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NASA SP-7063 (06)

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS 1991-1992

NASA STI PROGRAM
SCIENTIFIC & TECHNICAL INFORMATION

NASA SP-7063 (06)

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS 1991-1992

NASA
National Aeronautics and Space Administration
Scientific and Technical Information Program
Washington, DC 1993

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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 1991 through 1992. 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 through 05 of this catalog list NASA publications announced during 1987 through 1990.

Two monthly 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 the NASA Center for AeroSpace Information and the American Institute of Aeronautics and Astronautics, Inc.

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

NASA SP-7085	*Large Space Structures and Systems in the Space Station Era: 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 NASA Center for AeroSpace Information. They are also available at any Federal Regional Depository Library. Additional availability information including current CASI price schedules, can be found in the Appendix at the back of this publication.

NASA Scientific and Technical Publications 1991-1992

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AERONAUTICS For related information see also Astronautics.

ASTRONAUTICS For related information see also *Aeronautics.*

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

CHEMISTRY AND MATERIALS

ENGINEERING For related information see also *Physics.*

GEOSCIENCES For related information see also *Space Sciences.*

LIFE SCIENCES

MATHEMATICAL AND COMPUTER SCIENCES

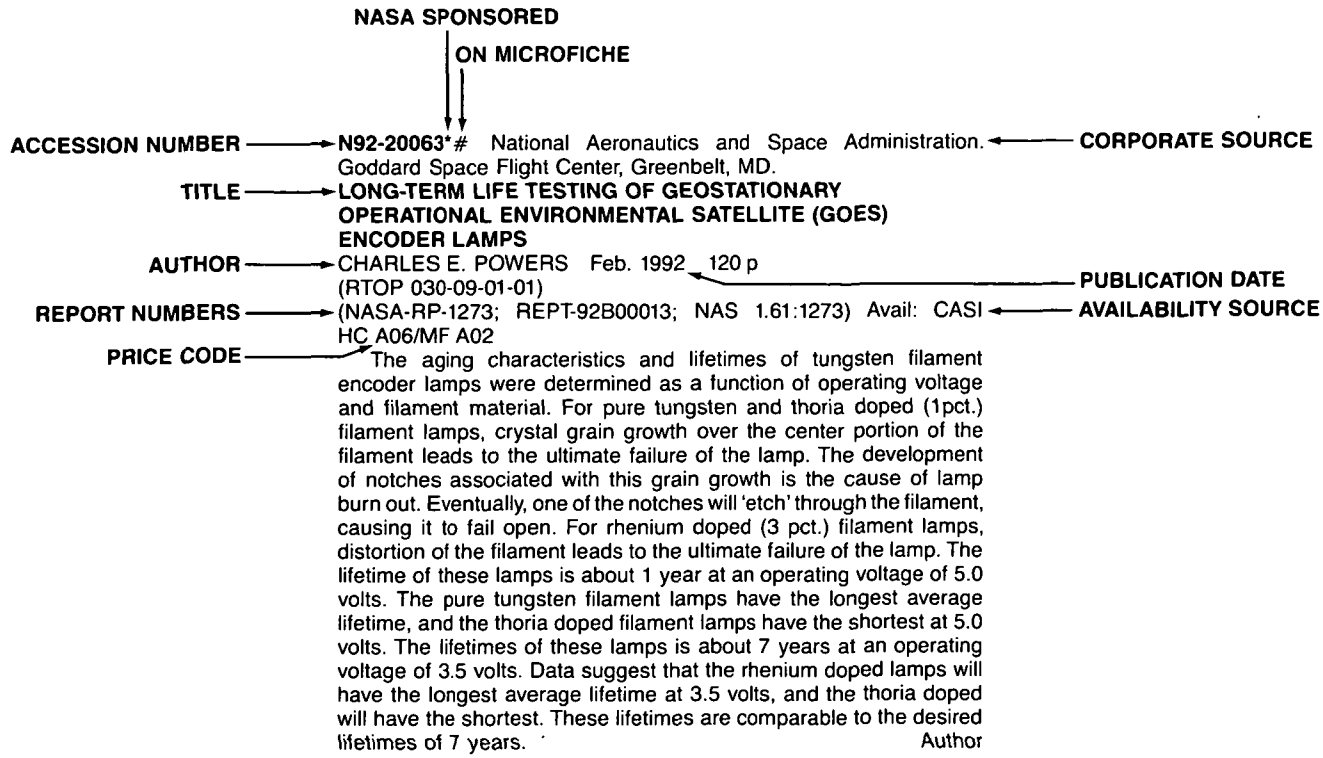
SOCIAL SCIENCES

SPACE SCIENCES For related information see also *Geosciences.*

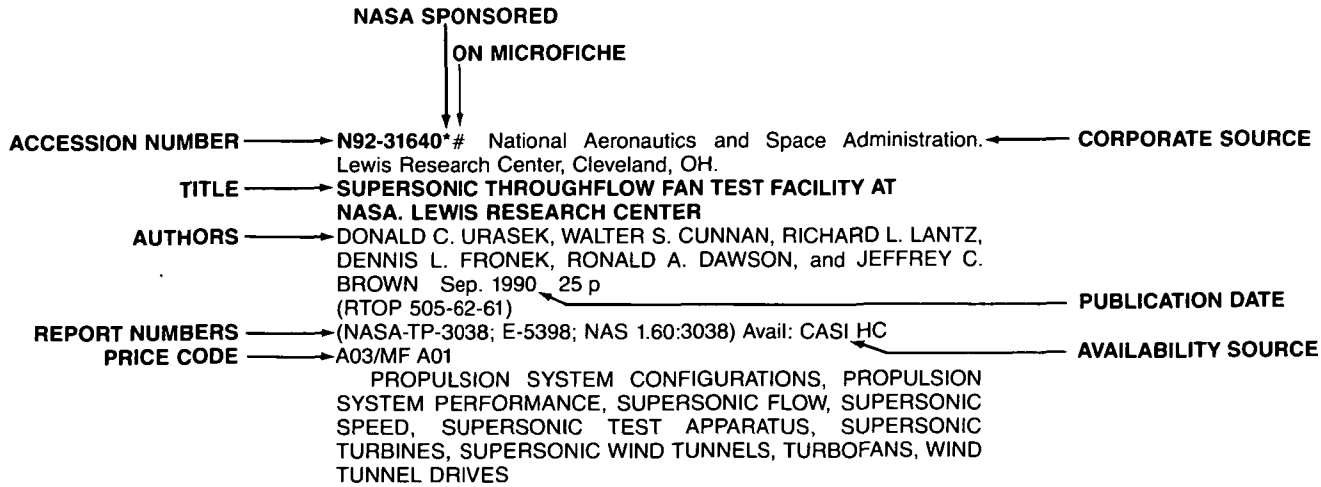
GENERAL

Includes aeronautical, astronautical, and space science related histories, biographies, and pertinent reports too broad for categorization; histories or broad overviews of NASA programs.

TYPICAL CITATION AND ABSTRACT



TYPICAL CITATION AND SUBJECT TERMS



SCIENTIFIC AND TECHNICAL PUBLICATIONS

1991-1992

February 1993

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AERONAUTICS (GENERAL)

N91-10002* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 256)
Sep. 1990 129 p
(NASA-SP-7037(256); NAS 1.21:7037(256)) Avail: CASI HC A07
This bibliography lists 426 reports, articles, and other documents introduced into the NASA scientific and technical information system in August 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

N91-12589* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 257)
Oct. 1990 156 p
(NASA-SP-7037(257); NAS 1.21:7037(257)) Avail: CASI HC A08
This bibliography lists 560 reports, articles, and other documents introduced into the NASA scientific and technical information system in September 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

N91-13399* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 258)
Dec. 1988 167 p
(NASA-SP-7037(258); NAS 1.21:7037(258)) Avail: CASI HC A08
This bibliography lists 536 reports, articles, and other documents introduced into the NASA scientific and technical information system in October 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

N91-15978* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 260)
Jan. 1991 132 p
(NASA-SP-7037(260); NAS 1.21:7037(260)) Avail: CASI HC A07
This bibliography lists 405 reports, articles, and other documents introduced into the NASA scientific and technical information system in December, 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

N91-15979* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 259)
Dec. 1990 202 p
(NASA-SP-7037(259); NAS 1.21:7037(259)) Avail: CASI HC A10
This bibliography lists 774 reports, articles, and other documents introduced into the NASA scientific and technical information system in November, 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

N91-19024*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1989-1990
FREDERICK R. MORRELL, comp. Washington Dec. 1990 183 p Conference held in Athens, OH, 14-15 Jun. 1990; sponsored by NASA and FAA
(RTOP 505-66-01-02)
(NASA-CP-3095; L-16848; NAS 1.55:3095) Avail: CASI HC A09/MF A02
AIR TRANSPORTATION, AIRCRAFT PERFORMANCE, AVIONICS, CONTROL THEORY, EXPERT SYSTEMS, GUIDANCE (MOTION), NAVIGATION, UNIVERSITY PROGRAM

N91-23073* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 261)
Feb. 1991 562 p
(NASA-SP-7037(261); NAS 1.21:7037(261)) Avail: CASI HC A24
This publication is a cummulative index to the abstracts contained in Supplements 249 through 260 of Aeronautical Engineering: A Continuing Bibliography. The bibliographic series is compiled through the cooperative efforts of the American Institute of Aeronautics and Astronautics (AIAA) and the National Aeronautics and Space Administration (NASA). Seven indexes are included -- subject, personal author, corporate source, foreign technology, contract number, report number and accession number. Author

N91-23074* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 262)
Feb. 1991 142 p
(NASA-SP-7037(262); NAS 1.21:7037(262)) Avail: CASI HC A07
This bibliography lists 474 reports, articles, and other documents introduced into the NASA scientific and technical information system in Jan. 1991. 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

N91-24095* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 265)
May 1991 152 p
(NASA-SP-7037(265); NAS 1.21:7037(265)) Avail: CASI HC A08
This bibliography lists 554 reports, articles, and other documents introduced into the NASA scientific and technical information system in Apr. 1991. 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

N91-24096* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 263)
Mar. 1991 146 p
(NASA-SP-7037(263); NAS 1.21:7037(263)) Avail: CASI HC A07
This bibliography lists 517 reports, articles, and other documents introduced into the NASA scientific and technical information system in Feb. 1991. 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

N91-24097* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 264)
Apr. 1991 159 p
(NASA-SP-7037(264); NAS 1.21:7037(264)) Avail: CASI HC A08
This bibliography lists 558 reports, articles, and other documents introduced into the NASA scientific and technical information system in Mar. 1991. 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

N91-26113*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
DEVELOPMENT OF AN INTEGRATED AEROSERVOELASTIC ANALYSIS PROGRAM AND CORRELATION WITH TEST DATA
K. K. GUPTA, M. J. BRENNER, and L. S. VOELKER
Washington May 1991 105 p
(RTOP 533-02-51)
(NASA-TP-3120; H-1543; NAS 1.60:3120) Avail: CASI HC A06/MF A02
AEROELASTICITY, COMPUTER PROGRAMS, DYNAMIC RESPONSE, DYNAMIC STRUCTURAL ANALYSIS, FINITE ELEMENT METHOD, FLIGHT CONTROL, MATHEMATICAL MODELS, SERVOCONTROL, STRESS ANALYSIS

