-7046(10)	n 26	N89-26037	NASA-TP-2655	. p 36	N87-18034
NASA-RP-1209	p 52	N88-29234	NASA-SP-7046(20)	n 26	N90-26056	NASA-TP-2656	. p.4	N87-20233
NASA-RP-1210	D 56	N89-14648	NASA-SP-7053-SUPPL-3	n 70	N87-27557	NASA-TP-2657	. p 37	N87-29795
NASA-BP-1211	. p 79	N89-30151	NASA-SP-7056(04)	n 25	N87-26073	NASA-TP-2658	. p4	N87-18537
NASA-RP-1212	D 42	N90-19593	NASA-SP-7056(05)	p 25	N88-13382	NASA-TP-2659	. p.68	N87-17487
NASA-RP-1213	. p 78	N89-16709	NASA-SP-7056(07)	n 25	N89-18522	NASA-TP-2660-PT-1	. p 5	N87-23597
NASA-RP-1214	. p 56	N89-17374	NASA-SP-7056(10)	0 26	N90-25171	NASA-TP-2660-PT-2	. p 5	N87-25301
NASA-RP-1215	. p 48	N89-22152	NASA-SP-7063(01)	p 70	N87-30218	NASA-TP-2661	. p 43	N87-20567
NASA-RP-1216	D 75	N90-18342	NASA-SP-7063(02)	n 70	N88-22830	NASA-TP-2663	. p 27	N87-18611
NASA-RP-1217	. p 75	N90-10807	NASA-SP-7063(03)	p 71	N90-10782	NASA-TP-2664	. p 34	N87-17991
NASA-RP-1218	. p 67	N89-25673	NASA-SP-7064-SUPPL-3	p 71	N90-22438	NASA-TP-2665	. p 34	N87-17990
NASA-RP-1219	. p 40	N90-10412	NASA-SP-7064-VOL-3	D 70	N89-13301	NASA-TP-2666	. p 21	N87-17717
NASA-RP-1220	p 15	N89-23448	NASA-SP-7065	p 71	N89-15779	NASA-TP-2667	р4	N87-19351
NASA-RP-1221	. p 53	N89-26304	NASA-SP-7069	p 74	N88-24553	NASA-TP-2668	р 29	N87-18629
NASA-RP-1222	. p 40	N90-21351	NASA-SP-7078	p 69	N90-12385	NASA-TP-2669	р 16	N87-19393
NASA-RP-1223	. p 48	N89-26275	NASA-SP-7079	p 71	N90-27548	NASA-TP-2670		NO7 20471
							p 72	1107-20471
NASA-RP-1224-VOL-1	. p 53	N90-13893	NASA-SP-7084	p 71	N90-26710	NASA-TP-2671	р72 р31	N87-20423
NASA-RP-1224-VOL-1	.р53 .р53	N90-13893 N89-28969	NASA-SP-7084	р71 р69	N90-26710 N87-20833	NASA-TP-2671 NASA-TP-2672	р72 р31 р64	N87-20423 N87-23202
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225	р 53 р 53 р 57	N90-13893 N89-28969 N89-28983	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22)	р71 р69 р69	N90-26710 N87-20833 N88-21867	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674	р72 р31 р64 р30	N87-20423 N87-23202 N87-20407
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226	р 53 р 53 р 57 р 39	N90-13893 N89-28969 N89-28983 N89-26209	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(22) NASA-SP-7500(23)	p 71 p 69 p 69 p 69	N90-26710 N87-20833 N88-21867 N89-26766	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675	p 72 p 31 p 64 p 30 p 35	N87-20423 N87-23202 N87-20407 N87-22923
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227	р 53 р 53 р 57 р 57 р 39 р 57	N90-13893 N89-28969 N89-28983 N89-26209 N89-27302	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24)	p 71 p 69 p 69 p 69 p 69	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676	р72 р31 р64 р30 р35 р4	N87-20423 N87-23202 N87-20407 N87-22923 N87-20238
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228	p 53 p 53 p 57 p 39 p 39 p 57 p 42	N90-13893 N89-28969 N89-28983 N89-26209 N89-27302 N90-18740	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(23)	p 71 p 69 p 69 p 69 p 69	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676 NASA-TP-2677	p 72 p 31 p 64 p 30 p 35 p 4 p 30	N87-20423 N87-20423 N87-23202 N87-20407 N87-22923 N87-20238 N87-18644
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228	p 53 p 53 p 57 p 39 p 57 p 42 p 77	N90-13893 N89-28969 N89-28983 N89-26209 N89-27302 N90-18740 N89-27612	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24) NASA-TP-1063	p 71 p 69 p 69 p 69 p 69 p 69	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676 NASA-TP-2677 NASA-TP-2677 NASA-TP-2678	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 30 p 14	N87-20423 N87-23202 N87-20407 N87-22923 N87-20238 N87-20238 N87-18644 N87-20990
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1229 NASA-RP-1230	p 53 p 53 p 57 p 39 p 57 p 57 p 42 p 77 p 57	N90-13893 N89-28969 N89-28963 N89-26963 N89-26209 N89-27302 N90-18740 N89-27612 N90-14741	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24) NASA-SP-7500(24) NASA-TP-1063 NASA-TP-1648	p 71 p 69 p 69 p 69 p 69 p 69 p 28 p 28 p 36	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676 NASA-TP-2676 NASA-TP-2677 NASA-TP-2678 NASA-TP-2679	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 14 p 66	N87-20471 N87-20423 N87-23202 N87-20407 N87-22923 N87-20238 N87-20238 N87-18644 N87-20798
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230	p 53 p 53 p 57 p 39 p 57 p 42 p 57 p 57 p 57	N90-13893 N89-28963 N89-28963 N89-26963 N89-27302 N90-18740 N89-27612 N90-18741 N90-17233	NASA-SP-7084	p 71 p 69 p 69 p 69 p 69 p 69 p 28 p 28 p 36 p 36	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-24639	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676 NASA-TP-2676 NASA-TP-2677 NASA-TP-2678 NASA-TP-2678 NASA-TP-2679 NASA-TP-2680	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 14 p 66 p 21	N87-20471 N87-20423 N87-23202 N87-22407 N87-22923 N87-20238 N87-18644 N87-20990 N87-20798 N87-20295
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1232	p 53 p 53 p 57 p 39 p 57 p 57 p 57 p 57 p 57	N90-13893 N89-28969 N89-26983 N89-26209 N89-27302 N90-18740 N90-27612 N90-14741 N90-17233 N90-27064	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24) NASA-SP-7500(24) NASA-TP-1863 NASA-TP-1848 NASA-TP-1849 NASA-TP-1849 NASA-TP-1850	p 71 p 69 p 69 p 69 p 69 p 69 p 28 p 36 p 36 p 36	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-24639 N87-23936	NASA-TP-2671 NASA-TP-2672 NASA-TP-2674 NASA-TP-2675 NASA-TP-2676 NASA-TP-2677 NASA-TP-2677 NASA-TP-2678 NASA-TP-2679 NASA-TP-2680 NASA-TP-2680 NASA-TP-2680		N87-20423 N87-23202 N87-20407 N87-22923 N87-20238 N87-18644 N87-20990 N87-20798 N87-20295 N88-17686
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1	p 53 p 53 p 57 p 39 p 57 p 57 p 57 p 57 p 38 p 54	N90-13893 N89-28969 N89-28963 N89-26209 N89-27302 N90-18740 N89-27612 N90-18741 N90-17233 N90-27064 N90-20562	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24) NASA-SP-7500(24) NASA-TP-1063 NASA-TP-1848 NASA-TP-1849 NASA-TP-1850 NASA-TP-2222	p 71 p 69 p 69 p 69 p 69 p 28 p 36 p 36 p 36 p 19	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-24639 N87-2936 N87-10871	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2681		N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20295 N87-20798 N87-20798 N87-20798 N87-20595 N88-17686 N87-20526
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1232 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2		N90-13893 N89-28969 N89-28963 N89-26209 N89-27302 N90-18740 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563	NASA-SP-7084 NASA-SP-7500(21) NASA-SP-7500(22) NASA-SP-7500(23) NASA-SP-7500(24) NASA-SP-7500(24) NASA-TP-1063 NASA-TP-1848 NASA-TP-1849 NASA-TP-1849 NASA-TP-1850 NASA-TP-2222 NASA-TP-2223	p 71 p 69 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 36 p 19 p 19	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-18570	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2682           NASA-TP-2683	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 14 p 66 p 21 p 39 p 39 p 5	N87-20423 N87-20423 N87-20407 N87-22923 N87-22923 N87-18644 N87-20598 N87-20598 N87-20598 N88-17686 N87-20514 N87-22626
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231-VOL-1 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4	p 53 p 53 p 57 p 39 p 57 p 57 p 57 p 57 p 57 p 57 p 54 p 54 p 54	N90-13893 N89-28963 N89-28983 N89-26209 N89-27302 N90-18740 N90-18740 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-2222           NASA-TP-2224	p 71 p 69 p 69 p 69 p 69 p 69 p 28 p 36 p 36 p 36 p 36 p 19 p 19 p 19	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-24639 N87-23936 N87-23936 N87-10871 N87-18570 N87-10103 N87-10103	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2683           NASA-TP-2683           NASA-TP-2684	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 4 p 30 p 14 p 66 p 21 p 39 p 5 p 5 p 5 p 5 p 3 p 3	N87-20423 N87-20407 N87-20407 N87-20207 N87-20238 N87-20238 N87-20298 N87-20798 N87-20798 N87-20295 N88-768 N87-20514 N87-22626 N87-15959 N87-15959
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1232 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1234 NASA-RP-1234 NASA-RP-1234 NASA-RP-1234	p 53 p 53 p 57 p 39 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 54 p 54 p 54	N90-13893 N89-28963 N89-28963 N89-26209 N89-27302 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20564 N90-20564 N90-17227 N90-17227 N90-17227	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1863           NASA-TP-1848           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2224           NASA-TP-2234           NASA-TP-2234           NASA-TP-2224           NASA-TP-2236	p 71 p 69 p 69 p 69 p 69 p 28 p 36 p 36 p 36 p 36 p 19 p 19 p 19 p 19	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23936 N87-23936 N87-10871 N87-10870 N87-10103 N87-10103 N87-10102 N87-10042 N872	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2683           NASA-TP-2684           NASA-TP-2684           NASA-TP-2685	p 72 p 31 p 64 p 30 p 35 p 4 p 30 p 4 p 30 p 4 p 30 p 4 p 21 p 39 p 5 p 14 p 39 p 5 p 14 p 5 p 5	N87-20423 N87-20407 N87-22923 N87-22923 N87-20238 N87-20238 N87-18644 N87-20598 N87-20598 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-25441
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235	p 53 p 53 p 57 p 39 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 54 p 54 p 53 p 53	N90-13893 N89-28963 N89-28963 N89-26209 N89-27302 N90-18740 N89-27612 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-17227 N90-21037	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1848           NASA-TP-1849           NASA-TP-2222           NASA-TP-2223           NASA-TP-2224           NASA-TP-2336           NASA-TP-2336           NASA-TP-2350	p 71 p 69 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 19 p 19 p 19 p 3 p 19	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23926 N87-23936 N87-10871 N87-10571 N87-10042 N87-10042 N87-10042 N87-10870 N87-10870	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2682           NASA-TP-2683           NASA-TP-2683           NASA-TP-2684           NASA-TP-2685           NASA-TP-2688           NASA-TP-2688	p 72 p 31 p 30 p 30 p 35 p 30 p 30 p 30 p 4 p 30 p 21 p 39 p 36 p 36	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-18644 N87-20990 N87-20798 N87-1686 N87-20514 N87-20514 N87-22626 N87-17000 N87-224161