N91-27122* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 266)
Jun. 1991 175 p
(NASA-SP-7037(266); NAS 1.21:7037(266))
This bibliography lists 645 reports, articles, and other documents introduced into the NASA scientific and technical information system in May 1991. 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

N91-30077* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 268)
Aug. 1991 131 p
(NASA-SP-7037(268); NAS 1.21:7037(268)) Avail: CASI HC A07
This bibliography lists 406 reports, articles, and other documents introduced into the NASA scientific and technical information system in July, 1991. 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

N92-10001* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 267)
Jul. 1991 188 p
(NASA-SP-7037(267); NAS 1.21:7037(267)) Avail: CASI HC A09
This bibliography lists 661 reports, articles, and other documents introduced into the NASA scientific and technical information system in June, 1991. Subject coverage includes design, construction and testing of aircraft and aircraft engines; aircraft components, equipment and systems; ground support systems; theoretical and applied aspects of aerodynamics and general fluid dynamics; electrical engineering; aircraft control; remote sensing; computer sciences; nuclear physics; and social sciences. Author

N92-10973* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 270)
Oct. 1991 176 p
(NASA-SP-7037(270); NAS 1.21:7037(270)) Avail: CASI HC A09
This bibliography lists 600 reports, articles, and other documents introduced into the NASA scientific and technical information system in September, 1991. 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

N92-10974* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 269)
Sep. 1991 153 p
(NASA-SP-7037(269); NAS 1.21:7037(269)) Avail: CASI HC A08
This bibliography lists 539 reports, articles, and other documents introduced into the NASA scientific and technical information system in August, 1991. 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

N92-14967* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 271)
Nov. 1991 184 p
(NASA-SP-7037(271); NAS 1.21:7037(271)) Avail: CASI HC A09
This bibliography lists 666 reports, articles, and other documents introduced into the NASA scientific and technical information system in October, 1991. 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

N92-17984*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1990-1991
FREDERICK R. MORRELL, comp. Washington Dec. 1991 183 p Conference held in Athens, OH, 20-21 Jun. 1991; sponsored by NASA and FAA
(RTOP 505-64-52-01)
(NASA-CP-3131; L-17017; NAS 1.55:3131) Avail: CASI HC A09/MF A02
AIR TRANSPORTATION, AIRCRAFT SAFETY, NATIONAL AIRSPACE SYSTEM, NAVIGATION, UNIVERSITY PROGRAM

N92-21729* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 273)
Jan. 1992 219 p
(NASA-SP-7037(273); NAS 1.21:7037(273)) Avail: CASI HC A10
This bibliography lists 808 reports, articles, and other documents introduced into the NASA scientific and technical information system in Dec. 1991. 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

N92-21844* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 272)
Dec. 1991 192 p
(NASA-SP-7037(272); NAS 1.21:7037(272)) Avail: CASI HC A09
This bibliography lists 719 reports, articles, and other documents introduced into the NASA scientific and technical information system in November, 1991. 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

N92-22505*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE HIGH RESOLUTION ACCELEROMETER PACKAGE (HIRAP) FLIGHT EXPERIMENT SUMMARY FOR THE FIRST 10 FLIGHTS
ROBERT C. BLANCHARD (Lockheed Engineering and Sciences Co., Hampton, VA.), K. T. LARMAN, and M. BARRETT (Lockheed Engineering and Sciences Co., Hampton, VA.) Apr. 1992 318 p
(RTOP 506-48-11-01)
(NASA-RP-1267; L-16900; NAS 1.61:1267) Avail: CASI HC A14/MF A03
The High Resolution Accelerometer Package (HiRAP) instrument is a triaxial, orthogonal system of gas damped accelerometers with a resolution of 1 x 10(exp -6) g (1 micro-g). The purpose of HiRAP is to measure the low frequency component of the total acceleration along the orbiter vehicle (OV) body axes while the OV descends through the rarefied flow flight regime. Two HiRAP instruments have flown on a total of 10 Space Transport System (STS) missions. The aerodynamic component of the acceleration measurements was separated from the total acceleration. Instrument bias and orbiter mechanical system acceleration effects were incorporated into one bulk bias. The bulk bias was subtracted from the acceleration measurements to produce aerodynamic descent data sets for all 10 flights. The aerodynamic acceleration data sets were input to an aerodynamic coefficient model. The aerodynamic acceleration data and coefficient model were used to estimate the atmospheric density for the altitude range of 140 to 60 km and a downrange distance of 600 km. For 8 of 10 flights results from this model agree with expected results. For the results that do not agree with expected results, a variety of error sources have been explored. Author

N92-27929* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 277)
Apr. 1992 137 p
(NASA-SP-7037(277); NAS 1.21:7037(277)) Avail: CASI HC A07
This bibliography lists 467 reports, articles, and other documents introduced into the NASA scientific and technical information system in Mar. 1992. Subject coverage includes: the engineering and theoretical aspects of design, construction, evaluation, testing, operation, and performance of aircraft (including aircraft engines); and associated aircraft components, equipment, and systems. It also includes research and development in ground support systems, theoretical and applied aspects of aerodynamics, and general fluid dynamics. Author

N92-28677* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 278)
May 1992 128 p
(NASA-SP-7037(278); NAS 1.21:7037(278)) Avail: CASI HC A07
This bibliography lists 414 reports, articles, and other documents introduced into the NASA scientific and technical information system in April 1992. Author

N92-28679* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 275)
Feb. 1992 112 p
(NASA-SP-7037(275); NAS 1.21:7037(275)) Avail: CASI HC A06
This bibliography lists 379 reports, articles, and other documents introduced into the NASA scientific and technical information system in Jan. 1991. Author

N92-31456* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 280)
Jul. 1992 172 p
(NASA-SP-7037(280); NAS 1.21:7037(280)) Avail: CASI HC A08
This bibliography lists 647 reports, articles, and other documents introduced into the NASA scientific and technical information system in June, 1991. Subject coverage includes: aerodynamics, air transportation safety, aircraft communication and navigation, aircraft design and performance, aircraft instrumentation, aircraft propulsion, aircraft stability and control, research facilities, astronautics, chemistry and materials, engineering, geosciences, computer sciences, physics, and social sciences. Author

02

AERODYNAMICS

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

N91-10007*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
TRANSONIC FLOW ANALYSIS FOR ROTORS. PART 3: THREE-DIMENSIONAL, QUASI-STEADY, EULER CALCULATION
I-CHUNG CHANG Jun. 1990 23 p
(RTOP 505-61-51)
(NASA-TP-2375; A-86374-PT-3; NAS 1.60:2375) Avail: CASI HC A03/MF A01
COMPUTER PROGRAMS, EULER EQUATIONS OF MOTION, FINITE VOLUME METHOD, LIFTING ROTORS, ROTOR AERODYNAMICS, TRANSONIC FLOW

N91-10839*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
NASA COMPUTATIONAL FLUID DYNAMICS CONFERENCE. VOLUME 1: SESSIONS 1-6
Sep. 1989 475 p Conference held at Moffett Field, CA, 7-9 Mar. 1989 Original contains color illustrations
(RTOP 505-60-01)
(NASA-CP-10038-VOL-1; A-89160-VOL-1; NAS 1.55:10038-VOL-1) Avail: CASI HC A20/MF A04; 25 functional color pages
COMPUTATIONAL FLUID DYNAMICS, COMPUTATIONAL GRIDS, CONFERENCES, GRID GENERATION (MATHEMATICS), MATHEMATICAL MODELS, SIMULATION, SUPERCOMPUTERS, TURBULENCE MODELS

N91-10868*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
NASA COMPUTATIONAL FLUID DYNAMICS CONFERENCE. VOLUME 2: SESSIONS 7-12
Sep. 1989 525 p Conference held at Moffett Field, CA, 7-9 Mar. 1989 Original contains color illustrations
(RTOP 505-60-01)
(NASA-CP-10038-VOL-2; A-89160-VOL-2; NAS 1.55:10038-VOL-2) Avail: CASI HC A22/MF A04; 30 functional color pages
ALGORITHMS, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, HYPERSONICS, SHORT TAKEOFF AIRCRAFT, SPACECRAFT DESIGN, SUPERCOMPUTERS

N91-10902*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PREDICTION OF EFFECTS OF WING CONTOUR MODIFICATIONS ON LOW-SPEED MAXIMUM LIFT AND TRANSONIC PERFORMANCE FOR THE EA-6B AIRCRAFT
DENNIS O. ALLISON and E. G. WAGGONER Washington Nov. 1990 48 p
(RTOP 505-61-21-03)
(NASA-TP-3046; L-16741; NAS 1.60:3046) Avail: CASI HC A03/MF A01
COMPUTER PROGRAMS, CONTOURS, MANEUVERABILITY, PANEL METHOD (FLUID DYNAMICS), PERFORMANCE PREDICTION, TRANSONIC FLOW, WIND TUNNEL TESTS, WING PROFILES

N91-13401*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NAVIER-STOKES AND EULER SOLUTIONS FOR LEE-SIDE FLOWS OVER SUPERSONIC DELTA WINGS. A CORRELATION WITH EXPERIMENT
S. NAOMI MCMILLIN (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JAMES L. THOMAS (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and EARLL M. MURMAN (Massachusetts Inst. of Tech., Cambridge.) Washington Dec. 1990 103 p Original contains color illustrations
(RTOP 505-61-71-01)
(NASA-TP-3035; L-16751; NAS 1.60:3035) Avail: CASI HC A06/MF A02; 19 functional color pages
COMPUTER PROGRAMS, DELTA WINGS, EULER EQUATIONS OF MOTION, FLOW DISTRIBUTION, NAVIER-STOKES EQUATION, SUPERSONIC FLOW

N91-13402*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF LOCATION OF AFT-MOUNTED NACELLES ON THE LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF A HIGH-WING TRANSPORT AIRPLANE
WILLIAM K. ABEYOUNIS (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and JAMES C. PATTERSON, JR. (Vigyan Research Associates, Inc., Hampton, VA.) Washington Dec. 1990 98 p
(RTOP 505-62-41-05)
(NASA-TP-3047; L-16743; NAS 1.60:3047) Avail: CASI HC A05/MF A02
AERODYNAMIC INTERFERENCE, AIRCRAFT DESIGN, ENGINE AIRFRAME INTEGRATION, TRANSPORT AIRCRAFT, WING NACELLE CONFIGURATIONS

N91-14316*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PARAMETRIC STUDY OF AFTERBODY/NOZZLE DRAG ON TWIN TWO-DIMENSIONAL CONVERGENT-DIVERGENT NOZZLES AT MACH NUMBERS FROM 0.60 TO 1.20
ODIS C. PENDERGRAFT, JR., JAMES R. BURLEY, II, and E. ANN BARE Oct. 1986 267 p
(RTOP 505-62-91-01)
(NASA-TP-2640; L-16158; NAS 1.60:2640) Avail: CASI HC A12/MF A03
AERODYNAMIC COEFFICIENTS, AFTERBODIES, CONVERGENT-DIVERGENT NOZZLES, DRAG MEASUREMENT, PARAMETERIZATION

N91-16990*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A PARAMETRIC EXPERIMENTAL INVESTIGATION OF A SCRAMJET NOZZLE AT MACH 6 WITH FREON AND ARGON OR AIR USED FOR EXHAUST SIMULATION
JAMES M. CUBBAGE (Vigyan Research Associates, Inc., Hampton, VA.) and WILLIAM J. MONTA Washington Feb. 1991 106 p
(RTOP 763-01-31-24)
(NASA-TP-3048; L-16707; NAS 1.60:3048) Avail: CASI HC A06/MF A02
EXHAUST FLOW SIMULATION, EXHAUST GASES, EXHAUST NOZZLES, FLOW DISTRIBUTION, NOZZLE FLOW, SUPERSONIC COMBUSTION RAMJET ENGINES

N91-18030*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DETAILED FLOW-FIELD MEASUREMENTS OVER A 75 DEG SWEPT DELTA WING
SCOTT O. KJELGAARD and WILLIAM L. SELLERS, III Washington Oct. 1990 45 p Original contains color illustrations
(RTOP 505-60-11-03)
(NASA-TP-2997; L-16718; NAS 1.60:2997) Avail: CASI HC A03/MF A01; 16 functional color pages
DELTA WINGS, FLOW DISTRIBUTION, FLOW VISUALIZATION, FREE FLOW, JET FLOW, SWEPT WINGS, VORTICES

N91-18031*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PHYSICALLY WEIGHTED APPROXIMATIONS OF UNSTEADY AERODYNAMIC FORCES USING THE MINIMUM-STATE METHOD
MORDECHAY KARPEL (Technion - Israel Inst. of Tech., Haifa.) and SHERWOOD TIFFANY HOADLEY Washington Mar. 1991 46 p
(RTOP 505-63-21-04)
(NASA-TP-3025; L-16491; NAS 1.60:3025) Avail: CASI HC A03/MF A01
AERODYNAMIC COEFFICIENTS, COMPUTER PROGRAMS, LEAST SQUARES METHOD, MATRICES (MATHEMATICS), UNSTEADY AERODYNAMICS

N91-18032*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN EXPLICIT UPWIND ALGORITHM FOR SOLVING THE PARABOLIZED NAVIER-STOKES EQUATIONS
JOHN J. KORTE Washington Feb. 1991 71 p Original contains color illustrations
(RTOP 506-80-11-01)
(NASA-TP-3050; L-16753; NAS 1.60:3050) Avail: CASI HC A04/MF A01; 1 functional color page

ALGORITHMS, FLOW DISTRIBUTION, GAS FLOW, HYPERSONIC FLOW, NAVIER-STOKES EQUATION, PARABOLIC DIFFERENTIAL EQUATIONS

N91-19042*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL INVESTIGATION OF POROUS-FLOOR EFFECTS ON CAVITY FLOW FIELDS AT SUPERSONIC SPEEDS
FLOYD J. WILCOX, JR. Washington Nov. 1990 105 p
(RTOP 505-61-71-01)
(NASA-TP-3032; L-16711; NAS 1.60:3032) Avail: CASI HC A06/MF A02
CAVITIES, CAVITY FLOW, FLOW DISTRIBUTION, MACH NUMBER, POROSITY, SUPERSONIC SPEED, VENTS, WIND TUNNEL MODELS

N91-19057*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THREE-COMPONENT LASER ANEMOMETER MEASUREMENT SYSTEMS
LOUIS J. GOLDMAN Washington Jan. 1991 20 p
(NASA-TP-3080; E-5526; NAS 1.60:3080) Avail: CASI HC A03/MF A01
ANNULAR FLOW, LASER ANEMOMETERS, LASER DOPPLER VELOCIMETERS, LASER INTERFEROMETRY, THREE DIMENSIONAL FLOW, TURBOMACHINERY

N91-19058*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
PANEL METHODS: AN INTRODUCTION
LARRY L. ERICKSON Washington Dec. 1990 64 p
(RTOP 505-60-21)
(NASA-TP-2995; A-89266; NAS 1.60:2995) Avail: CASI HC A04/MF A01
BOUNDARY CONDITIONS, COMPUTER PROGRAMS, INVISCID FLOW, PANEL METHOD (FLUID DYNAMICS), POTENTIAL FLOW, SUBSONIC SPEED, SUPERSONIC SPEED

N91-20043*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WALL-INTERFERENCE ASSESSMENT AND CORRECTIONS FOR TRANSONIC NACA 0012 AIRFOIL DATA FROM VARIOUS WIND TUNNELS M.S. Thesis - George Washington Univ., 1988
LAWRENCE L. GREEN and PERRY A. NEWMAN Apr. 1991 63 p Presented at AIAA Meeting, Honolulu, HI, 8-10 Jun. 1987
(RTOP 505-61-01-04)
(NASA-TP-3070; L-16721; NAS 1.60:3070; AIAA PAPER 87-1431) Avail: CASI HC A04/MF A01
AERODYNAMIC INTERFERENCE, AIRFOIL PROFILES, BOUNDARY LAYER FLOW, TRANSONIC FLOW, WALL FLOW, WIND TUNNEL WALLS

N91-21059*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC THRUST-VECTORING PERFORMANCE OF NONAXISYMMETRIC CONVERGENT-DIVERGENT NOZZLES WITH POST-EXIT YAW VANES M.S. Thesis - George Washington Univ., Aug. 1988
ROBERT J. FOLEY (George Washington Univ., Washington, DC.) and ODIS C. PENDERGRAFT, JR. May 1991 81 p
(RTOP 505-62-71-01)
(NASA-TP-3085; L-16784; NAS 1.60:3085) Avail: CASI HC A05/MF A01
CONVERGENT-DIVERGENT NOZZLES, JET VANES, NOZZLE GEOMETRY, STATIC TESTS, STATIC THRUST, THRUST VECTOR CONTROL, YAW

N91-21062*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPUTATIONAL FLUID DYNAMICS SYMPOSIUM ON AEROPROPULSION
Washington Jan. 1991 687 p Symposium held in Cleveland, OH, 24-26 Apr. 1990 Supersedes NASA-CP-10045 Original contains color illustrations
(NASA-CP-3078; E-5296; NASA-CP-10045; NAS 1.55:3078)
Avail: CASI HC A99/MF A06; 10 functional color pages
COMBUSTIBLE FLOW, COMBUSTION CHAMBERS, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, GRID GENERATION (MATHEMATICS), PROPULSION SYSTEM PERFORMANCE, TURBOMACHINERY, TURBULENCE MODELS

N91-22069*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROPROPULSIVE CHARACTERISTICS OF CANTED TWIN PITCH-VECTORING NOZZLES AT MACH 0.20 TO 1.20
FRANCIS J. CAPONE, MARY L. MASON, and GEORGE T. CARSON, JR. Washington May 1991 257 p
(RTOP 505-62-71-01)
(NASA-TP-3060; L-16823; NAS 1.60:3060) Avail: CASI HC A12/MF A03
CONVERGENT-DIVERGENT NOZZLES, FLAPS (CONTROL SURFACES), FLOW DISTRIBUTION, NOZZLE GEOMETRY, PROPULSIVE EFFICIENCY, THRUST VECTOR CONTROL

N91-22070*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUMERICAL STUDY OF THE AERODYNAMIC EFFECTS OF USING SULFUR HEXAFLUORIDE AS A TEST GAS IN WIND TUNNELS
W. KYLE ANDERSON Washington Jan. 1991 26 p Previously announced in IAA as A90-37958
(RTOP 505-60-01-01)
(NASA-TP-3086; L-16849; NAS 1.60:3086) Avail: CASI HC A03/MF A01
AIRFOILS, INVISCID FLOW, SUBSONIC FLOW, SULFUR FLUORIDES, TRANSONIC FLOW, TURBULENT FLOW, WIND TUNNEL TESTS

N91-24132*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSONIC SYMPOSIUM: THEORY, APPLICATION AND EXPERIMENT, VOLUME 2
JEROME T. FOUGHNER, JR., comp. Apr. 1989 241 p Symposium held in Hampton, VA, 19-21 Apr. 1988
(RTOP 505-60-11-01)
(NASA-CP-3020-VOL-2; L-16502-VOL-2; NAS 1.55:3020-VOL-2) Avail: CASI HC A11/MF A03
AERODYNAMIC CHARACTERISTICS, AIRCRAFT DESIGN, BODY-WING CONFIGURATIONS, COMPUTATIONAL FLUID DYNAMICS, FLIGHT TESTS, TRANSONIC FLOW, WIND TUNNEL TESTS

N91-25103*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-SPEED, POWERED GROUND EFFECTS OF A GENERIC, HYPERSONIC CONFIGURATION
GREGORY M. GATLIN 1990 62 p
(RTOP 763-01-31-22)
(NASA-TP-3092; L-16861; NAS 1.60:3092) Avail: CASI HC A04/MF A01
AERODYNAMIC CHARACTERISTICS, AIRCRAFT MODELS, GROUND EFFECT (AERODYNAMICS), HYPERSONIC AIRCRAFT, LOW SPEED, SCALE MODELS, WIND TUNNEL TESTS

N91-27124*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF YAW ANGLE AND REYNOLDS NUMBER ON RECTANGULAR-BOX CAVITIES AT SUBSONIC AND TRANSONIC SPEEDS
E. B. PLENTOVICH, JULIO CHU, and M. B. TRACY Washington Jul. 1991 54 p
(RTOP 505-68-91-12)
(NASA-TP-3099; L-16847; NAS 1.60:3099) Avail: CASI HC A04/MF A01
CAVITIES, FLOW DISTRIBUTION, HIGH REYNOLDS NUMBER,

MACH NUMBER, PRESSURE DISTRIBUTION, SUBSONIC FLOW, TRANSONIC FLOW, YAW

N91-27140*# *National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.
SHOCK WAVE INTERACTION WITH AN ABRUPT AREA CHANGE
MANUEL D. SALAS Washington Aug. 1991 16 p
(RTOP 505-62-31-07)
(NASA-TP-3113; L-16878; NAS 1.60:3113) Avail: CASI HC A03/MF A01
COMPUTATIONAL FLUID DYNAMICS, EULER EQUATIONS OF MOTION, MATHEMATICAL MODELS, NUMERICAL ANALYSIS, SHOCK WAVE INTERACTION, SHOCK WAVES, UNIQUENESS THEOREM

N91-28136*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EVALUATION OF A TECHNIQUE TO GENERATE ARTIFICIALLY THICKENED BOUNDARY LAYERS IN SUPERSONIC AND HYPERSONIC FLOWS
A. R. PORRO (National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.), W. R. HINGST (National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.), D. O. DAVIS (Washington Univ., Seattle.), and A. B. BLAIR, JR. (*National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.) Washington Aug. 1991 28 p
(RTOP 505-80-21)
(NASA-TP-3142; E-5660; NAS 1.60:3142) Avail: CASI HC A03/MF A01
BOUNDARY LAYERS, COMPRESSIBLE FLOW, HONEYCOMB STRUCTURES, HYPERSONIC FLOW, SUPERSONIC FLOW, TURBULENT BOUNDARY LAYER, WIND TUNNEL MODELS