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1230 NASA-RP-1230 NASA-RP-1237 NASA-RP-1230 NASA-RP-1200 NASA-RP-1200 NASA-RP-1200 NASA-RP-1200 N	p 53 p 53 p 57 p 357 p 357 p 357 p 42 p 577 p 577 p 57 p 584 p 544 p 54 p 54 p 54 p 54 p 54 p 54	N90-13893 N89-28963 N89-28963 N89-26209 N89-27302 N90-18740 N90-18740 N90-17233 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-20564 N90-21037 N90-23837 N90-23837	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2224           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 36 p 19 p 19 p 3 p 19 p 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-18570 N87-10047 N87-10042 N87-10042 N87-10870 N87-10838 N87-10838 N87-10820	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2682           NASA-TP-2683           NASA-TP-2684           NASA-TP-2688           NASA-TP-2688           NASA-TP-2689           NASA-TP-2689	p 72 p 31 p 30 p 30 p 35 p 4 p 35 p 4 p 14 p 21 p 21 p 5 p 13 p 36 p 36 p 36 p 5 p 5	N87-20423 N87-20423 N87-20407 N87-20203 N87-20238 N87-20238 N87-20298 N87-20299 N87-20295 N88-17686 N87-20514 N87-226261 N87-2554 N87-15959 N87-17000 N87-22441 N87-20390
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1237 NASA-RP-1238 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1237 NASA-RP-1238 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 N	p 53 p 53 p 53 p 57 p 39 p 39 p 39 p 42 p 57 p 57 p 57 p 58 p 54 p 54	N90-13893 N89-28969 N89-28969 N89-26209 N89-27302 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-17227 N90-21037 N90-23837 N90-23837 N90-27607 N90-27607	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1863           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2236           NASA-TP-2350           NASA-TP-2352           NASA-TP-2352           NASA-TP-2354	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 36 p 36 p 19 p 19 p 3 p 19 p 3 p 3 p 3 p 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23936 N87-23936 N87-10871 N87-10103 N87-10103 N87-1003 N87-10838 N87-10838 N87-10839 N87-10839 N87-10844	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689	p 72 p 31 p 30 p 30 p 35 p 4 p 30 p 4 p 66 p 21 p 30 p 5 p 36 p 36 p 36 p 65 p 66	N87-20423 N87-20407 N87-20407 N87-20207 N87-20238 N87-20238 N87-20238 N87-20295 N87-20295 N87-20295 N87-20295 N87-202514 N87-202514 N87-202514 N87-202514 N87-20380 N87-20380 N87-20380
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1226 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1236 NASA-RP-1238 NASA-RP	p 53 p 53 p 53 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 58 p 54 p 54 p 54 p 54 p 53 p 54 p 54 p 53 p 54 p 54 p 54 p 54 p 53 p 57 p 54 p 54 p 54 p 54 p 54 p 54 p 54 p 54 p 54	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-21037 N90-22607 N90-28063 N90-28063 N90-28063	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2224           NASA-TP-2236           NASA-TP-2352           NASA-TP-2354           NASA-TP-2364           NASA-TP-2364           NASA-TP-2352	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 36 p 19 p 3 p 19 p 3 p 3 p 3 p 3 3 p 3 3 p 3 3 2 3 7	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10042 N87-10838 N87-10839 N87-10839 N87-10839 N87-10841 N87-2728	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2686         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691	p 72 p 64 p 64 p 30 p 35 p 35 p 30 p 35 p 30 p 30 p 35 p 30 p 55 p 66 p 26 p 26 p 26 p 22 p 26 p 26 p 22	N87-20423 N87-20423 N87-32022 N87-20407 N87-22923 N87-20293 N87-20290 N87-20295 N88-17686 N87-20295 N87-17686 N87-22514 N87-22652 N87-17000 N87-224161 N87-20384 N87-23652
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1235 NASA-RP-1236 NASA-RP-1236 NASA-RP-1238 NASA-RP-1240 NASA-RP-1231 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1240 NASA-RP	p 53 p 53 p 53 p 39 p 39 p 57 p 57 p 57 p 57 p 57 p 57 p 53 p 54 p 54 p 54 p 54 p 54 p 54 p 54 p 54 p 54 p 55 p 55 p 55 p 55 p 55 p 57 p 54 p 54 p 54 p 55 p 55	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27664 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-23837 N90-238063 N90-23780 N90-23780	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2236           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2354           NASA-TP-2375-PT-2           NASA-TP-2384	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 19 p 19 p 3 p 3 p 3 p 3 p 3 p 3 7 3 7	N90-26710 N87-20833 N88-21867 N99-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10042 N87-10042 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N872	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2691         NASA-TP-2692		N87-20423 N87-20423 N87-20407 N87-20203 N87-20238 N87-20238 N87-20298 N87-20299 N87-20299 N87-20299 N87-20295 N88-17686 N87-20514 N87-22626 N87-15959 N87-15959 N87-17000 N87-224161 N87-22380 N87-23614 N87-23614 N87-23620
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1238 NASA-RP-1240 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241	p 53 p 53 p 53 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 57 p 54 p 54 p 54 p 54 p 54 p 58 p 58 p 58 p 58 p 58 p 58 p 58 p 57 p 54 p 54 p 58 p 58 p 58 p 58 p 58 p 58 p 57 p 57	N90-13893 N89-28969 N89-28963 N89-26209 N89-27302 N90-18740 N90-14741 N90-17471 N90-7064 N90-20562 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-23837 N90-28063 N90-28063 N90-28929 N90-289470	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1803           NASA-TP-1848           NASA-TP-1850           NASA-TP-1850           NASA-TP-1822           NASA-TP-2222           NASA-TP-2223           NASA-TP-2230           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2352           NASA-TP-2354           NASA-TP-2384           NASA-TP-2392           NASA-TP-2392	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 19 p 19 p 3 p 3 p 37 p 37 p 14	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-1003 N87-10838 N87-10838 N87-10838 N87-10839 N87-10841 N87-29778 N87-2966	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2692         NASA-TP-2693	p 72 p 64 p 64 p 30 p 30 p 30 p 30 p 30 p 30 p 21 p 21 p 36 p 37 p 36 p 36 p 37 p 37 p 36 p 37 p	N87-20423 N87-20423 N87-20407 N87-20203 N87-20238 N87-20238 N87-20298 N87-20298 N87-20298 N87-20298 N87-202514 N87-20514 N87-20514 N87-20514 N87-22614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-20473
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1232 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1235 NASA-RP-1235 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1240 NASA-RP-1242 NASA-RP-1242 NASA-RP-1245	. p 53 . p 53 . p 53 . p 57 . p 39 . p 57 . p 57 . p 57 . p 57 . p 57 . p 57 . p 54 . p 54 . p 58 . p 50 . p 54 . p 53 . p 54 . p 54 . p 53 . p 54 . p 53 . p 57 . p 54 . p 54 . p 58 . p 57 . p 57 . p 57 . p 54 . p 55 . p 56 . p 57 . p 57 . p 57 . p 57 . p 54 . p 55 . p 58 . p 56 . p 56	N90-13893 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-2364 N90-27607 N90-2807 N90-2807 N90-28929 N90-28470	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1850           NASA-TP-1850           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2222           NASA-TP-2350           NASA-TP-2356           NASA-TP-2364           NASA-TP-2364           NASA-TP-2384           NASA-TP-2392           NASA-TP-2392           NASA-TP-2395	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 19 p 19 p 3 p 3 p 37 p 14 p 4	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10103 N87-10838 N87-10838 N87-10839 N87-10859 N87-10	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694		N87-20423 N87-20423 N87-32022 N87-20407 N87-22923 N87-20238 N87-18644 N87-20990 N87-20798 N87-1686 N87-20514 N87-22652 N87-17000 N87-22441 N87-224161 N87-224161 N87-23662 N87-2044 N87-23662 N87-16902 N88-14629
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1235 NASA-RP-1236 NASA-RP-1240 NASA-RP-1241 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245	- p 53 - p 53 - p 53 - p 53 - p 57 - p 57	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-18740 N89-27612 N90-17233 N90-27664 N90-20562 N90-20563 N90-20564 N90-20564 N90-27607 N90-23837 N90-237607 N90-23803 N90-23780 N90-28929 N90-28470	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1848           NASA-TP-1849           NASA-TP-2222           NASA-TP-2223           NASA-TP-2224           NASA-TP-2236           NASA-TP-2350           NASA-TP-2352           NASA-TP-2354           NASA-TP-2364           NASA-TP-2395           NASA-TP-2395           NASA-TP-2395           NASA-TP-2395           NASA-TP-2491           NASA-TP-2401	P 71 P 69 P 69 P 69 P 28 P 36 P 36 P 36 P 19 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 3	N90-26710 N87-20833 N88-21867 N99-26766 N90-24174 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10042 N87-10839 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17693 N87-20966 N87-17668	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2691         NASA-TP-2692         NASA-TP-2694         NASA-TP-2694         NASA-TP-2695		N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20298 N87-20298 N87-20298 N87-20298 N87-20514 N87-20514 N87-22544 N87-225441 N87-2360 N87-2360 N87-23614 N87-2362 N87-23642 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16902 N87-16588
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1240 NASA-RP-1241 NASA-RP-1242 NASA-RP-1242 NASA-RP-1245 N	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 57 - p 57 - p 57 - p 57 - p 54 - p 54 - p 54 - p 53 - p 54 - p 53 - p 54 - p 53 - p 54 - p 55 - p 54 - p 55 - p 54 - p 55 - p 55 - p 55 - p 54 - p 55 - p 55 - p 54 - p 55 - p 55 - p 54 - p 55 - p 55 - p 55 - p 54 - p 55 - p 55	N90-13893 N89-28963 N89-28963 N89-26209 N89-27302 N90-18740 N89-27612 N90-14741 N90-17233 N90-27064 N90-20563 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-23837 N90-28837 N90-288063 N90-23780 N90-23780 N90-28470 N81-71594 N81-71592	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1849           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2230           NASA-TP-2350           NASA-TP-2350           NASA-TP-2350           NASA-TP-2352           NASA-TP-2354           NASA-TP-2392           NASA-TP-2395           NASA-TP-2401           NASA-TP-2418           NASA-TP-2401	P 71 P 69 P 69 P 69 P 28 P 36 P 36 P 36 P 36 P 19 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10030 N87-10838 N87-10839 N87-10841 N87-29778 N87-17693 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2688         NASA-TP-2689         NASA-TP-2691         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697		N87-20423 N87-20423 N87-20407 N87-20203 N87-20238 N87-20238 N87-20298 N87-20298 N87-20295 N88-17686 N87-20514 N87-20514 N87-20514 N87-20380 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-2362 N87-18588 N88-23988
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1229 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1242 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-223(05) NASA-SP-23(05) NASA-SP	- p 53 - p 53 - p 57 - p 39 - p 57 - p 58 - p 54 - p 55 - p 54 - p 55 - p 55 - p 57 - p 54 -	N90-13893 N89-28969 N89-28969 N89-28969 N89-27302 N90-18740 N89-27612 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-21037 N90-23837 N90-22607 N90-28063 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2233         NASA-TP-2236         NASA-TP-2364         NASA-TP-2364         NASA-TP-2392         NASA-TP-2392         NASA-TP-2394         NASA-TP-2395         NASA-TP-2418         NASA-TP-2402	P 71 P 69 P 69 P 69 P 36 P 36 P 36 P 36 P 36 P 39 P 30 P 37 P 4 P 4 P 4 P 4 P 4 P 3 P 3 P 3 P 37 P 4 P 4 P 4 P 4 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10103 N87-10838 N87-10838 N87-10839 N87-10838 N87-10838 N87-10839 N87-10841 N87-20966 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2688         NASA-TP-2688         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697		N87-20423 N87-20423 N87-20407 N87-2923 N87-20238 N87-20238 N87-20290 N87-20295 N88-17686 N87-20295 N87-17686 N87-20255 N87-17000 N87-22441 N87-224161 N87-20380 N87-224161 N87-20544 N87-23662 N87-16902 N88-14629 N87-18588 N88-23988 N87-22235
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1232 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1236 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1240 NASA-RP-1241 NASA-RP-1242 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-223(05) NASA-SP-2301 NASA-SP-230	- p 53 - p 53 - p 53 - p 57 - p 39 - p 57 - p 57 - p 57 - p 57 - p 57 - p 57 - p 58 - p 58 - p 54 - p 55 - p 54 - p 75 - p 54 - p 75 - p 54 - p 75 - p 54 - p 75 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-23603 N90-23803 N90-237607 N90-23805 N90-237607 N90-23805 N90-237607 N90-237607 N90-23805 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1848           NASA-TP-1848           NASA-TP-1850           NASA-TP-2222           NASA-TP-2224           NASA-TP-2236           NASA-TP-2352           NASA-TP-2354           NASA-TP-2394           NASA-TP-2395           NASA-TP-2418           NASA-TP-2482           NASA-TP-2462           NASA-TP-2462           NASA-TP-2462           NASA-TP-2462           NASA-TP-2462           NASA-TP-2462	P 71 p 669 p 669 p 69 p 366 p 366 p 199 p 37 p 37 p 4 p 4 p 4 p 2 p 8 p 7 p 7 p 7 p 7 p 7 p 7 p 7 p 7	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10870 N87-10839 N87-10839 N87-10839 N87-10839 N87-10839 N87-10839 N87-10839 N87-17683 N87-17669 N87-17673 N87-23735	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699		N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-18644 N87-20990 N87-20798 N87-1686 N87-1686 N87-1000 N87-20514 N87-2168 N87-17000 N87-22441 N87-22411 N87-23662 N87-20474 N87-16902 N87-16902 N87-16902 N87-1698 N87-22474 N87-1698 N87-22474 N87-16902 N87-1698 N87-22448 N87-22255 N87-20448
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1227 NASA-RP-1228 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1240 NASA-RP-1240 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-224(05) NASA-SP-224(05) NASA-SP-2012-VOL-1 NASA-SP-4012-VOL-1	- p 53 - p 53 - p 57 - p 39 - p 57 - p 54 - p 56 -	N90-13893 N89-28969 N89-28969 N89-27302 N90-18740 N89-27612 N90-14741 N90-17233 N90-27064 N90-20562 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-20564 N90-23837 N90-23837 N90-23837 N90-2380 N90-23780 N90-23780 N90-23780 N90-238470 N81-71594 N81-71	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1849           NASA-TP-1848           NASA-TP-1850           NASA-TP-1850           NASA-TP-1850           NASA-TP-2223           NASA-TP-2224           NASA-TP-2236           NASA-TP-2350           NASA-TP-2352           NASA-TP-2352           NASA-TP-2354           NASA-TP-2392           NASA-TP-2392           NASA-TP-2401           NASA-TP-2402           NASA-TP-2452           NASA-TP-2452           NASA-TP-2452           NASA-TP-2452           NASA-TP-2451           NASA-TP-2452           NASA-TP-2451           NASA-TP-2452	p 71 p 69 p 69 p 69 p 69 p 36 p 36 p 36 p 36 p 36 p 19 p 19 p 3 p 3 p 3 p 3 p 3 p 3 p 4 p 4 p 4 p 4 p 2 g 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-10103 N87-10870 N87-10830 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-23735 N88-23735 N87-21873	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \ 05 \\ \dots \ p \ 65 \ 05 \\ \dots \ p \ 65 \ 05 \ 05 \ 05 \ 05 \ 05 \ 05 \ 05$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20298 N87-20298 N87-20298 N87-20298 N87-20298 N87-20295 N87-15959 N87-15959 N87-15959 N87-15959 N87-224161 N87-22360 N87-22414 N87-23614 N87-23614 N87-23614 N87-2368 N87-23614 N87-16902 N87-16558 N87-22938 N87-22938 N87-22938 N87-20448 N87-21855
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1236 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1245 NASA-RP	- p 53 - p 53 - p 57 - p 39 - p 57 - p 58 - p 54 - p 54 - p 54 - p 58 - p 58 - p 54 - p 54 - p 55 - p 54 - p 55 - p 54 - p 55 - p 54 - p 55 - p 55 - p 55 - p 57 - p 54 - p 56 -	N90-13893 N89-28963 N89-28983 N89-26209 N89-27302 N90-18740 N99-27612 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-21037 N90-28063 N90-27607 N90-28063 N90-28063 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-7554 N88-25428 N88-25429 N88-25429 N88-25430	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2230           NASA-TP-2230           NASA-TP-2306           NASA-TP-2350           NASA-TP-2350           NASA-TP-2364           NASA-TP-2352           NASA-TP-2364           NASA-TP-2392           NASA-TP-2392           NASA-TP-2392           NASA-TP-2392           NASA-TP-2392           NASA-TP-2395           NASA-TP-2401           NASA-TP-2418           NASA-TP-2418           NASA-TP-2420           NASA-TP-2418           NASA-TP-2418           NASA-TP-2420           NASA-TP-2418           NASA-TP-2517           NASA-TP-2523           NASA-TP-2517           NASA-TP-2517	P 71 P 69 P 69 P 69 P 69 P 36 P 36 P 19 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-1003 N87-1003 N87-10042 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-23735 N87-15183 N87-15183	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2688         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2699         NASA-TP-2700	$\begin{array}{c} \dots p \ 72 \\ \dots p \ 72 \\ \dots p \ 64 \\ \dots p \ 64 \\ \dots p \ 30 \\ \dots p \ 30 \\ \dots p \ 4 \\ \dots p \ 30 \\ \dots p \ 4 \\ \dots p \ 30 \\ \dots p \ 4 \\ \dots p \ 21 \\ \dots p \ 21 \\ \dots p \ 5 \\ \dots p \ 21 \\ \dots p \ 5 \\ \dots p \ 21 \\ \dots p \ 23 \\ \dots p \ 21 \\ \dots p \ 23 \\ \dots p \ 41 \\ \dots p \ 23 \\ \dots p \ 41 \\ \dots p \ 23 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 33 \\ \dots p \ 41 \\ \dots p \ 31 \ \dots p \ 31 \\ \dots p \ 31 \ \dots p \ 31 $	N87-20423 N87-20423 N87-20407 N87-2923 N87-20230 N87-20293 N87-20290 N87-20295 N87-18644 N87-20295 N87-20295 N87-16960 N87-12950 N87-17000 N87-22441 N87-224161 N87-20380 N87-224161 N87-20544 N87-2662 N87-18558 N87-22454
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1226 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1234 NASA-RP-1235 NASA-RP-1235 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1238 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1245 NASA-RP-1245 NASA-SP-2010 NASA-SP-2010 NASA-SP-4012-VOL-1 NASA-SP-4012-VOL-2 NASA-SP-4012-VOL-2 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-402-2 NASA-SP-4012-VOL-3 NASA-SP-402-2 NASA-SP-	- p 53 - p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 58 - p 54 - p 56 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-23780 N90-23780 N90-28063 N90-23780 N90-28929 N90-28470 N81-71594 N81-71	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2224         NASA-TP-2366         NASA-TP-2350         NASA-TP-2354         NASA-TP-2354         NASA-TP-2354         NASA-TP-2395         NASA-TP-2395         NASA-TP-2418         NASA-TP-2462         NASA-TP-2453         NASA-TP-2462         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2462         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523	P 71 P 69 P 69 P 69 P 28 69 P 36 P 19 P 36 P 36 P 19 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 4 P 4 P 4 P 4 P 2 P 8 P 8 P 8 P 9 P 9 P 9 P 9 P 9 P 9 P 9 P 9	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10103 N87-10870 N87-10838 N87-10839 N87-10839 N87-10839 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-10833 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-23735 N87-15183 N87-14918 N87-14918 N88-20257	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2698         NASA-TP-2699		N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20290 N87-20295 N88-17686 N87-20295 N87-20295 N87-20295 N87-20295 N87-20295 N87-20295 N87-20295 N87-17000 N87-22441 N87-24161 N87-20380 N87-20380 N87-20340 N87-21850 N87-220448 N87-22054 N87-22654 N87-22654 N87-22654 N87-22654