N91-28143*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF A SUBSONIC, ENERGY-EFFICIENT TRANSPORT CONFIGURATION IN THE NATIONAL TRANSONIC FACILITY
PETER F. JACOBS and BLAIR B. GLOSS Aug. 1989 70 p
(RTOP 505-61-21-03)
(NASA-TP-2922; L-16569; NAS 1.60:2922) Avail: CASI HC A04/MF A01
AEROELASTICITY, BOUNDARY LAYER TRANSITION, LONGITUDINAL STABILITY, NONADIABATIC CONDITIONS, SUBSONIC SPEED, SUPERCRITICAL WINGS, WALL TEMPERATURE

N91-30098*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FULL-SCALE SEMISPAN TESTS OF A BUSINESS-JET WING WITH A NATURAL LAMINAR FLOW AIRFOIL
DAVID E. HAHNE and FRANK L. JORDAN, JR. Sep. 1991 52 p
(RTOP 505-61-41-01)
(NASA-TP-3133; L-16905; NAS 1.60:3133) Avail: CASI HC A04/MF A01
AIRFOIL PROFILES, FLAPPING, FULL SCALE TESTS, JET AIRCRAFT, LAMINAR FLOW AIRFOILS, LOW SPEED, SEMISPAN MODELS, WIND TUNNEL TESTS

N92-10005*# *National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.
MEASUREMENTS OF FORCES, MOMENTS, AND PRESSURES ON A GENERIC STORE SEPARATING FROM A BOX CAVITY AT SUPERSONIC SPEEDS
ROBERT L. STALLINGS, JR. (Lockheed Engineering and Sciences Co., Hampton, VA.), FLOYD J. WILCOX, JR., and DANA K. FORREST Sep. 1991 186 p
(RTOP 505-68-91-12)
(NASA-TP-3110; L-16866; NAS 1.60:3110) Avail: CASI HC A09/MF A02
CAVITIES, EXTERNAL STORE SEPARATION, FLAT PLATES, FLOW DISTRIBUTION, MOMENTS, PRESSURE MEASUREMENT, SUPERSONIC SPEED

N92-10011*# National Aeronautics and Space Administration. *Ames Research Center, Moffett Field, CA.*
TRANSONIC AND SUPERSONIC EULER COMPUTATIONS OF VORTEX-DOMINATED FLOW FIELDS ABOUT A GENERIC FIGHTER
AGA M. GOODSELL and JOHN E. MELTON Nov. 1991 44 p
(RTOP 505-60-11)
(NASA-TP-3156; A-90161; NAS 1.60:3156) Avail: CASI HC A03/MF A01
ANGLE OF ATTACK, BODY-WING CONFIGURATIONS, EULER EQUATIONS OF MOTION, FIGHTER AIRCRAFT, FLOW DISTRIBUTION, PRESSURE DISTRIBUTION

N92-10975*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC INTERNAL PERFORMANCE OF VENTRAL AND REAR NOZZLE CONCEPTS FOR SHORT-TAKEOFF AND VERTICAL-LANDING AIRCRAFT
RICHARD J. RE and GEORGE T. CARSON, JR. Washington Sep. 1991 71 p
(RTOP 505-62-30-01)
(NASA-TP-3103; L-16902; NAS 1.60:3103) Avail: CASI HC A04/MF A01
AIRCRAFT CONFIGURATIONS, EXHAUST NOZZLES, EXHAUST SYSTEMS, FIGHTER AIRCRAFT, PROPULSION SYSTEM CONFIGURATIONS, SHORT TAKEOFF AIRCRAFT, VERTICAL LANDING

N92-10981*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
NACA 0015 WING PRESSURE AND TRAILING VORTEX MEASUREMENTS
K. W. MCALISTER and R. K. TAKAHASHI Washington Nov. 1991 141 p
(RTOP 505-61-51)
(NASA-TP-3151; A-91056; NAS 1.60:3151; AVSCOM-TR-91-A-003) Avail: CASI HC A07/MF A02
LOW SPEED, PRESSURE MEASUREMENT, SEMISPAN MODELS, TRAILING EDGES, VELOCITY MEASUREMENT, VORTICES, WING TIPS, WINGS

N92-12994*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND TUNNEL INVESTIGATION OF THE INTERACTION AND BREAKDOWN CHARACTERISTICS OF SLENDER WING VORTICES AT SUBSONIC, TRANSONIC, AND SUPERSONIC SPEEDS
GARY E. ERICKSON Washington Nov. 1991 226 p
(RTOP 505-68-71-03)
(NASA-TP-3114; L-16803; NAS 1.60:3114) Avail: CASI HC A11/MF A03
AERODYNAMIC CHARACTERISTICS, DELTA WINGS, FLOW DISTRIBUTION, LASERS, LEADING EDGES, SLENDER WINGS, VORTICES

N92-14968*# National Aeronautics and Space Administration. *Lewis Research Center, Cleveland, OH.*
WIND TUNNEL INVESTIGATION OF VORTEX FLOWS ON F/A-18 CONFIGURATION AT SUBSONIC THROUGH TRANSONIC SPEED
GARY E. ERICKSON Washington Dec. 1991 166 p
(RTOP 505-68-30-03)
(NASA-TP-3111; L-16799; NAS 1.60:3111) Avail: CASI HC A08/MF A02
F-18 AIRCRAFT, FOREBODIES, INTERACTIONAL AERODYNAMICS, LEADING EDGES, VORTEX BREAKDOWN, VORTICES, WIND TUNNEL TESTS, WINGS

N92-17131*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TWO-DIMENSIONAL STABILITY OF LAMINAR FLAMES
H. S. MUKUNDA and J. PHILIP DRUMMOND Washington Feb. 1992 30 p
(RTOP 763-01-21-16)
(NASA-TP-3131; L-16604; NAS 1.60:3131) Avail: CASI HC A03/MF A01
ACTIVATION ENERGY, COMBUSTION CHEMISTRY, FLAME STABILITY, LAMINAR FLOW, LEWIS NUMBERS, PREMIXED FLAMES

N92-19002*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INSTALLATION EFFECTS OF WING-MOUNTED TURBOFAN NACELLE-PYLONS ON A 1/17-SCALE, TWIN-ENGINE, LOW-WING TRANSPORT MODEL
ODIS C. PENDERGRAFT, JR. (Aerospace Research Labs., Wright-Patterson AFB, OH.), ANTHONY M. INGRALDI (Aerospace Research Labs., Wright-Patterson AFB, OH.), RICHARD J. RE (Aerospace Research Labs., Wright-Patterson AFB, OH.), and TIMMY T. KARIYA (Vigyan Research Associates, Inc., Hampton, VA.) Mar. 1992 108 p
(RTOP 535-03-10-01)
(NASA-TP-3168; L-16960; NAS 1.60:3168) Avail: CASI HC A06/MF A02
AERODYNAMIC INTERFERENCE, BYPASS RATIO, INTERACTIONAL AERODYNAMICS, SUPERCRITICAL WINGS, TURBOFAN ENGINES, TURBOFANS, WING NACELLE CONFIGURATIONS

N92-19175*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A WEAKLY NONLINEAR THEORY FOR WAVE-VORTEX INTERACTIONS IN CURVED CHANNEL FLOW
BART A. SINGER (High Technology Corp., Hampton, VA.), GORDON ERLEBACHER (Institute for Computer Applications in Science and Engineering, Hampton, VA.), and THOMAS A. ZANG Mar. 1992 26 p
(RTOP 505-59-50-01)
(NASA-TP-3158; L-16989; NAS 1.60:3158) Avail: CASI HC A03/MF A01
CHANNEL FLOW, FLUID DYNAMICS, NONLINEARITY, TOLLMIEN-SCHLICHTING WAVES, VORTICES

N92-20038*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INFLUENCE OF AIRFOIL GEOMETRY ON DELTA WING LEADING-EDGE VORTICES AND VORTEX-INDUCED AERODYNAMICS AT SUPERSONIC SPEEDS
RICHARD M. WOOD (Lockheed Engineering and Sciences Co., Hampton, VA.), JAMES E. BYRD, and GARY F. WESSELMANN (Arnold Engineering Development Center, Arnold Air Force Station, TN.) Washington Feb. 1992 86 p
(RTOP 505-61-71-01)
(NASA-TP-3105; L-16851; NAS 1.60:3105) Avail: CASI HC A05/MF A01
AIRFOIL PROFILES, DELTA WINGS, LEADING EDGES, SUPERSONIC SPEED, VORTICES, WIND TUNNEL TESTS

N92-20494*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPARISON OF A TWO-DIMENSIONAL ADAPTIVE-WALL TECHNIQUE WITH ANALYTICAL WALL INTERFERENCE CORRECTION TECHNIQUES
RAYMOND E. MINECK Apr. 1992 73 p
(RTOP 505-59-10-03)
(NASA-TP-3132; L-16911; NAS 1.60:3132) Avail: CASI HC A04/MF A01
AERODYNAMIC INTERFERENCE, AIRFOILS, CORRECTION, MODELS, REYNOLDS NUMBER, TRANSONIC WIND TUNNELS, WALL FLOW, WIND TUNNEL WALLS

N92-20545*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DIFFRACTED AND HEAD WAVES ASSOCIATED WITH WAVES ON NONSEPARABLE SURFACES
RAYMOND L. BARGER Apr. 1992 17 p
(RTOP 505-59-53-01)
(NASA-TP-3169; L-16968; NAS 1.60:3169) Avail: CASI HC A03/MF A01
SURFACE WAVES, THIN WALLED SHELLS, WAVE DIFFRACTION

N92-23095*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC PERFORMANCE OF A CRUCIFORM NOZZLE WITH MULTIAXIS THRUST-VECTORING AND REVERSE-THRUST CAPABILITIES
DAVID J. WING and SCOTT C. ASBURY Apr. 1992 82 p
(RTOP 505-62-30-01)
(NASA-TP-3188; L-16958; NAS 1.60:3188) Avail: CASI HC A05/MF A01
CONVERGENT-DIVERGENT NOZZLES, PERFORMANCE TESTS, THRUST REVERSAL, THRUST VECTOR CONTROL, TWO DIMENSIONAL FLOW, WIND TUNNEL TESTS

N92-25133*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPARISON OF JET PLUME SHAPE PREDICTIONS AND PLUME INFLUENCE ON SONIC BOOM SIGNATURE
RAYMOND L. BARGER and N. DUANE MELSON Mar. 1992 23 p
(RTOP 505-59-53-01)
(NASA-TP-3172; L-16970; NAS 1.60:3172) Avail: CASI HC A03/MF A01
PLUMES, PREDICTIONS, SHAPES, SIGNATURES, SONIC BOOMS