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1227 NASA-RP-1229 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-224(05) NASA-SP-2012-VOL-2 NASA-SP-4012-VOL-2 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4023 NASA-SP-4024	- p 53 - p 53 - p 53 - p 53 - p 53 - p 54 - p 57 - p 54 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-23837 N90-27607 N90-23837 N90-23760 N90-23829 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-85474 N81-71592 N77-85474 N88-25429 N88-25429 N88-25429 N88-25420 N88-25928 N89-25	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1663           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2223           NASA-TP-2224           NASA-TP-2224           NASA-TP-2224           NASA-TP-2236           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2354           NASA-TP-2354           NASA-TP-2354           NASA-TP-2354           NASA-TP-2354           NASA-TP-2354           NASA-TP-2401           NASA-TP-2401           NASA-TP-2401           NASA-TP-2402           NASA-TP-2402           NASA-TP-2402           NASA-TP-2402           NASA-TP-2403           NASA-TP-2404           NASA-TP-2405           NASA-TP-2405           NASA-TP-2500 <tr< td=""><td>P 71 P 69 P 69 P 69 P 28 P 36 P 36 P 36 P 19 P 3 P 3 P 37 P 14 P 4 P 4 P 4 P 4 P 4 P 4 P 5 P 69 P 69 P 7 P 7 P 7 P 7 P 7 P 7 P 7 P 7</td><td>N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10103 N87-10830 N87-10830 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14917 N88-2027 N87-14918 N88-2027</td><td>NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699</td><td><math display="block">\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \\ \dots \ p \ 64 \ \dots \ 64 \ </math></td><td>N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20298 N87-20298 N87-20298 N87-20298 N87-20298 N87-20514 N87-20514 N87-20514 N87-2055 N87-2055 N87-20474 N87-20380 N87-20474 N87-20474 N87-20474 N87-22698 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22655</td></tr<>	P 71 P 69 P 69 P 69 P 28 P 36 P 36 P 36 P 19 P 3 P 3 P 37 P 14 P 4 P 4 P 4 P 4 P 4 P 4 P 5 P 69 P 69 P 7 P 7 P 7 P 7 P 7 P 7 P 7 P 7	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10103 N87-10830 N87-10830 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14917 N88-2027 N87-14918 N88-2027	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \\ \dots \ p \ 64 \ \dots \ 64 \ $	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20298 N87-20298 N87-20298 N87-20298 N87-20298 N87-20514 N87-20514 N87-20514 N87-2055 N87-2055 N87-20474 N87-20380 N87-20474 N87-20474 N87-20474 N87-22698 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22498 N87-22655
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-2010_VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4024 NASA-SP-4025	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 39 - p 57 - p 54 - p 54 - p 58 - p 54 - p 58 - p 54 - p 58 - p 54 - p 58 - p 880 - p 881 - p 8	N90-13893 N89-28963 N89-28963 N89-26209 N89-27302 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-28063 N90-27607 N90-28063 N90-27607 N90-28063 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71592 N77-854774 N88-25429 N88-25430 N88-14062 N90-25928 N90-25928 N90-25928	NASA-SP-7084           NASA-SP-7500(21)           NASA-SP-7500(22)           NASA-SP-7500(23)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-SP-7500(24)           NASA-TP-1848           NASA-TP-1849           NASA-TP-1850           NASA-TP-1850           NASA-TP-2222           NASA-TP-2223           NASA-TP-2224           NASA-TP-2236           NASA-TP-2350           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2352           NASA-TP-2395           NASA-TP-2395           NASA-TP-2395           NASA-TP-2401           NASA-TP-2418           NASA-TP-2517           NASA-TP-2517           NASA-TP-2517           NASA-TP-2517           NASA-TP-2517           NASA-TP-2516           NASA-TP-2556           NASA-TP-2566	p 71 p 669 p 699 p 69 p 769 p 77 p 77 p 77 p 77 p 77 p 77 p 77 p 7	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-1003 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-1767 N88-23735 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-15183 N87-14918 N88-20257 N88-14112 N87-29469	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2700         NASA-TP-2700         NASA-TP-2705	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \ \dots \$	N87-20423 N87-20423 N87-32022 N87-20407 N87-22923 N87-20293 N87-20295 N87-18644 N87-20295 N87-2055 N87-17686 N87-20514 N87-20514 N87-20514 N87-22441 N87-22441 N87-22441 N87-224161 N87-20544 N87-1858 N87-22358
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1234 NASA-RP-1235 NASA-RP-1235 NASA-RP-1236 NASA-RP-1238 NASA-RP-1238 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1242 NASA-RP-1245 NASA-SP-2005 NASA-SP-4012-VOL-1 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4021	- p 53 - p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 58 - p 54 - p 56 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-21037 N90-23780 N90-28063 N90-28063 N90-28070 N90-28083 N90-28470 N81-71594 N81-71	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2222         NASA-TP-2230         NASA-TP-2336         NASA-TP-2350         NASA-TP-2352         NASA-TP-2364         NASA-TP-2354         NASA-TP-2364         NASA-TP-2384         NASA-TP-2395         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2418         NASA-TP-2418         NASA-TP-2428         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2523         NASA-TP-2526         NASA-TP-2556         NASA-TP-2556	P 71 P 69 P 69 P 69 P 73 P 73 P 74 P 75 P 75	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10042 N87-10838 N87-10838 N87-10838 N87-10839 N87-10838 N87-10839 N87-10838 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-15183 N87-15	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2698         NASA-TP-2700         NASA-TP-2700         NASA-TP-2701         NASA-TP-2705         NASA-TP-2706	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \ 05 \\ \dots \ p \ 65 \ 05 \\ \dots \ p \ 65 \ 05 \ 05 \ 05 \ 05 \ 05 \ 05 \ 05$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20290 N87-20295 N88-17686 N87-20295 N87-20295 N87-20295 N87-20295 N87-20295 N87-20295 N87-17000 N87-22441 N87-2181 N87-24161 N87-20380 N87-20474 N87-18588 N88-23988 N87-20448 N87-21873 N87-20448 N87-21873 N87-20555 N87-20586 N87-23586 N87-23586
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1227 NASA-RP-1229 NASA-RP-1230 NASA-RP-1230 NASA-RP-1230 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-4 NASA-RP-1233-VOL-4 NASA-RP-1233-VOL-4 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1245 NASA-RP-1245 NASA-RP-1245 NASA-SP-2012-VOL-2 NASA-SP-2012-VOL-2 NASA-SP-4012-VOL-2 NASA-SP-4012-VOL-2 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025	- p 53 - p 53 - p 53 - p 53 - p 53 - p 53 - p 54 - p 57 - p 54 - p 57 - p 54 - p 57 - p 54 - p 57 - p 54 - p 54 - p 57 - p 54 - p 54 - p 57 - p 54 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-18740 N89-27612 N90-17233 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-20564 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-238470 N81-71594 N81-71594 N81-71592 N77-85474 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25928 N89-25928 N89-25946 N87-24390	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1663         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2224         NASA-TP-2223         NASA-TP-2236         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2354         NASA-TP-2384         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2401         NASA-TP-2401         NASA-TP-2402         NASA-TP-2403         NASA-TP-2404         NASA-TP-2405         NASA-TP-2405         NASA-TP-2406         NASA-TP-2507         NASA-TP-2508         NASA-TP-2509         NASA-TP-2506         NASA-TP-2567         NASA-TP-2567	P 71 P 669 P 69 P 28 P 28 P 366 P 366 P 366 P 366 P 37 P 3 P 3 P 3 P 3 P 3 P 3 P 3 P 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10870 N87-10103 N87-10830 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14918 N88-20257 N88-14918 N88-20257 N88-14918 N87-29469 N87-11963 N87-11963 N87-11963 N87-11963	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2697         NASA-TP-2698         NASA-TP-2697         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2700         NASA-TP-2700         NASA-TP-2706	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \\ \dots \ p \ 65 \\ \dots \ p \ 64 \ \dots \ 64 \ 0$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20293 N87-20298 N87-20298 N87-20298 N87-20298 N87-20298 N87-20514 N87-20514 N87-20514 N87-20514 N87-22541 N87-225474 N87-2360 N87-22447 N87-22698 N87-22447 N87-2255 N87-22447
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1236 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1245 NASA-SP-2305 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4014 NASA-SP-4025 NASA-SP-4015 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4015 NASA-SP-4015 NASA-SP-4015 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4026	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 54 - p 54 - p 54 - p 58 - p 54 - p 58 - p 54 - p 58 - p 54 - p 58 - p 54 - p 54 - p 58 - p 88 - p 88	N90-13893 N89-28969 N89-28963 N89-26209 N89-27302 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-28063 N90-27607 N90-28063 N90-27607 N90-28063 N90-2780 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-854774 N88-25429 N88-25429 N88-25430 N88-14062 N90-25928 N89-25938 N89-25946 N89-25930 N89-25946 N89-25930 N89-25946 N89-25930 N89-25930 N89-25946 N89-25930 N89-25940 N89-25930 N89-25940 N89-25930 N89-25940 N89-25930 N89-25940 N89-25	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2223         NASA-TP-2224         NASA-TP-2236         NASA-TP-2350         NASA-TP-2352         NASA-TP-2354         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2401         NASA-TP-24517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2516         NASA-TP-2517         NASA-TP-2518         NASA-TP-2517         NASA-TP-2518         NASA-TP-2546         NASA-TP-2546         NASA-TP-2566         NASA-TP-2583         NASA-TP-2583         NASA-TP-2583         NASA-TP-2584	P 71 p 669 p 699 p 28 69 p 366 p 19 p 3 p 3 p 37 p 4 p 4 p 4 p 29 p 64 p 4 p 4 p 29 p 65 p 7 p 4 p 4 p 7 p 69 p 7 p 69 p 9 p 7 p 69 p 9 p 7 p 69 p 9 p 7 p 7 p 7 p 7 p 7 p 7 p 7 p 7	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17668 N87-17668 N87-17668 N87-17669 N87-15183 N87-11963 N87-17479 N88-10765	NASA-TP-2671           NASA-TP-2672           NASA-TP-2674           NASA-TP-2675           NASA-TP-2676           NASA-TP-2677           NASA-TP-2678           NASA-TP-2679           NASA-TP-2679           NASA-TP-2680           NASA-TP-2681           NASA-TP-2682           NASA-TP-2683           NASA-TP-2684           NASA-TP-2689           NASA-TP-2689           NASA-TP-2690           NASA-TP-2691           NASA-TP-2692           NASA-TP-2693           NASA-TP-2693           NASA-TP-2693           NASA-TP-2696           NASA-TP-2697           NASA-TP-2698           NASA-TP-2699           NASA-TP-2700           NASA-TP-2701           NASA-TP-2705           NASA-TP-2706           NASA-TP-2708		N87-20423 N87-20423 N87-32022 N87-32923 N87-20230 N87-20293 N87-20295 N87-18644 N87-20295 N87-1686 N87-2055 N87-17686 N87-20514 N87-22644 N87-22644 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-2245 N87-2245 N87-2245 N87-22694 N87-21855 N87-22694 N87-21855 N87-23586 N87-22555 N87-23586 N87-22447
NASA-RP-1224-VOL-1         NASA-RP-1224-VOL-2         NASA-RP-1225         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1232         NASA-RP-1231         NASA-RP-1233-VOL-1         NASA-RP-1233-VOL-2         NASA-RP-1233-VOL-2         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1237         NASA-RP-1238         NASA-RP-1237         NASA-RP-1238         NASA-RP-1240         NASA-RP-1241         NASA-RP-1245         NASA-RP-1245         NASA-SP-301         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-1         NASA-SP-4023         NASA-SP-4024         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4035         NASA-SP-4046	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 58 - p 54 - p 58 - p 54 - p 56 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20563 N90-20564 N90-21037 N90-2364 N90-25047 N90-28063 N90-27607 N90-28063 N90-28929 N90-28470 N81-71594 N81-715	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2230         NASA-TP-2230         NASA-TP-2336         NASA-TP-2350         NASA-TP-2354         NASA-TP-2364         NASA-TP-2352         NASA-TP-2364         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2418         NASA-TP-2517         NASA-TP-2517         NASA-TP-2510         NASA-TP-2511         NASA-TP-2512         NASA-TP-2513         NASA-TP-2556         NASA-TP-2556         NASA-TP-2588         NASA-TP-2588	P 71 P 69 P 69 P 28 69 P 36 P 19 P 3 P 37 P 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10042 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17668 N87-17668 N87-17668 N87-17669 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-17669 N88-23735 N87-15183 N87-15183 N87-15183 N87-15183 N87-15193 N87-29469 N87-11963 N87-17479 N88-10765 N87-17471	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2691         NASA-TP-2691         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2700         NASA-TP-2701         NASA-TP-2702         NASA-TP-2703         NASA-TP-2704         NASA-TP-2707         NASA-TP-2708         NASA-TP-2709         NASA-TP-2709	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 64 \\ \dots \ p \ 30 \\ \dots \ p \ 44 \\ \dots \ p \ 30 \\ \dots \ p \ 44 \\ \dots \ p \ 30 \\ \dots \ p \ 44 \\ \dots \ p \ 30 \\ \dots \ p \ 44 \\ \dots \ p \ 30 \\ \dots \ p \ 44 \\ \dots \ p \ 30 \\ \dots \ p \ 50 \ \dots \ p \ 50 \ \dots \ p \ 50 \ 10 \\ \dots \ 10 \ 10 \ 10 \ 10 \ 10 \ 10 \ 10 \ $	N87-20423 N87-20423 N87-20407 N87-22923 N87-202923 N87-202923 N87-20290 N87-20295 N87-18644 N87-20295 N87-1686 N87-15959 N87-17000 N87-22441 N87-22616 N87-20380 N87-20380 N87-20380 N87-20474 N87-20380 N87-20474 N87-20568
NASA-RP-1224-VOL-1         NASA-RP-1226         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1230         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1233-VOL-1         NASA-RP-1233-VOL-2         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1238         NASA-RP-1238         NASA-RP-1240         NASA-RP-1241         NASA-RP-1242         NASA-RP-1242         NASA-RP-1242         NASA-RP-1245         NASA-RP-1245         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4023         NASA-SP-4024         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025 <td< td=""><td>P 53 P 53 P 53 P 57 P 57 P 57 P 57 P 57 P 57 P 57 P 57</td><td>N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-21037 N90-23837 N90-27607 N90-23837 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23829 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-85474 N81-71592 N81-71592 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25928 N89-25928 N89-25926 N87-24390 N89-26805 N87-19322 N87-18139</td><td>NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1663         NASA-TP-1849         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2224         NASA-TP-2224         NASA-TP-2224         NASA-TP-2230         NASA-TP-2232         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2354         NASA-TP-2384         NASA-TP-2401         NASA-TP-2401         NASA-TP-2418         NASA-TP-2420         NASA-TP-2530         NASA-TP-2530         NASA-TP-2546         NASA-TP-25567</td></td<> <td>р 71 р 669 р 69 р 28 69 р 36 р 36 р 36 р 36 р 37 р 37 р 4 р 4 р 4 р 4 р 4 р 4 р 4 р 4</td> <td>N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10820 N87-10838 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14918 N88-20257 N88-14918 N87-14918 N87-29469 N87-11963 N87-11963 N87-11972 N88-10765 N87-13731 N88-8955</td> <td>NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2698         NASA-TP-2698         NASA-TP-2700         NASA-TP-2701         NASA-TP-2705         NASA-TP-2706         NASA-TP-2708         NASA-TP-2709         NASA-TP-2709         NASA-TP-2701</td> <td><math display="block">\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \\ \dots \ p \ 65 \\ \dots \ p \ 64 \ \dots \ 64</math></td> <td>N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20298 N87-20798 N87-20798 N87-20598 N87-20514 N87-20514 N87-2056 N87-2056 N87-2056 N87-2056 N87-20474 N87-22647 N87-22647 N87-22568 N87-20568</td>	P 53 P 53 P 53 P 57 P 57 P 57 P 57 P 57 P 57 P 57 P 57	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-21037 N90-23837 N90-27607 N90-23837 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23780 N90-23829 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-85474 N81-71592 N81-71592 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25429 N88-25928 N89-25928 N89-25926 N87-24390 N89-26805 N87-19322 N87-18139	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1663         NASA-TP-1849         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2224         NASA-TP-2224         NASA-TP-2224         NASA-TP-2230         NASA-TP-2232         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2352         NASA-TP-2354         NASA-TP-2384         NASA-TP-2401         NASA-TP-2401         NASA-TP-2418         NASA-TP-2420         NASA-TP-2530         NASA-TP-2530         NASA-TP-2546         NASA-TP-25567	р 71 р 669 р 69 р 28 69 р 36 р 36 р 36 р 36 р 37 р 37 р 4 р 4 р 4 р 4 р 4 р 4 р 4 р 4	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10820 N87-10838 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14918 N88-20257 N88-14918 N87-14918 N87-29469 N87-11963 N87-11963 N87-11972 N88-10765 N87-13731 N88-8955	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2698         NASA-TP-2698         NASA-TP-2700         NASA-TP-2701         NASA-TP-2705         NASA-TP-2706         NASA-TP-2708         NASA-TP-2709         NASA-TP-2709         NASA-TP-2701	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \\ \dots \ p \ 65 \\ \dots \ p \ 65 \\ \dots \ p \ 64 \ \dots \ 64$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20298 N87-20798 N87-20798 N87-20598 N87-20514 N87-20514 N87-2056 N87-2056 N87-2056 N87-2056 N87-20474 N87-22647 N87-22647 N87-22568 N87-20568
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1242 NASA-SP-2305 NASA-SP-4012-VOL-3 NASA-SP-4055 NASA-SP-	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 54 - p 58 - p 58 - p 58 - p 58 - p 77 - p 54 - p 77 - p 54 - p 77 - p 54 - p 77 - p 54 - p 77 -	N90-13893 N89-28969 N89-28963 N89-26209 N89-27302 N90-18740 N90-14741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-28063 N90-27807 N90-28063 N90-27807 N90-28063 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-85474 N88-25429 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N89-25938 N89-25946 N87-24390 N89-25935	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2223         NASA-TP-2230         NASA-TP-2350         NASA-TP-2352         NASA-TP-2354         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2462         NASA-TP-24517         NASA-TP-2452         NASA-TP-2517         NASA-TP-2517         NASA-TP-2518         NASA-TP-2517         NASA-TP-2517         NASA-TP-2518         NASA-TP-2517         NASA-TP-2517         NASA-TP-2518         NASA-TP-2519         NASA-TP-2517         NASA-TP-2546         NASA-TP-2546         NASA-TP-2546         NASA-TP-2583         NASA-TP-2583         NASA-TP-	р 71 р 669 р 69 р 9 38 69 р 9 36 р 9 36 р 9 37 р 9 3 р 9 37 р 9 3 р 9 4 4 4 2 р 9 6 9 р 9 6 9 р 9 6 9 р 9 3 р 9 4 4 2 р 9 6 9 р 9 3 р 9 6 9 р 9 3 р 9 6 9 р 9 3 р 9 6 9 р 9 3 р 9 6 9 6 9 6 9 6 9 8 9 8 9 6 9 6 9 6 9 8 8 8 8 8 8 8 8 8 8 8 8 8	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-10103 N87-10042 N87-10838 N87-10838 N87-10839 N87-10839 N87-10839 N87-10838 N87-10830 N87-10830 N87-10841 N87-29778 N87-17669 N87-17668 N87-17668 N87-17668 N87-17668 N87-17668 N87-15183 N87-17479 N88-10765 N87-13731 N88-28895 N89-12114	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2693         NASA-TP-2693         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2700         NASA-TP-2701         NASA-TP-2701         NASA-TP-2701		N87-20423 N87-20423 N87-32022 N87-20407 N87-22923 N87-20293 N87-20295 N87-18644 N87-20295 N87-1686 N87-2055 N87-17686 N87-20514 N87-22644 N87-22644 N87-2054 N87-2054 N87-2054 N87-2054 N87-2054 N87-2054 N87-2055 N87-22694 N87-21855 N87-22694 N87-22586 N87-22447 N87-22447 N87-22244 N87-20566 N87-22443