N92-25202*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE NATURAL FLOW WING-DESIGN CONCEPT
RICHARD M. WOOD and STEVEN X. S. BAUER May 1992 44 p Previously announced in IAA as A89-49677
(RTOP 505-61-71-01)
(NASA-TP-3193; L-16837; NAS 1.60:3193) Avail: CASI HC A03/MF A01
AERODYNAMIC CHARACTERISTICS, AIRCRAFT CONFIGURATIONS, AIRCRAFT DESIGN, FLOW DISTRIBUTION, LEADING EDGES, SLENDER WINGS, SUPERSONIC FLOW, SWEPT WINGS

N92-25276*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND-TUNNEL STATIC AND FREE-FLIGHT INVESTIGATION OF HIGH-ANGLE-OF-ATTACK STABILITY AND CONTROL CHARACTERISTICS OF A MODEL OF THE EA-6B AIRPLANE
FRANK L. JORDAN, JR. and DAVID E. HAHNE May 1992 60 p
(RTOP 505-61-71-07)
(NASA-TP-3194; L-16813; NAS 1.60:3194) Avail: CASI HC A04/MF A01
AERODYNAMIC STABILITY, AIRCRAFT CONTROL, ANGLE OF ATTACK, DIRECTIONAL STABILITY, DYNAMIC STABILITY, FREE FLIGHT, STATIC TESTS, WIND TUNNEL TESTS

N92-28477*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALCULATION OF UNSTEADY TRANSONIC FLOWS WITH MILD SEPARATION BY VISCOUS-INVISCID INTERACTION
JAMES T. HOWLETT Jun. 1992 39 p
(RTOP 509-10-02-03)
(NASA-TP-3197; L-16996; NAS 1.60:3197) Avail: CASI HC A03/MF A01
BOUNDARY LAYERS, FLOW DISTRIBUTION, FLOW

EQUATIONS, MATHEMATICAL MODELS, THREE DIMENSIONAL FLOW, TRANSONIC FLOW, UNSTEADY FLOW, VISCOUS FLOW

N92-28980*# National Aeronautics and Space Administration. *Lewis Research Center, Cleveland, OH.*
LASER ANEMOMETER MEASUREMENTS AND COMPUTATIONS IN AN ANNULAR CASCADE OF HIGH TURNING CORE TURBINE VANES
LOUIS J. GOLDMAN and RICHARD G. SEASHOLTZ Jul. 1992 38 p
(RTOP 505-62-52)
(NASA-TP-3252; E-6354; NAS 1.60:3252) Avail: CASI HC A03/MF A01
ANNULAR FLOW, CASCADE FLOW, CRITICAL VELOCITY, LASER ANEMOMETERS, TURBINE BLADES, TURBOMACHINERY, TURBULENCE, TURBULENT FLOW, VANES

N92-29625*# National Aeronautics and Space Administration. *Ames Research Center, Moffett Field, CA.*
NASA WORKSHOP ON FUTURE DIRECTIONS IN SURFACE MODELING AND GRID GENERATION
W. R. VANDALSEM (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), R. E. SMITH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), Y. K. CHOO (National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.), L. D. BIRCKELBAW, and A. A. VOGEL Mar. 1992 24 p Workshop held at Moffett Field, CA, 5-7 Dec. 1989
(RTOP 505-59-00)
(NASA-CP-10092; A-92072; NAS 1.55:10092) Avail: CASI HC A03/MF A01
COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, GRID GENERATION (MATHEMATICS), NASA PROGRAMS

N92-30295*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
VALIDATION OF THREE-DIMENSIONAL INCOMPRESSIBLE SPATIAL DIRECT NUMERICAL SIMULATION CODE: A COMPARISON WITH LINEAR STABILITY AND PARABOLIC STABILITY EQUATION THEORIES FOR BOUNDARY-LAYER TRANSITION ON A FLAT PLATE
RONALD D. JOSLIN, CRAIG L. STREETT, and CHAU-LYAN CHANG (High Technology Corp., Hampton, VA.) Jul. 1992 49 p
(RTOP 505-59-50-01)
(NASA-TP-3205; L-17026; NAS 1.60:3205) Avail: CASI HC A03/MF A01
BOUNDARIES, BOUNDARY CONDITIONS, BOUNDARY LAYER TRANSITION, BOUNDARY LAYERS, COMPUTERIZED SIMULATION, FINITE DIFFERENCE THEORY, FLAT PLATES, FLUID DYNAMICS, FOURIER SERIES, INCOMPRESSIBLE FLOW, RUNGE-KUTTA METHOD, WAVE REFLECTION

N92-30394*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TWO-DIMENSIONAL AERODYNAMIC CHARACTERISTICS OF SEVERAL POLYGON-SHAPED CROSS-SECTIONAL MODELS APPLICABLE TO HELICOPTER FUSELAGES
HENRY L. KELLEY, CYNTHIA A. CROWELL, and JOHN C. WILSON Aug. 1992 30 p
(DA PROJ. 1L2-36003-D-313; RTOP 505-59-36-01)
(NASA-TP-3233; L-16951; NAS 1.60:3233; AVSCOM-TR-92-B-002) Avail: CASI HC A03/MF A01
AERODYNAMIC CHARACTERISTICS, AIRCRAFT MODELS, BLUNT BODIES, CROSS SECTIONS, FUSELAGES, HELICOPTERS, POLYGONS, WIND TUNNEL TESTS

N92-30747*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRAJECTORY FITTING IN FUNCTION SPACE WITH APPLICATION TO ANALYTIC MODELING OF SURFACES
RAYMOND L. BARGER Jul. 1992 15 p
(RTOP 505-59-53-01)
(NASA-TP-3232; L-17054; NAS 1.60:3232) Avail: CASI HC A03/MF A01
COMPUTATIONAL GRIDS, CURVE FITTING, FUNCTION SPACE, GRID GENERATION (MATHEMATICS), MATHEMATICAL MODELS, SMOOTHING, TRAJECTORIES

N92-30909*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DIRECT SIMULATION OF HIGH-SPEED MIXING LAYERS
H. S. MUKUNDA, B. SEKAR (General Electric Co., Cincinnati, OH.), M. H. CARPENTER, J. PHILIP DRUMMOND, and AJAY KUMAR Jul. 1992 63 p
(RTOP 505-62-40-06)
(NASA-TP-3186; L-16929; NAS 1.60:3186) Avail: CASI HC A04/MF A01
COMPUTATIONAL GRIDS, COMPUTERIZED SIMULATION, CONVECTION, FLOW CHARACTERISTICS, FREE WING AIRCRAFT, MIXING LAYERS (FLUIDS), TURBULENCE

N92-31532*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND TUNNEL AERODYNAMIC CHARACTERISTICS OF A TRANSPORT-TYPE AIRFOIL IN A SIMULATED HEAVY RAIN ENVIRONMENT
GAUDY M. BEZOS, R. EARL DUNHAM, JR., GARL L. GENTRY, JR., and W. EDWARD MELSON, JR. (National Aeronautics and Space Administration. Wallops Flight Facility, Wallops Island, VA.) Aug. 1992 68 p
(RTOP 505-68-01-02)
(NASA-TP-3184; L-16959; NAS 1.60:3184) Copyright Avail: CASI HC A04/MF A01
AERODYNAMIC CHARACTERISTICS, AIRFOILS, ENVIRONMENT EFFECTS, ENVIRONMENT SIMULATION, PERFORMANCE PREDICTION, RAIN, SCALE MODELS, WIND TUNNEL TESTS

N92-32480*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A METHOD FOR DESIGNING BLENDED WING-BODY CONFIGURATIONS FOR LOW WAVE DRAG
RAYMOND L. BARGER Sep. 1992 19 p
(RTOP 505-59-53-01)
(NASA-TP-3261; L-17095; NAS 1.60:3261) Avail: CASI HC A03/MF A01
AERODYNAMIC CONFIGURATIONS, AIRCRAFT DESIGN, BODY-WING CONFIGURATIONS, COMPUTATIONAL GRIDS, DRAG REDUCTION, SUPERSONIC AIRCRAFT, WAVE DRAG

N92-33484*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
APPLICATIONS OF A DIRECT/ITERATIVE DESIGN METHOD TO COMPLEX TRANSONIC CONFIGURATIONS
LEIGH ANN SMITH and RICHARD L. CAMPBELL Sep. 1992 36 p
(RTOP 505-59-10-03)
(NASA-TP-3234; L-16962; NAS 1.60:3234) Avail: CASI HC A03/MF A01
AERODYNAMIC DRAG, AIRCRAFT CONFIGURATIONS, AIRCRAFT DESIGN, DRAG REDUCTION, INDUCED DRAG, INTERFERENCE DRAG, NACELLES, TRANSPORT AIRCRAFT

N92-33625*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A NOZZLE INTERNAL PERFORMANCE PREDICTION METHOD
JOHN R. CARLSON Oct. 1992 50 p
(RTOP 505-62-30-01)
(NASA-TP-3221; L-16965; NAS 1.60:3221) Avail: CASI HC A03/MF A01
DISCHARGE COEFFICIENT, FLOW DISTRIBUTION, NAVIER-STOKES EQUATION, NOZZLE DESIGN, NOZZLE

EFFICIENCY, NOZZLE FLOW, NOZZLE THRUST COEFFICIENTS, PERFORMANCE PREDICTION, PITCHING MOMENTS, ROLLING MOMENTS, YAWING MOMENTS

N92-33656*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SURVEY AND ANALYSIS OF RESEARCH ON SUPERSONIC DRAG-DUE-TO-LIFT MINIMIZATION WITH RECOMMENDATIONS FOR WING DESIGN
HARRY W. CARLSON (Lockheed Engineering and Sciences Co., Hampton, VA.) and MICHAEL J. MANN Sep. 1992 158 p
(RTOP 505-68-70-02)
(NASA-TP-3202; L-16963; NAS 1.60:3202) Avail: CASI HC A08/MF A02
AIRCRAFT DESIGN, BODY-WING CONFIGURATIONS, CAMBERED WINGS, SUPERSONIC AIRCRAFT, SUPERSONIC DRAG, SURVEYS, TWISTED WINGS, WINGS

N92-33706*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF AFTERBODY GEOMETRY ON AERODYNAMIC CHARACTERISTICS OF ISOLATED NONAXISYMMETRIC AFTERBODIES AT TRANSONIC MACH NUMBERS
LINDA S. BANGERT and GEORGE T. CARSON, JR. Sep. 1992 265 p
(RTOP 505-62-30-01)
(NASA-TP-3236; L-17034; NAS 1.60:3236) Avail: CASI HC A12/MF A03
AERODYNAMIC CHARACTERISTICS, AFTERBODIES, AIRCRAFT CONFIGURATIONS, AIRCRAFT MODELS, BOATTAILS, FIGHTER AIRCRAFT, INTERACTIONAL AERODYNAMICS, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N92-34193*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PARAMETRIC INVESTIGATION OF SINGLE-EXPANSION-RAMP NOZZLES AT MACH NUMBERS FROM 0.60 TO 1.20
FRANCIS J. CAPONE, RICHARD J. RE, and E. ANN BARE Oct. 1992 276 p
(RTOP 505-62-30-01)
(NASA-TP-3240; L-17067; NAS 1.60:3240) Avail: CASI HC A13/MF A03
AERODYNAMIC COEFFICIENTS, AERODYNAMIC DRAG, CONVERGENT NOZZLES, CONVERGENT-DIVERGENT NOZZLES, MACH NUMBER, NOZZLE DESIGN, NOZZLE FLOW, PROPULSION SYSTEM PERFORMANCE, WIND TUNNEL TESTS