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1225 NASA-RP-1226 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1240 NASA-RP-1240 NASA-RP-1240 NASA-RP-1241 NASA-RP-1241 NASA-RP-1241 NASA-RP-1245 NASA-SP-223(05) NASA-SP-2010-VOL-3 NASA-SP-4012-VOL-1 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4026 NASA-SP-406 NASA-SP-407 NASA-SP-408 NASA-SP-48	- p 53 - p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 54 - p 75 -	N90-13893 N89-28969 N89-28969 N89-28969 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20563 N90-20564 N90-21037 N90-21037 N90-23837 N90-21037 N90-28063 N90-27607 N90-28063 N90-28029 N90-280470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N88-25428 N88-25428 N88-25428 N88-25430 N88-14062 N90-25928 N88-25946 N87-24390 N89-26805 N87-19322 N87-18139 N88-19375	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2230         NASA-TP-2230         NASA-TP-2230         NASA-TP-2364         NASA-TP-2364         NASA-TP-2392         NASA-TP-2392         NASA-TP-2395         NASA-TP-2395         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2418         NASA-TP-2418         NASA-TP-2418         NASA-TP-2517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2517         NASA-TP-2516         NASA-TP-2523         NASA-TP-2546         NASA-TP-2588         NASA-TP-2588         NASA-TP-2594         NASA-TP-2594<	р 71 р 669 р 69 р 28 669 р 93 69 р 3 р 3 р 3 р 3 р 3 р 3 р 3 р 3	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-1002 N87-10103 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-14112 N87-29469 N87-11963 N87-17479 N88-10765 N87-17479 N88-10765 N87-17471 N88-28895 N89-12114 N87-18035	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2700         NASA-TP-2701         NASA-TP-2703         NASA-TP-2704         NASA-TP-2707         NASA-TP-2708         NASA-TP-2701         NASA-TP-2711         NASA-TP-2711	$\begin{array}{c} & & \rho \ 72 \\ & & \rho \ 72 \\ & & \rho \ 74 \\ & & \rho \ 74 \\ & & \rho \ 75 $	N87-20423 N87-20423 N87-20407 N87-22923 N87-202923 N87-202923 N87-20290 N87-20295 N87-18644 N87-20295 N87-1686 N87-15959 N87-17000 N87-22441 N87-22441 N87-22441 N87-20380 N87-23662 N87-18588 N87-22452 N87-2048 N87-2658 N87-2658 N87-22654 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-2058 N87-20543
NASA-RP-1224-VOL-1         NASA-RP-1226         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1232         NASA-RP-1231         NASA-RP-1232         NASA-RP-1233-VOL-1         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1238         NASA-RP-1240         NASA-RP-1241         NASA-RP-1242         NASA-RP-1242         NASA-RP-1245         NASA-RP-1245         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4023         NASA-SP-4024         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4305         NASA-SP-4406         NASA-	- p 53 - p 55 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-20564 N90-21037 N90-23780 N90-28063 N90-23780 N90-28063 N90-23780 N90-28929 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71592 N88-25428 N88-25429 N88-25429 N88-25429 N88-25928 N88-25928 N89-25928 N89-25928 N89-25926 N87-19322 N87-18139 N88-19375 N87-30235 N87-24870	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1643         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2224         NASA-TP-2223         NASA-TP-2224         NASA-TP-2236         NASA-TP-2350         NASA-TP-2352         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2384         NASA-TP-2401         NASA-TP-2401         NASA-TP-2401         NASA-TP-2402         NASA-TP-2503         NASA-TP-2504         NASA-TP-2505	р 71 р 669 р 69 р 28 669 р 9 36 р 9 36 р 9 36 р 9 36 р 9 37 р 9 3 р 9 4 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-1042 N87-10838 N87-10838 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-14918 N87-29469 N87-11963 N87-11963 N87-11963 N87-11963 N87-11963 N87-1197 N88-10765 N87-13731 N88-28955 N89-12114 N87-289459 N87-13731 N88-28955 N87-13731 N88-28955 N89-12114 N87-289459 N87-13731 N88-28955 N87-13731	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2698         NASA-TP-2698         NASA-TP-2700         NASA-TP-2701         NASA-TP-2703         NASA-TP-2704         NASA-TP-2705         NASA-TP-2708         NASA-TP-2709         NASA-TP-2711         NASA-TP-2712         NASA-TP-2714	$\begin{array}{c} \dots \ \ \rho \ \ 72 \\ \dots \ \ \rho \ \ 73 \\ \dots \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20298 N87-20798 N87-20798 N87-20798 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20300 N87-22441 N87-20300 N87-20300 N87-22441 N87-20555 N87-20448 N87-22555 N87-20448 N87-22555 N87-20448 N87-22555 N87-22694 N87-22568 N87-20566 N87-20566 N87-20566 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20543 N87-20547
NASA-RP-1224-VOL-1 NASA-RP-1224-VOL-2 NASA-RP-1226 NASA-RP-1227 NASA-RP-1227 NASA-RP-1227 NASA-RP-1228 NASA-RP-1229 NASA-RP-1230 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1231 NASA-RP-1233-VOL-1 NASA-RP-1233-VOL-2 NASA-RP-1233-VOL-2 NASA-RP-1235 NASA-RP-1235 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1237 NASA-RP-1238 NASA-RP-1241 NASA-RP-1241 NASA-RP-1242 NASA-RP-1242 NASA-RP-1242 NASA-SP-2305 NASA-SP-205 NASA-SP-4012-VOL-3 NASA-SP-4012-VOL-3 NASA-SP-4025 NASA-SP-4025 NASA-SP-4025 NASA-SP-4026 NASA-SP-4086 NASA-SP-487 NASA-SP-488 NASA-SP-489 NASA-SP-490	- p 53 - p 53 - p 53 - p 53 - p 53 - p 57 - p 54 - p 77 - p 75 - p 55 - p 55 - p 55 - p 55 - p 77 - p 75 - p 55 -	N90-13893 N89-28969 N89-28969 N89-27302 N90-18740 N90-174741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-28063 N90-27607 N90-28063 N90-27607 N90-28063 N90-2780 N90-28470 N81-71594 N81-71594 N81-71594 N81-71592 N77-854774 N88-25429 N88-25429 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N89-25946 N87-24390 N89-25946 N87-24390 N88-25805 N87-19322 N87-18139 N88-18054	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2224         NASA-TP-2230         NASA-TP-2350         NASA-TP-2350         NASA-TP-2350         NASA-TP-2350         NASA-TP-2350         NASA-TP-2350         NASA-TP-2351         NASA-TP-2384         NASA-TP-2392         NASA-TP-2394         NASA-TP-2395         NASA-TP-2401         NASA-TP-2462         NASA-TP-2530         NASA-TP-2530         NASA-TP-2546         NASA-TP-2556         NASA-TP-2566         NASA-TP-2588         NASA-TP-2588         NASA-TP-2593         NASA-TP-2593         NASA-TP-2593         NASA-TP-2593         NASA-TP-2596         NASA-TP-2597         NASA-TP-2596	р 71 р 669 р 69 р 9 28 669 р 9 36 р 9 36 р 9 36 р 9 37 р 9 3 р 9 4 4 4 2 19 р 9 8 9 6 9 6 9 6 9 6 9 6 9 6 9 6 9 6	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-1003 N87-1003 N87-10030 N87-10838 N87-10838 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-15183 N87-1765 N87-1765 N87-13731 N88-28955 N83-12114 N87-18035 N87-17699 N87-12581	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2688         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2709         NASA-TP-2700         NASA-TP-2701         NASA-TP-2705         NASA-TP-2706         NASA-TP-2707         NASA-TP-2708         NASA-TP-2709         NASA-TP-2701         NASA-TP-2703         NASA-TP-2704         NASA-TP-2705         NASA-TP-2706         NASA-TP-2707         NASA-TP-2708         NASA-TP-2709         NASA-TP-2711         NASA-TP-2711	$\begin{array}{c} & & \rho \ 72 \\ & & & & \rho \ 72 \\ & & & & \rho \ 72 \\ & & & & & \rho \ 72 \\ & & & & & & \rho \ 72 \\ & & & & & & \rho \ 72 \\ & & & & & & & \rho \ 72 \\ & & & & & & & & \rho \ 72 \\ & & & & & & & & & \rho \ 72 \\ & & & & & & & & & & & \rho \ 72 \\ & & & & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & & & \\ &$	N87-20423 N87-20423 N87-32022 N87-32923 N87-20293 N87-20293 N87-20295 N87-18644 N87-20295 N87-1686 N87-20516 N87-20514 N87-22644 N87-22644 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23614 N87-23618 N87-22441 N87-2463 N87-2255 N87-22694 N87-21855 N87-22694 N87-2255 N87-22694 N87-23586 N87-22447 N87-23244 N87-20566 N87-22443 N87-20566 N87-24433 N87-20947