03

AIR TRANSPORTATION AND SAFETY

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

N91-10936*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AVIATION SAFETY/AUTOMATION PROGRAM CONFERENCE
SAMUEL A. MORELLO, comp. Washington Oct. 1990 270 p Conference held in Virginia Beach, VA, 11-12 Oct. 1989
(RTOP 505-67-21-07)
(NASA-CP-3090; L-16840; NAS 1.55:3090) Avail: CASI HC A12/MF A03
AIR TRAFFIC CONTROL, AIRCRAFT SAFETY, AVIONICS, COCKPITS, CONFERENCES, HUMAN FACTORS ENGINEERING, MAN MACHINE SYSTEMS, MAN-COMPUTER INTERFACE, TEST FACILITIES

N91-11682*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE WIND SHEAR DETECTION AND WARNING SYSTEMS. SECOND COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE, PART 1
AMOS A. SPADY, JR., comp., ROLAND L. BOWLES, comp., and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, DC.) Jul. 1990 347 p Conference held in Williamsburg, VA, 18-20 Oct. 1988
(RTOP 505-67-41-54)
(NASA-CP-10050-PT-1; NAS 1.55:10050-PT-1) Avail: CASI HC A15/MF A03
AIRBORNE EQUIPMENT, AIRCRAFT HAZARDS, CONFERENCES, DETECTION, WARNING SYSTEMS, WIND SHEAR

N91-11695*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE WIND SHEAR DETECTION AND WARNING SYSTEMS. SECOND COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE, PART 2
AMOS A. SPADY, JR., comp., ROLAND L. BOWLES, comp., and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, DC.) Jul. 1990 452 p Conference held in Williamsburg, VA, 18-20 Oct. 1988
(RTOP 505-67-41-54)
(NASA-CP-10050-PT-2; NAS 1.55:10050-PT-2) Avail: CASI HC A20/MF A04
AIRCRAFT GUIDANCE, CONFERENCES, DETECTION, MICROBURSTS (METEOROLOGY), WARNING SYSTEMS, WIND SHEAR

N91-15141*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
REPORT OF THE WORKSHOP ON AVIATION SAFETY/AUTOMATION PROGRAM
SAMUEL A. MORELLO, ed. Oct. 1990 45 p Workshop held in Virginia Beach, VA, 10 Oct. 1989
(RTOP 505-64-13-22)
(NASA-CP-10054; NAS 1.55:10054) Avail: CASI HC A03/MF A01
AIR TRAFFIC CONTROL, AIR TRAFFIC CONTROLLERS (PERSONNEL), COMPUTER TECHNIQUES, CONFERENCES, FLIGHT MANAGEMENT SYSTEMS, WORKSTATIONS

N91-24140*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE WIND SHEAR DETECTION AND WARNING SYSTEMS: THIRD COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE, PART 2
DAN D. VICROY, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), ROLAND L. BOWLES, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, DC.) Jan. 1991 464 p Conference held in Hampton, VA, 16-18 Oct. 1990 Prepared in cooperation with Federal Aviation Administration, Washington, DC
(RTOP 505-64-12)
(NASA-CP-10060-PT-2; NAS 1.55:10060-PT-2; DOT/FAA/RD-91/2-PT-2) Avail: CASI HC A20/MF A04
AIRBORNE EQUIPMENT, CONFERENCES, DOPPLER RADAR, METEOROLOGICAL RADAR, MICROBURSTS (METEOROLOGY), OPTICAL RADAR, RADAR DETECTION, WARNING SYSTEMS, WIND SHEAR

N91-24166*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE WIND SHEAR DETECTION AND WARNING SYSTEMS: THIRD COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE, PART 1
DAN D. VICROY, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), ROLAND

L. BOWLES, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, DC.) Jan. 1991 490 p Conference held in Hampton, VA, 16-18 Oct. 1990 Prepared in cooperation with FAA, Washington, DC
(RTOP 505-64-12)
(NASA-CP-10060-PT-1; NAS 1.55:10060-PT-1; DOT/FAA/RD-91/2-PT-1) Avail: CASI HC A21/MF A04

AERODYNAMICS, AIRCRAFT PERFORMANCE, FLIGHT HAZARDS, FLIGHT MANAGEMENT SYSTEMS, FLIGHT TESTS, MICROBURSTS (METEOROLOGY), RAIN, WARNING SYSTEMS, WIND SHEAR

N91-70436*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
THE DEVELOPMENT OF THE NASA AVIATION SAFETY REPORTING SYSTEM
W. D. REYNARD, C. E. BILLINGS, E. S. CHEANEY, and R. HARDY Nov. 1986 192 p
(RTOP 505-67-41)
(NASA-RP-1114; A-85127; NAS 1.61:1114) Avail: CASI HC A09

N92-10994*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A COMPARISON OF AIRBORNE WAKE VORTEX DETECTION MEASUREMENTS WITH VALUES PREDICTED FROM POTENTIAL THEORY
ERIC C. STEWART Washington Nov. 1991 38 p
(RTOP 505-68-10-01)
(NASA-TP-3125; L-16899; NAS 1.60:3125) Avail: CASI HC A03/MF A01

ALGORITHMS, FLIGHT SAFETY, FLOW DISTRIBUTION, IN-FLIGHT MONITORING, NEAR WAKES, VORTICES, WAKES

N92-30395*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LEWIS ICING RESEARCH TUNNEL TEST OF THE AERODYNAMIC EFFECTS OF AIRCRAFT GROUND DEICING/ANTI-ICING FLUIDS
L. JAMES RUNYAN (Boeing Commercial Airplane Co., Seattle, WA.), THOMAS A. ZIERTEN (Boeing Commercial Airplane Co., Seattle, WA.), EUGENE G. HILL (Boeing Commercial Airplane Co., Seattle, WA.), and HAROLD E. ADDY, JR. Aug. 1992 134 p
(RTOP 505-68-11)
(NASA-TP-3238; E-5808; NAS 1.15:3238) Avail: CASI HC A07/MF A02

AERODYNAMIC CHARACTERISTICS, BOEING AIRCRAFT, DEICING, ICE FORMATION, NEWTONIAN FLUIDS, RHEOLOGY, WIND TUNNEL TESTS

04

AIRCRAFT COMMUNICATIONS AND NAVIGATION

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

N92-21459*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FLIGHT DECK BENEFITS OF INTEGRATED DATA LINK COMMUNICATION
MARVIN C. WALLER Washington NASA. Langley Research Center Apr. 1992 49 p
(RTOP 505-64-13-01)
(NASA-TP-3219; L-16845; NAS 1.60:3219) Avail: CASI HC A03/MF A01

AIR TRAFFIC CONTROL, AIRCRAFT COMMUNICATION, COMPUTERIZED SIMULATION, DATA LINKS, DATA MANAGEMENT, DATA TRANSMISSION, DIGITAL DATA, GROUND-AIR-GROUND COMMUNICATION, PULSE COMMUNICATION

05

AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes aircraft simulation technology.

N91-14323*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A METHOD FOR THE DESIGN OF TRANSONIC FLEXIBLE WINGS
LEIGH ANN SMITH and RICHARD L. CAMPBELL Washington Dec. 1990 41 p
(RTOP 505-61-21-03)
(NASA-TP-3045; L-16762; NAS 1.60:3045) Avail: CASI HC A03/MF A01

AERODYNAMIC LOADS, AEROELASTICITY, AIRCRAFT DESIGN, AIRFOIL PROFILES, FLEXIBLE WINGS, TRANSONIC SPEED

N91-17014*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC FOOTPRINT LOCAL FORCES, AREAS, AND ASPECT RATIOS FOR THREE TYPE 7 AIRCRAFT TIRES
WILLIAM E. HOWELL (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), SHARON E. PEREZ, and WILLIAM A. VOGLER (Lockheed Engineering and Sciences Co., Hampton, VA.) Washington Feb. 1991 95 p
(RTOP 505-63-41-02)
(NASA-TP-2983; L-16521; NAS 1.60:2983) Avail: CASI HC A05/MF A01

AIRCRAFT TIRES, AREA, ASPECT RATIO, LOAD DISTRIBUTION (FORCES), VEHICULAR TRACKS

N91-19082*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
STATE ESTIMATION APPLICATIONS IN AIRCRAFT FLIGHT-DATA ANALYSIS: A USER'S MANUAL FOR SMACK
RALPH E. BACH, JR. Mar. 1991 134 p
(RTOP 505-66-41)
(NASA-RP-1252; A-88203; NAS 1.61:1252) Avail: CASI HC A07/MF A02

The evolution in the use of state estimation is traced for the analysis of aircraft flight data. A unifying mathematical framework for state estimation is reviewed, and several examples are presented that illustrate a general approach for checking instrument accuracy and data consistency, and for estimating variables that are difficult to measure. Recent applications associated with research aircraft flight tests and airline turbulence upsets are described. A computer program for aircraft state estimation is discussed in some detail. This document is intended to serve as a user's manual for the program called SMACK (SMoothing for AirCraft Kinematics). The diversity of the applications described emphasizes the potential advantages in using SMACK for flight-data analysis. Author

N91-20071*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
PROCEEDINGS OF THE X-15 FIRST FLIGHT 30TH ANNIVERSARY CELEBRATION
Washington Jan. 1991 174 p Symposium held in Edwards, CA, 8 Jun. 1989
(RTOP 533-02-00)
(NASA-CP-3105; H-1622; NAS 1.55:3105) Avail: CASI HC A08/MF A02

AIRCRAFT DESIGN, CONFERENCES, HISTORIES, HYPERSONIC FLIGHT, NASA PROGRAMS, RESEARCH AND DEVELOPMENT, SPACE FLIGHT, X-15 AIRCRAFT

N91-21127*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPAN REDUCTION EFFECTS ON THE FLUTTER CHARACTERISTICS OF ARROW-WING SUPERSONIC TRANSPORT CONFIGURATIONS
DONALD F. KELLER and ELLEN PARKER BULLOCK 26 Dec. 1990 55 p
(RTOP 505-63-21)
(NASA-TP-3077; L-16807; NAS 1.60:3077) Avail: CASI HC A04/MF A01

AIRCRAFT CONFIGURATIONS, ARROW WINGS, DYNAMIC PRESSURE, FLUTTER ANALYSIS, SUPERSONIC TRANSPORTS, TRANSONIC FLUTTER, WIND TUNNEL TESTS, WING SPAN

N91-24199*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF CLOUD DETECTION INSTRUMENTS AND PERFORMANCE OF LAMINAR-FLOW LEADING-EDGE TEST ARTICLES DURING NASA LEADING-EDGE FLIGHT-TEST PROGRAM
RICHARD E. DAVIS (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), DAL V. MADDALON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), RICHARD D. WAGNER (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), DAVID F. FISHER (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), and RONALD YOUNG (National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.) Apr. 1989 58 p
(RTOP 505-60-31-01)
(NASA-TP-2888; L-16509; NAS 1.60:2888) Avail: CASI HC A04/MF A01

AIRCRAFT DESIGN, AIRLINE OPERATIONS, BOUNDARY LAYER CONTROL, CLOUDS, DETECTION, FLIGHT SIMULATION, HAZE, LAMINAR BOUNDARY LAYER, LEADING EDGES

N91-24200*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA-LARC FLIGHT-CRITICAL DIGITAL SYSTEMS TECHNOLOGY WORKSHOP
C. W. MEISSNER, JR., ed., J. R. DUNHAM, ed., and G. CRIM, ed. Apr. 1989 191 p Workshop held in Hampton, VA, 13-15 Dec. 1988
(RTOP 505-66-21-03)
(NASA-CP-10028; REPT-412U-3181-29; NAS 1.55:10028) Avail: CASI HC A09/MF A02

COMPUTER SYSTEMS DESIGN, DIGITAL SYSTEMS, FLIGHT CONTROL, QUALITY CONTROL, RELIABILITY ENGINEERING, SYSTEMS ENGINEERING, TECHNOLOGY ASSESSMENT

N92-13054*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PLANFORM CURVATURE EFFECTS ON FLUTTER CHARACTERISTICS OF A WING WITH 56 DEG LEADING-EDGE SWEEP AND PANEL ASPECT RATIO OF 1.14
DONALD F. KELLER, MAYNARD C. SANDFORD, and THERESA L. PINKERTON (Illinois Univ., Urbana.) Washington Sep. 1991 46 p
(RTOP 505-63-50-13)
(NASA-TP-3116; L-16858; NAS 1.60:3116) Avail: CASI HC A03/MF A01

AEROELASTICITY, CURVATURE, FLUTTER ANALYSIS, LEADING EDGE SWEEP, PLANFORMS, SWEPT WINGS, TRANSONIC FLUTTER, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N92-33874*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HIGH-SPEED RESEARCH: SONIC BOOM, VOLUME 1
CHRISTINE M. DARDEN, comp. Washington Oct. 1992 195 p Workshop held in Hampton, VA, 25-27 Feb. 1992
(RTOP 537-03-21-01)
(NASA-CP-3172; L-17145-VOL-1; NAS 1.55:3172) Avail: CASI HC A09/MF A03

ATMOSPHERIC EFFECTS, ATMOSPHERIC TURBULENCE, SHOCK WAVE PROPAGATION, SONIC BOOMS, TURBULENCE EFFECTS

06

AIRCRAFT INSTRUMENTATION

Includes cockpit and cabin display devices; and flight instruments.

N91-17020*# National Aeronautics and Space Administration, Washington, DC.
SPACE TRANSPORTATION AVIONICS TECHNOLOGY SYMPOSIUM. VOLUME 2: CONFERENCE PROCEEDINGS
Aug. 1990 742 p Symposium held in Williamsburg, VA, 7-9 Nov. 1989
(NASA-CP-3081-VOL-2; NAS 1.55:3081-VOL-2) Avail: CASI HC A99/MF A06

AVIONICS, COMPUTER PROGRAMMING, CONFERENCES, SOFTWARE ENGINEERING, SPACE TRANSPORTATION SYSTEM, SYSTEMS ENGINEERING, SYSTEMS INTEGRATION

N91-31143*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FLIGHT TESTS WITH A DATA LINK USED FOR AIR TRAFFIC CONTROL INFORMATION EXCHANGE
CHARLES E. KNOX and CHARLES H. SCANLON Sep. 1991 38 p
(RTOP 505-64-13-01)
(NASA-TP-3135; L-16936; NAS 1.60:3135) Avail: CASI HC A03/MF A01

AIR TRAFFIC CONTROL, CIVIL AVIATION, DATA LINKS, FLIGHT OPERATIONS, FLIGHT TESTS, RADIO FREQUENCIES, SAFETY FACTORS, SYSTEMS ENGINEERING, VOICE COMMUNICATION

N92-13065*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF SHORT-TERM EXPOSURE TO STEREOSCOPIC THREE-DIMENSIONAL FLIGHT DISPLAYS ON REAL-WORLD DEPTH PERCEPTION
ANTHONY M. BUSQUETS, RUSSELL V. PARRISH, and STEVEN P. WILLIAMS Washington Oct. 1991 26 p
(DA PROJ. 1L1-61102-AH-45; RTOP 505-64-13-32)
(NASA-TP-3117; L-16897; NAS 1.60:3117; AVSCOM-TR-91-B-014; AD-A242333) Avail: CASI HC A03/MF A01

DEPTH, DISPLAY DEVICES, FLIGHT INSTRUMENTS, HUMAN FACTORS ENGINEERING, PILOT PERFORMANCE, SPACE PERCEPTION, STEREOSCOPIC VISION

N92-20546*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
VENTURI AIR-JET VACUUM EJECTORS FOR HIGH-VOLUME ATMOSPHERIC SAMPLING ON AIRCRAFT PLATFORMS
GERALD F. HILL (Lockheed Engineering and Sciences Co., Hampton, VA.), GLEN W. SACHSE, DOUGLAS C. YOUNG, LARRY O. WADE (Lockheed Engineering and Sciences Co., Hampton, VA.), and LEWIS G. BURNEY Apr. 1992 38 p
(RTOP 464-54-17-70)
(NASA-TP-3183; L-16937; NAS 1.60:3183) Avail: CASI HC A03/MF A01

AIR JETS, AIR SAMPLING, AIRBORNE EQUIPMENT, EJECTORS, ELECTRA AIRCRAFT, FLYING PLATFORMS, VACUUM PUMPS, VENTURI TUBES

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.

N91-20086*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION 1991
Mar. 1991 574 p Conference held in Cleveland, OH, 20-21 Mar. 1991
(RTOP 505-62-00)
(NASA-CP-10063; E-5954; NAS 1.55:10063) Avail: CASI HC A24/MF A04
AIR BREATHING ENGINES, AIRCRAFT DESIGN, AIRCRAFT ENGINES, COMPUTER PROGRAMS, CONTROL SYSTEMS DESIGN, FLUID MECHANICS, PROPULSION SYSTEM CONFIGURATIONS, STRUCTURAL DESIGN

N92-22510*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION 1987
Washington Feb. 1990 498 p Conference held in Cleveland, OH, 17-19 Nov. 1987 Previously announced as N88-16697, N88-15785, N88-15790, N88-15794, N88-15800 and N88-15807
(RTOP 505-62-3B)
(NASA-CP-3049; E-3798; NAS 1.55:3049) Avail: CASI HC A21/MF A04
AIRCRAFT ENGINES, CONFERENCES, ENGINE DESIGN, PROPULSION SYSTEM CONFIGURATIONS, PROPULSION SYSTEM PERFORMANCE

N92-22863*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DESIGN AND PERFORMANCE OF CONTROLLED-DIFFUSION STATOR COMPARED WITH ORIGINAL DOUBLE-CIRCULAR-ARC STATOR
THOMAS F. GELDER, JAMES F. SCHMIDT, KENNETH L. SUDER, and MICHAEL D. HATHAWAY (Army Aviation Systems Command, Cleveland, OH.) Mar. 1989 80 p Presented at the 1987 Aerospace Technology Conference and Exposition, Long Beach, CA, 5-8 Oct. 1987; sponsored by SAE
(DA PROJ. 1L1-61102-AH-45; RTOP 505-62-51)
(NASA-TP-2852; E-4195; NAS 1.60:2852; AVSCOM-TR-88-C-013; SAE-871783) Avail: CASI HC A05/MF A01
DIFFUSION, ENERGY CONVERSION EFFICIENCY, FAN BLADES, STATOR BLADES, STATORS

N92-25712*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
WORKSHOP ON GRID GENERATION AND RELATED AREAS
Apr. 1992 160 p Workshop held in Cleveland, OH, 14-15 Nov. 1991
(RTOP 505-62-52)
(NASA-CP-10089; E-6823; NAS 1.55:10089) Avail: CASI HC A08/MF A02
COMPUTATIONAL GRIDS, CONFERENCES, GRID GENERATION (MATHEMATICS), MULTIGRID METHODS, SURFACES

N92-25808*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPUTATIONAL FLUID DYNAMICS
Feb. 1992 219 p Conference held at Moffett Field, CA, 12-14 Mar. 1991; sponsored by NASA. Ames Research Center Original contains color illustrations
(RTOP 505-62-52)
(NASA-CP-10078; E-6374; NAS 1.55:10078)
ALGORITHMS, COMPUTATIONAL FLUID DYNAMICS, FLOW DISTRIBUTION, MATHEMATICAL MODELS, NUMERICAL ANALYSIS, REAL GASES, RESEARCH AND DEVELOPMENT

08

AIRCRAFT STABILITY AND CONTROL

Includes aircraft handling qualities; piloting; flight controls; and autopilots.

N91-10079*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
FLIGHT CHARACTERISTICS OF A MODIFIED SCHWEIZER SGS1-36 SAILPLANE AT LOW AND VERY HIGH ANGLES OF ATTACK
ALEX G. SIM Jul. 1990 48 p
(RTOP 505-45-21)
(NASA-TP-3022; H-1563; NAS 1.60:3022) Avail: CASI HC A03/MF A01
AERODYNAMIC STABILITY, ANGLE OF ATTACK, FLIGHT CHARACTERISTICS, GLIDERS, PARAMETER IDENTIFICATION, PILOT PERFORMANCE

N91-20128*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A CONTROLS ENGINEERING APPROACH FOR ANALYZING AIRPLANE INPUT-OUTPUT CHARACTERISTICS
P. DOUGLAS ARBUCKLE Washington Apr. 1991 22 p
(RTOP 505-66-71-03)
(NASA-TP-3072; L-16798; NAS 1.60:3072) Avail: CASI HC A03/MF A01
AIRCRAFT CONTROL, AIRCRAFT MODELS, CONTROL SYSTEMS DESIGN, MODAL RESPONSE

N91-25151*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DEVELOPMENT OF AN ADAPTIVE FAILURE DETECTION AND IDENTIFICATION SYSTEM FOR DETECTING AIRCRAFT CONTROL ELEMENT FAILURES
W. THOMAS BUNDICK 1990 150 p Sponsored in part by Planning Research Corp., Hampton, VA
(RTOP 505-66-41-04)
(NASA-TP-3051; L-16801; NAS 1.60:3051) Avail: CASI HC A07/MF A02
ADAPTIVE CONTROL, AIRCRAFT CONTROL, ATMOSPHERIC TURBULENCE, FAILURE ANALYSIS, FAULT TOLERANCE

N91-30154*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
APPLICATION AND FLIGHT TEST OF LINEARIZING TRANSFORMATIONS USING MEASUREMENT FEEDBACK TO THE NONLINEAR CONTROL PROBLEM
ROBERT F. ANTONIEWICZ (National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.), EUGENE L. DUKE (National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.), and P. K. A. MENON (Georgia Inst. of Tech., Atlanta.) Sep. 1991 56 p
(RTOP 505-60-21)
(NASA-TP-3154; H-1629; NAS 1.60:3154) Avail: CASI HC A04/MF A01
AIRCRAFT CONTROL, CONTROL SYSTEMS DESIGN, CONTROLLERS, F-15 AIRCRAFT, FEEDBACK CONTROL, FLIGHT CONTROL, NONLINEAR SYSTEMS, TRAJECTORY CONTROL