NASA-RP-1224-VOL-1         NASA-RP-1224-VOL-2         NASA-RP-1225         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1232         NASA-RP-1233         NASA-RP-1233-VOL-1         NASA-RP-1233-VOL-2         NASA-RP-1233-VOL-2         NASA-RP-1233-VOL-4         NASA-RP-1233-VOL-4         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1237         NASA-RP-1238         NASA-RP-1240         NASA-RP-1241         NASA-RP-1241         NASA-RP-1245         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4012-VOL-3         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4026         NASA-SP-4026         NASA-SP-4025         NASA-SP-4030         NASA-SP-40406         NASA-SP-40406	- p 53 - p 57 - p 55 - p 55 - p 55 - p 55 - p 57 - p 54 - p 55 - p 56 -	N90-13893 N89-28969 N89-28969 N89-28969 N89-27302 N90-18740 N99-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20563 N90-20564 N90-21037 N90-21037 N90-23837 N90-21037 N90-22063 N90-22054 N90-22054 N90-22054 N90-22054 N90-28029 N90-28029 N90-280470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N88-25428 N88-25428 N88-25428 N88-25428 N88-25430 N88-14062 N90-25928 N89-26803 N89-26805 N87-18139 N88-19375 N87-30235 N87-24870 N88-18084 N89-10401	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2222         NASA-TP-2230         NASA-TP-2230         NASA-TP-2236         NASA-TP-2364         NASA-TP-2364         NASA-TP-2392         NASA-TP-2392         NASA-TP-2394         NASA-TP-2395         NASA-TP-2392         NASA-TP-2394         NASA-TP-2401         NASA-TP-2418         NASA-TP-2418         NASA-TP-2418         NASA-TP-2517         NASA-TP-2530         NASA-TP-2530         NASA-TP-2530         NASA-TP-2546         NASA-TP-2566         NASA-TP-2588         NASA-TP-2588         NASA-TP-2593         NASA-TP-2594         NASA-TP-2596         NASA-TP-2597         NASA-TP-2598         NASA-TP-2597<	р 71 р 669 р 69 р 9 28 669 р 9 369 р 9 369 р 9 369 р 9 369 р 9 369 р 9 37 р 9 4 4 р 9 4 4 2 9 7 2 4 2 9 3 6 9 3 6 9 7 4 4 9 7 2 4 4 9 7 2 4 4 9 7 2 4 4 9 3 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 9 3 7 7 4 4 9 9 3 4 9 7 7 4 4 9 9 3 4 9 7 7 4 4 9 9 3 8 9 3 7 7 4 4 9 9 3 6 6 6 9 9 9 3 7 7 4 4 9 9 3 7 7 4 4 9 9 3 6 6 6 9 9 9 3 8 9 9 9 3 8 9 9 9 3 8 9 9 9 3 8 9 9 9 3 8 9 9 9 3 8 9 9 9 9 3 8 9 9 9 3 9 9 9 3 8 9 9 9 3 9 9 9 3 9 9 9 3 9 3 9 9 9 3 9 9 9 3 9 9 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-1003 N87-1003 N87-1003 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-10838 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-1767 N88-20257 N88-14112 N87-29469 N87-11963 N87-17479 N88-10765 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-17479 N88-2035 N87-1251 N87-1251 N87-1251 N87-1251	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2682         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2699         NASA-TP-2700         NASA-TP-2701         NASA-TP-2703         NASA-TP-2704         NASA-TP-2707         NASA-TP-2708         NASA-TP-2709         NASA-TP-2711         NASA-TP-2711         NASA-TP-2711         NASA-TP-2713         NASA-TP-2714	$\begin{array}{c} & & \rho \ 72 \\ & & \rho \ 72 \\ & & \rho \ 74 \\ & & \rho \ 74 \\ & & \rho \ 74 \\ & & \rho \ 75 \\ & & \rho \ 74 \\ & & \rho \ 75 $	N87-20423 N87-20423 N87-20407 N87-22923 N87-202923 N87-202923 N87-20290 N87-20295 N87-18644 N87-20295 N87-1686 N87-15959 N87-17000 N87-22441 N87-22441 N87-22441 N87-22441 N87-20380 N87-23662 N87-18588 N87-23662 N87-20474 N87-18598 N87-22654 N87-2048 N87-22654 N87-22654 N87-20568 N87-22654 N87-20568 N87-22643 N87-27643 N87-27643 N87-27643 N87-27643 N87-21076
NASA-RP-1224-VOL-1         NASA-RP-1224-VOL-2         NASA-RP-1225         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1233-VOL-1         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1239         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1239         NASA-RP-1230         NASA-RP-1241         NASA-RP-1242         NASA-RP-1242         NASA-RP-1241         NASA-SP-2012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4012-VOL-1         NASA-SP-4025         NASA-SP-4024         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-SP-4025         NASA-	- p 53 - p 55 -	N90-13893 N89-28963 N89-28963 N89-28963 N89-27302 N90-18740 N89-27612 N90-17233 N90-27064 N90-20562 N90-20563 N90-20563 N90-20564 N90-20564 N90-21037 N90-23780 N90-27607 N90-28063 N90-27607 N90-28063 N90-27607 N90-280829 N90-28470 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-71594 N81-24390 N89-25928 N89-25936 N87-24390 N89-25946 N87-19322 N87-18139 N88-19375 N87-30235 N87-30235 N87-30235	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1849         NASA-TP-1849         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2224         NASA-TP-2236         NASA-TP-2350         NASA-TP-2350         NASA-TP-2384         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2392         NASA-TP-2393         NASA-TP-2567         NASA-TP-2593         NASA-TP-2596         NASA-TP-2596         NASA-TP-2598         NASA-TP-2598         NASA-TP-2598	р 71 р 669 р 69 р 9 28 669 р 9 36 р 9 36 р 9 36 р 9 37 р 9 3 р 9 4 9 6 9 8 9 9 9 9 7 4 4 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10870 N87-10103 N87-10820 N87-10838 N87-10839 N87-10839 N87-10839 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-1375 N87-11963 N87-14918 N87-29469 N87-11963 N87-12561 N87-12561 N87-12561 N87-12561 N87-12561 N87-12561 N87-12521	NASA-TP-2671         NASA-TP-2672         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2681         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2683         NASA-TP-2684         NASA-TP-2685         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2690         NASA-TP-2691         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2699         NASA-TP-2699         NASA-TP-2700         NASA-TP-2701         NASA-TP-2702         NASA-TP-2703         NASA-TP-2704         NASA-TP-2705         NASA-TP-2706         NASA-TP-2707         NASA-TP-2710         NASA-TP-2711         NASA-TP-2712         NASA-TP-2713         NASA-TP-2714	$\begin{array}{c} \ p \ 72 \\ \ p \ 72 \ \ p \ 72 \$	N87-20423 N87-20423 N87-20407 N87-22923 N87-20238 N87-20238 N87-20298 N87-20798 N87-20798 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-20514 N87-22641 N87-20380 N87-20380 N87-20380 N87-20380 N87-20380 N87-20380 N87-20380 N87-20474 N87-21853 N87-20548 N87-20548 N87-20548 N87-20548 N87-20548 N87-20548 N87-20548 N87-20548 N87-20547 N87-20548 N87-20548 N87-20548 N87-20548 N87-20547 N87-20548 N87-20548 N87-20548 N87-20548 N87-20547 N87-20548 N87-20548 N87-20548 N87-20547 N87-20548 N87-20548 N87-20548 N87-20547 N87-20
NASA-RP-1224-VOL-1         NASA-RP-1224-VOL-2         NASA-RP-1225         NASA-RP-1226         NASA-RP-1227         NASA-RP-1228         NASA-RP-1229         NASA-RP-1230         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1231         NASA-RP-1233-VOL-1         NASA-RP-1233-VOL-2         NASA-RP-1233-VOL-4         NASA-RP-1233-VOL-4         NASA-RP-1233-VOL-4         NASA-RP-1234         NASA-RP-1235         NASA-RP-1236         NASA-RP-1237         NASA-RP-1238         NASA-RP-1241         NASA-RP-1242         NASA-RP-1242         NASA-RP-1242         NASA-SP-301         NASA-SP-301         NASA-SP-4012-VOL-1         NASA-SP-4012-VOL-2         NASA-SP-4012-VOL-3         NASA-SP-4024         NASA-SP-4025         NASA-SP-4024         NASA-SP-4025         NASA-SP-4025         NASA-SP-487         NASA-SP-488         NASA-SP-488      <	- p 53 - p 55 -	N90-13893 N89-28969 N89-28969 N89-27302 N90-18740 N90-174741 N90-17233 N90-27064 N90-20562 N90-20563 N90-20564 N90-20564 N90-21037 N90-21037 N90-21037 N90-22607 N90-22607 N90-22607 N90-28063 N90-2780 N90-28070 N81-71594 N81-71594 N81-71592 N77-854774 N88-25429 N88-25429 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N90-25928 N88-25430 N88-14062 N89-25946 N87-24390 N89-25946 N87-19322 N87-18139 N88-18034 N87-30235 N87-30235 N87-30235 N87-24870 N88-11592 N87-24870 N88-2564	NASA-SP-7084         NASA-SP-7500(21)         NASA-SP-7500(22)         NASA-SP-7500(23)         NASA-SP-7500(23)         NASA-SP-7500(24)         NASA-SP-7500(24)         NASA-TP-1848         NASA-TP-1848         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-1850         NASA-TP-2223         NASA-TP-2224         NASA-TP-2230         NASA-TP-2350         NASA-TP-2350         NASA-TP-2352         NASA-TP-2352         NASA-TP-2354         NASA-TP-2384         NASA-TP-2395         NASA-TP-2395         NASA-TP-2395         NASA-TP-2395         NASA-TP-2401         NASA-TP-2482         NASA-TP-2530         NASA-TP-2542         NASA-TP-2546         NASA-TP-2546         NASA-TP-2546         NASA-TP-2583         NASA-TP-2586         NASA-TP-2586         NASA-TP-2596         NASA-TP-2597         NASA-TP-2596         NASA-TP-2596         NASA-TP-2597         NASA-TP-2601         NASA-TP-2601	р 71 р 669 р 69 р 9 3 р 69 р 9 3 р 9 4 9 6 9 6 9 6 9 6 9 6 9 6 9 6 9 6	N90-26710 N87-20833 N88-21867 N89-26766 N90-24174 N88-70029 N87-23921 N87-23921 N87-23936 N87-10871 N87-10871 N87-10103 N87-1003 N87-1003 N87-10030 N87-10838 N87-10838 N87-10839 N87-10839 N87-10841 N87-29778 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-17669 N87-15183 N87-15265 N87-12581 N87-12581 N87-12585	NASA-TP-2671         NASA-TP-2672         NASA-TP-2674         NASA-TP-2675         NASA-TP-2676         NASA-TP-2677         NASA-TP-2678         NASA-TP-2679         NASA-TP-2680         NASA-TP-2681         NASA-TP-2683         NASA-TP-2684         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2689         NASA-TP-2690         NASA-TP-2691         NASA-TP-2692         NASA-TP-2693         NASA-TP-2693         NASA-TP-2694         NASA-TP-2695         NASA-TP-2696         NASA-TP-2697         NASA-TP-2698         NASA-TP-2700         NASA-TP-2700         NASA-TP-2700         NASA-TP-2700         NASA-TP-2700         NASA-TP-2701         NASA-TP-2702         NASA-TP-2703         NASA-TP-2704         NASA-TP-2705         NASA-TP-2706         NASA-TP-2707         NASA-TP-2708         NASA-TP-2709         NASA-TP-2711         NASA-TP-2712         NASA-TP-2713	$\begin{array}{c} \dots \ p \ 72 \\ \dots \ p \ 72 \\ \dots \ p \ 64 \ \dots \ 64 \ \dots \ 64 \ 16 \ \dots \ 164 \ 164 \ \dots \ 164 \ \dots \ 164 \ 164 \ \dots \ $	N87-20423 N87-20423 N87-32022 N87-320407 N87-22923 N87-20293 N87-20295 N87-18644 N87-20295 N87-18648 N87-2055 N87-17686 N87-20514 N87-20514 N87-22641 N87-22441 N87-22441 N87-22441 N87-23662 N87-2054 N87-2054 N87-2054 N87-20555 N87-22694 N87-21855 N87-22694 N87-21855 N87-22694 N87-21855 N87-22694 N87-22447 N87-20555 N87-22447 N87-20566 N87-22443 N87-20566 N87-22443 N87-20547 N87-20547 N87-22443 N87-20547 N87-20547 N87-22443 N87-20547 N87-20547 N87-20547 N87-20547 N87-22443 N87-20547 N87-20547 N87-20547 N87-21076 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-20547 N87-22443 N87-20547 N87-22443 N87-20547 N87-23593 N87-24458

C-2

### REPORT NUMBER INDEX

### NASA-TP-3042

	~~		111 A . TO ADD .		NO0 05040			100 07004
NASA-1P-2/19	p 35	N87-21239	NASA-TP-2821	p 44	N88-25013	NASA-TP-2933	p 10	N89-2/034
NASA-1P-2720	p 26	N87-20381	NASA-12-2022	p 20	N09-13529	NASA TD 2025	p 30	N80.27214
NASA-IP-2/21	p 5	N87-24432	NASA-TP-2023	p 44	N88-28343	NASA-TP-2936	p 40	N89-27039
NASA-TP-2722	p 65	N87-26491	NASA-TP-2825	p 45	N88-26907	NASA-TP-2937	0 47	N90-18081
NASA-TP-2724	p 58	N87-20727	NASA-TP-2826	p 28	N88-25480	NASA-TP-2938	p 64	N90-10618
NASA-TP-2725	p 26	N87-25423	NASA-TP-2827	p 12	N88-26344	NASA-TP-2939	p 10	N90-10829
NASA-TP-2726	p 27	N87-25424	NASA-TP-2828	p 8	N89-10024	NASA-TP-2940	p 20	N90-10074
NASA-TP-2727	p 6	N87-26874	NASA-TP-2829	p 65	N89-12316	NASA-TP-2941	p 46	N89-29811
NASA-TP-2728	p 5	N87-26031	NASA-1P-2830	p 68	N88-30402	NASA-TP-2942	p /8	N90-10814
NASA-1P-2/29	р6 - 20	N87-26883	NASA-TP-2032	p 10	N88-28075	NASA-TP-2945	n 34	N90-11915
NASA-TP-2730	p 20	N87-23433	NASA-TP-2834	08	N88-29752	NASA-TP-2945	0 10	N90-10830
NASA-TP-2732	p 32	N87-22870	NASA-TP-2835	p 65	N89-16437	NASA-TP-2946	p 11	N90-15882
NASA-TP-2733	p 5	N87-23592	NASA-TP-2837	p 13	N89-11726	NASA-TP-2947	p 67	N90-10680
NASA-TP-2735	p 40	N87-27994	NASA-TP-2838	p 39	N89-13762	NASA-TP-2948	p 79	N90-12456
NASA-TP-2736	p 5	N87-26032	NASA-TP-2839	p 61	N89-18039	NASA-TP-2949	p 66	N90-12282
NASA-1P-2737	p 4	N87-21871	NASA-TP-2840	p 39	N88-28286	NASA-TP-2950	p 29	N90-26823
NASA-TP-2730	p 42	NB7-26041	NASA-TP-2843	0.66	N89-14053	NASA-TP-2952	0 47	N90-12042
NASA-TP-2740	p 19	N87-25331	NASA-TP-2844	p 19	N89-12569	NASA-TP-2953	p 38	N90-17042
NASA-TP-2741	p 68	N87-24977	NASA-TP-2845	p 45	N89-16183	NASA-TP-2954	р 38	N90-14493
NASA-TP-2742	p 6	N87-27626	NASA-TP-2846	p 8	N89-10844	NASA-TP-2955	p 31	N90-10248
NASA-TP-2743	p 34	N87-24590	NASA-TP-2847	p 33	N88-28177	NASA-TP-2956	p 11	N90-14185
NASA-TP-2744	p 30	N87-25463	NASA-1P-2040	p 8 n 45	N89-10020 N89-16170	NASA-TP-2957	p 09 o 17	N90-18393
NASA-1F-2745	p 32	N87-24303	NASA-TP-2851	D 25	N89-12580	NASA-TP-2961	6 11	N90-14187
NASA-TP-2747	D 19	N87-26922	NASA-TP-2853	p 63	N89-12237	NASA-TP-2962	p 20	N90-11757
NASA-TP-2748	p 66	N88-11450	NASA-TP-2855	p 37	N89-12822	NASA-TP-2963	p 58	N90-19718
NASA-TP-2749	p 21	N87-28570	NASA-TP-2856	p 9	N89-14213	NASA-TP-2965	p 20	N90-17639
NASA-TP-2751	p 27	N87-25425	NASA-TP-2857	p 20	N89-24327	NASA-TP-2966	p 16	N90-1/62/
NASA-TP-2752	p 35	N87-25532	NASA-TP-2000	p 9 n 13	N89-12043	NASA-TP-2968	p 31 n 68	N90-14890
NASA-TP-2755	030	N87-27024	NASA-TP-2862	D 27	N89-15979	NASA-TP-2969	p 11	N90-16710
NASA-TP-2756	p 49	N87-28162	NASA-TP-2863	p 30	N89-10996	NASA-TP-2970	p 29	N90-19302
NASA-TP-2757	p 32	N87-27067	NASA-TP-2865	p 39	N89-16139	NASA-TP-2971	p 16	N90-15100
NASA-TP-2758	p 37	N87-27161	NASA-TP-2866	p 65	N89-16415	NASA-TP-2972	p 33	N90-16968
NASA-TP-2759	p 65	N87-27474	NASA-TP-2867	p 38	N89-16115	NASA-TP-2973	p 11	N90-19193
NASA-TP-2760-REV	p 63	N90-11454	NASA-TP-2000	p 45	N89-195/9	NASA-TP-2974	p 03	N90-18385
NASA-TP 2761	p 56	N88-14572 N88-12454	NASA-TP-2870	D 13	N89-15901	NASA-TP-2976	p 24	N90-14256
NASA-TP-2763	p 6	N87-29462	NASA-TP-2872	p 45	N89-13814	NASA-TP-2977	p 42	N90-19595
NASA-TP-2764	p 65	N88-17380	NASA-TP-2873	p 45	N89-16196	NASA-TP-2978	p 13	N90-18378
NASA-TP-2765	p 27	N88-12538	NASA-TP-2874	p 20	N89-15930	NASA-TP-2979	p 80	N90-18357
NASA-TP-2766	p 67	N88-17440	NASA-TP-2875	p 34	N89-17767	NASA-TP-2980	p 17	N90-21004
NASA-TP-2767	p 25	N88-14115	NASA-12-2077	p 9	N89-10800	NASA-1P-2961	p 29	Ng0-19239
NASA-TP 2760	ρ65 56	N88-21/40	NASA-TP-2879	o 38	N90-11245	NASA-TP-2984	p 33	N90-28754
NASA-TP-2709	p 62	N88-20833	NASA-TP-2880	p 39	N89-15380	NASA-TP-2985	p 18	N90-27722
NASA-TP-2771	p 7	N88-17615	NASA-TP-2881	p 63	N89-13994	NASA-TP-2987	p 80	N90-25031
NASA-TP-2772	р6	N88-10009	NASA-TP-2883	p 31	N89-26091	NASA-TP-2988	p 38	N90-23670
NASA-TP-2773	p 14	N88-12480	NASA-TP-2884	p 45	N89-16192	NASA-TP-2989	p 11	N90-20946
NASA-TP-2774	p 27	N88-12543	NASA-1P-2885	p 20	N89-19309	NASA-1P-2990	p 11	N90-20046
NASA-TP-2776	p 15	N88-24623	NASA-TP-2887	n 80	N89-17562	NASA-TP-2992	n 40	N90-24585
NASA-TF-2777	p 32	N88-10978	NASA-TP-2890	09	N89-17568	NASA-TP-2994	p 33	N90-21210
NASA-TP-2779	p 44	N88-15263	NASA-TP-2891	p 35	N89-15337	NASA-TP-2996	p 22	N90-19242
NASA-TP-2780	р66	N88-13002	NASA-TP-2892	p 64	N89-17422	NASA-TP-2998	p 61	N90-21524
NASA-TP-2781	P 44	N88-21456	NASA-TP-2893	p 24	N89-18504	NASA-TP-2999	p 61	N90-22965
NASA-TP-2782	p 67	N88-17441	NASA-TP-2894	p 38	N89-19499 N89-19232	NASA-TP-3000	n 16	N90-25134
NASA-TP-2783	p 1/	N68-12487	NASA-TP-2896	045	N89-17892	NASA-TP-3002	0 12	N90-28503
NASA-TP-2785	0.67	N88-16510	NASA-TP-2897	p 45	N89-19580	NASA-TP-3005	p 18	N90-23403
NASA-TP-2786	p 39	N90-28806	NASA-TP-2898	p 20	N89-16845	NASA-TP-3007	p 29	N90-26077
NASA-TP-2787	p 32	N88-14212	NASA-TP-2899	p 35	N89-21169	NASA-TP-3008	p 12	N90-27649
NASA-TP-2788	p 35	N88-15146	NASA-TP-2900	p 38	N89-25409	NASA-12-3009	0 20	N90-24239
NASA-TP-2789	p 41	N88-17045	NASA-TP-2901	. p 41	N09-21243 N89-17650	NASA-TP-3012	p 23	N90-25206
NASA-TP-2791	n 30	N88-15846	NASA-TP-2903	p 63	N89-23181	NASA-TP-3013	p 33	N90-21219
NASA-TP-2792	p 30	N88-16830	NASA-TP-2904	p 35	N89-21171	NASA-TP-3016	p 26	N90-27738
NASA-TP-2793	p 23	N88-15820	NASA-TP-2905	p 40	N89-17855	NASA-TP-3017	p 42	N90-28066
NASA-TP-2795	p 41	N88-15224	NASA-TP-2906	p 29	N89-19385	NASA-TP-3018	p 39	N90-27066
NASA-TP-2796	p 7	N88-20264	NASA-1P-2907	ρ 20	N89-23468	NASA-TP-3019	p 24	N90-20036
NASA-TP-2797	p 7	N88-16662	NASA-TP-2908	p 20	N89-23469 N89-24507	NASA-TP-3021	n 68	N90-25673
NASA-TP-2798	0.7	N88-19420	NASA-TP-2910	p 31	N89-21103	NASA-TP-3024	p 47	N90-28859
NASA-TP-2800	D 8	N88-20280	NASA-TP-2911	p 41	N89-24607	NASA-TP-3027	p 67	N90-29166
NASA-TP-2801	p 44	N88-17095	NASA-TP-2912	ρ23	N89-28545	NASA-TP-3028	p 47	N90-25366
NASA-TP-2802	р 37	N88-18881	NASA-TP-2913	p 2	N89-22568	NASA-1P-3029	p 29	N90-25198
NASA-TP-2803	p 12	N88-21144	NASA-1P-2914	p 38	N89-2/110 N89-2/915	NASA-TP-3030	p 33 n 23	N90-20200
NASA-1P-2804	p 37	N88-125	NASA-TP-2916	p 04	N90-28099	NASA-TP-3036	p 11	N90-25938
NASA-TP-2806	יץ י ח7	N88-17614	NASA-TP-2917	p 16	N90-15902	NASA-TP-3037	p 60	N90-28965
NASA-TP-2807	p 32	N88-17869	NASA-TP-2918	p 10	N89-25117	NASA-TP-3039	p 35	N90-27965
NASA-TP-2808	p 15	N88-22031	NASA-TP-2919	p 10	N89-25118	NASA-TP-3042	p 29	N90-27876
NASA-TP-2809	р8	N88-21117	NASA-TP-2920	p 80	N89-25103			
NASA-TP-2810	p 15	N88-21157	NASA-TP-2921	p 46	N89-28034			
NASA-TP-2811	p 66	N89-14052 N88-18751	NASA-TP-2924	p 15	N89-27796			
NASA-TP-2012	n 8	N88-21118	NASA-TP-2925	p 20	N90-15112			
NASA-TP-2814	p 8	N88-23757	NASA-TP-2926	p 23	N90-13444			
NASA-TP-2815	p 19	N68-19475	NASA-TP-2928	p 31	N89-25332			
NASA-TP-2816	p 41	N88-18933	NASA-TP-2929	p 10	N89-26811			
NASA-TP-2817	p 65	N88-22653	NASA-TP-2930	p 67	N89-30022			
NASA-TP-2818	. p 8	N88-23/60	NACA TO 2020	p 46	1109-20200 NR0 25054			
NA3A-11-2020	. µз∪	103-19400	17407-11-2002	. p 10	100-20001			

1. Report No.	2. Government Access	sion No.	3. Recipient's Catalog I	vo.
A Title and Subtitle	L		5 Beport Date	
NASA Scientific and Technical Publicat	ions: A Catalog		February 1991	
of Special Publications, Reference Publications	lications,	F	6. Performing Organiza	tion Code
Conference Publications, and Technica	l Papers, 1987-1990		NTT	
7. Author(s)			8. Performing Organiza	tion Report No.
9. Performing Organization Name and Address			10. Work Unit No.	
Office of Management				
Scientific and Technical Information Div	vision		11. Contract or Grant N	0.
National Aeronautics and Space Admir	nistration			ļ
Washington, DC 20546			13. Type of Report and	Period Covered
12. Sponsoring Agency Name and Address			Special Publica	tion
National Aeronautics and Space Admi	nistration	ŀ	14 Sponsoring Agency	Code
Washington, DC 20546			it. opensoning rigency	Code
15. Supplementary Notes				
16 Abstract				
This catalog lists 783 citations of all N	IASA Special Public	ations, NASA Reference	e Publications, NAS	A Conference
Publications, and NASA Technical Pa	apers that were ent	ered into the NASA Sci	ientific and Technic	a) Information
of subject terms, personal authors, a	s 1987 through 199	<ol> <li>The entries are group mbers are provided</li> </ol>	ped by subject cate	gory. Indexes
	ind MAGA report nu	mbers are provided.		
				ļ
				(
			•	
		•		
17. Key Words (Suggested by Authors(s))		18. Distribution Statement		
Catalogs (Publications)		Unclassified - Unlin	nited	ł
		Subject Category 8	2	
19. Security Classif (of this report)	20. Security Classif //	of this page)	21. No of Pages	22. Price *
Unclassified	Unclassified		178	Free

ž

W

jų į

f I

}

)

,

Available from the National Technical Information Service, Springfield, Virginia 22161 as PR 890. National Aeronautics and Space Administration Code NTT

Washington, D.C. 20546-0001

Official Business Penalty for Private Use, \$300

NASA	× · · · · ·	Postage an Fees Pair National Aeronautics Space Administration NASA-451	
National Aeronautics and Space Administration	<b>1</b>	Official Business Penalty for Private Us	
Washington, D.C. SPEC 20546	IAL FOURTH CLASS I BOOK	MAIL	
L1 001 SP-70	63-0591041È	35090569A	
SCIEN & TECH ACCESSIONING	INFO FACIL DEFT	TTY.	• • •
P O BOX 8757 BALTIMORE MD	BWI ARPRT 21240		
		n an Alexandra da A Alexandra da Alexandra da Alexandr Alexandra da Alexandra da Alexandr	

NASA

POSTMASTER:

If Undeliverable (Section 158 Postal Manual) Do Not Return