N92-10027*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ON THE FORMULATION OF A MINIMAL UNCERTAINTY MODEL FOR ROBUST CONTROL WITH STRUCTURED UNCERTAINTY
CHRISTINE M. BELCASTRO (Drexel Univ., Philadelphia, PA.), B.-C. CHANG, and ROBERT FISCHL (Drexel Univ., Philadelphia, PA.) Sep. 1991 34 p
(RTOP 505-66-01-02)
(NASA-TP-3094; L-16893; NAS 1.60:3094) Avail: CASI HC A03/MF A01
CONTROL SYSTEMS DESIGN, FEEDBACK CONTROL, MATRICES (MATHEMATICS), ROBUSTNESS (MATHEMATICS), TRANSFER FUNCTIONS

N92-20195*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CONTROL INTEGRATION CONCEPT FOR HYPERSONIC CRUISE-TURN MANEUVERS
DAVID L. RANEY and FREDERICK J. LALLMAN Feb. 1992 63 p
(RTOP 505-64-40-01)
(NASA-TP-3136; L-16928; NAS 1.60:3136) Avail: CASI HC A04/MF A01
AIRCRAFT MANEUVERS, AIRCRAFT PERFORMANCE, FLIGHT CONTROL, HYPERSONIC FLIGHT, HYPERSONIC VEHICLES

N92-21410*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A METHODOLOGY FOR COMPUTING UNCERTAINTY BOUNDS OF MULTIVARIABLE SYSTEMS BASED ON SECTOR STABILITY THEORY CONCEPTS
MARTIN R. WASZAK Apr. 1992 42 p
(RTOP 505-66-71-01)
(NASA-TP-3166; L-16846; NAS 1.60:3166) Avail: CASI HC A03/MF A01
CONTROL STABILITY, CONTROL THEORY, LINEAR SYSTEMS, MIMO (CONTROL SYSTEMS), MULTIVARIABLE CONTROL, SYSTEMS STABILITY

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.

N91-13461*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALIBRATION OF THE 13- BY 13-INCH ADAPTIVE WALL TEST SECTION FOR THE LANGLEY 0.3-METER TRANSONIC CRYOGENIC TUNNEL
RAYMOND E. MINECK and ACQUILLA S. HILL Washington Dec. 1990 111 p
(RTOP 505-61-21-03)
(NASA-TP-3049; L-16787; NAS 1.60:3049) Avail: CASI HC A06/MF A02
AIRFOIL PROFILES, CALIBRATING, FLEXIBILITY, FLOW DISTRIBUTION, WIND TUNNEL WALLS

N91-24211*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ADVANCED HYPERVELOCITY AEROPHYSICS FACILITY WORKSHOP
ROBERT D. WITCOFSKI, comp. and WILLIAM I. SCALLION, comp. May 1989 170 p Workshop held in Hampton, VA, 10-11 May 1988
(RTOP 506-40-41-02)
(NASA-CP-10031; NAS 1.55:10031) Avail: CASI HC A08/MF A02
AEROTHERMODYNAMICS, COMPUTATIONAL FLUID DYNAMICS, HYPERSONIC AIRCRAFT, HYPERVELOCITY FLOW, TECHNOLOGY ASSESSMENT

N92-31640*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SUPERSONIC THROUGHFLOW FAN TEST FACILITY AT NASA. LEWIS RESEARCH CENTER
DONALD C. URASEK, WALTER S. CUNNAN, RICHARD L. LANTZ, DENNIS L. FRONEK, RONALD A. DAWSON, and JEFFREY C. BROWN Sep. 1990 25 p
(RTOP 505-62-61)
(NASA-TP-3038; E-5398; NAS 1.60:3038) Avail: CASI HC A03/MF A01
PROPULSION SYSTEM CONFIGURATIONS, PROPULSION SYSTEM PERFORMANCE, SUPERSONIC FLOW, SUPERSONIC SPEED, SUPERSONIC TEST APPARATUS, SUPERSONIC TURBINES, SUPERSONIC WIND TUNNELS, TURBOFANS, WIND TUNNEL DRIVES

12

ASTRONAUTICS (GENERAL)

N91-20147*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
MANUAL CONTROL ASPECTS OF ORBITAL FLIGHT
Abstracts Only
ADAM R. BRODY, ed. (Sterling Software, Palo Alto, CA.) and STEPHEN R. ELLIS, ed. Dec. 1990 14 p Workshop held at Moffett Field, CA, 22 Feb. 1990
(RTOP 506-47-31)
(NASA-CP-10056; A-90286; NAS 1.55:10056) Avail: CASI HC A03/MF A01
HUMAN FACTORS ENGINEERING, MANUAL CONTROL, ORBITAL MANEUVERS, SPACE STATIONS, SPACE TRANSPORTATION SYSTEM

N91-22139*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
VISION-21: SPACE TRAVEL FOR THE NEXT MILLENNIUM
GEOFFREY A. LANDIS, ed. (Sverdrup Technology, Inc., Brook Park, OH.) Apr. 1990 600 p Symposium held in Cleveland, OH, 3-4 Apr. 1990
(NASA-CP-10059; E-5838; NAS 1.55:10059) Avail: CASI HC A25/MF A06
CONFERENCES, MISSION PLANNING, NUCLEAR PROPULSION, NUCLEAR REACTORS, PROJECT PLANNING, REACTOR DESIGN, REACTOR TECHNOLOGY, SPACE EXPLORATION, SPACECRAFT PROPULSION

13

ASTRODYNAMICS

Includes powered and free-flight trajectories; and orbital and launching dynamics.

N91-10092*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
LONG-TERM ORBITAL LIFETIME PREDICTIONS

P. E. DREHER and A. T. LYONS Oct. 1990 26 p
(NASA-TP-3058; NAS 1.60:3058) Avail: CASI HC A03/MF A01
BOILER PLATE, LONG DURATION EXPOSURE FACILITY, LONG TERM EFFECTS, ORBITAL LIFETIME, PERFORMANCE PREDICTION

N91-17073*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM, 1990
THOMAS STENGLE, ed. Dec. 1990 549 p Symposium held in Greenbelt, MD, 22-24 May 1990
(NASA-CP-3102; REPT-91B00018; NAS 1.55:3102) Avail: CASI HC A23/MF A04
AERODYNAMICS, ATTITUDE (INCLINATION), CONFERENCES, ESTIMATES, FLIGHT MECHANICS, SATELLITE ATTITUDE CONTROL, SPACECRAFT ORBITS, SPACECRAFT TRAJECTORIES

N92-14070*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM, 1991
THOMAS STENGLE, ed. Washington Oct. 1991 490 p Symposium held in Greenbelt, MD, 21-23 May 1991
(NASA-CP-3123; REPT-91B00133; NAS 1.55:3123) Avail: CASI HC A21/MF A04
ATTITUDE (INCLINATION), MISSION PLANNING, ORBIT CALCULATION, ORBIT DECAY

14

GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)

Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators.

N92-12010*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
CONTROL CENTER TECHNOLOGY CONFERENCE PROCEEDINGS
Aug. 1991 641 p Conference held in Clear Lake, TX, 18-20 Jun. 1991 Sponsored in part by Houston Univ., Clear Lake, TX
(NASA-CP-10081; NAS 1.55:10081) Avail: CASI HC A99/MF A06
ARCHITECTURE (COMPUTERS), COMMUNICATION NETWORKS, COMPUTER NETWORKS, CONFERENCES, FLIGHT CONTROL, GROUND BASED CONTROL, GROUND SUPPORT EQUIPMENT, GROUND SUPPORT SYSTEMS, INTEGRATED MISSION CONTROL CENTER

N92-30307*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THREE-DIMENSIONAL LASER WINDOW FORMATION
VINCENT G. VERHOFF Jul. 1992 12 p
(RTOP 505-62-84)
(NASA-RP-1280; E-6096; NAS 1.61:1280) Avail: CASI HC A03/MF A01
The NASA Lewis Research Center has developed and implemented a unique process for forming flawless three-dimensional laser windows. These windows represent a major part of specialized, nonintrusive laser data acquisition systems used in a variety of compressor and turbine research test facilities. This report discusses in detail the aspects of three-dimensional laser window formation. It focuses on the unique methodology and the peculiarities associated with the formation of these windows. Included in this discussion are the design criteria, bonding mediums, and evaluation testing for three-dimensional laser windows. Author

15

LAUNCH VEHICLES AND SPACE VEHICLES

Includes boosters; operating problems of launch/space vehicle systems; and reusable vehicles.

N91-18180*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PARAMETRIC TRADE STUDIES ON A SHUTTLE 2 LAUNCH SYSTEM ARCHITECTURE
DOUGLAS O. STANLEY, THEODORE A. TALAY, ROGER A. LEPSCH, W. DOUGLAS MORRIS, J. CHRISTOPHER NAFTEL, and CHRISTOPHER I. CRUZ Washington Mar. 1991 56 p
(RTOP 506-40-61-01)
(NASA-TP-3059; L-16790; NAS 1.60:3059) Avail: CASI HC A04/MF A01
BOOSTER ROCKET ENGINES, LAUNCH VEHICLE CONFIGURATIONS, PROPULSION SYSTEM CONFIGURATIONS, SPACECRAFT CONFIGURATIONS, SPACECRAFT DESIGN, THRUST-WEIGHT RATIO

N91-20177*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BENEFITS FROM SYNERGIES AND ADVANCED TECHNOLOGIES FOR AN ADVANCED-TECHNOLOGY SPACE STATION
L. BERNARD GARRETT (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), MELVIN J. FEREBEE, JR. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), MANUEL J. QUEIJO (Bionetics Corp., Hampton, VA.), and ANSEL J. BUTTERFIELD (Bionetics Corp., Hampton, VA.) Washington Apr. 1991 25 p
(RTOP 506-49-31-01)
(NASA-TP-3067; L-16618; NAS 1.60:3067) Avail: CASI HC A03/MF A01
ARTIFICIAL GRAVITY, SPACE STATIONS, SPACECRAFT CABINS, SPACECRAFT CONFIGURATIONS, SYSTEMS ANALYSIS

N91-27177*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TECHNOLOGY FOR THE FUTURE: IN-SPACE TECHNOLOGY EXPERIMENTS PROGRAM, PART 1
ROGER A. BRECKENRIDGE, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), LENWOOD G. CLARK, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), KELLI F. WILLSHIRE, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), SHERWIN M. BECK, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and LISA D. COLLIER, comp. (Computer Technology Associates, Inc., Hampton, VA.) Jun. 1991 304 p Workshop held in Atlanta, GA, 6-9 Dec. 1988
(RTOP 506-44-41-01)
(NASA-CP-10073-PT-1; NAS 1.55:10073-PT-1) Avail: CASI HC A14/MF A03
CONFERENCES, INDUSTRIES, NASA SPACE PROGRAMS, SPACE STATIONS, UNIVERSITY PROGRAM

N91-27178*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TECHNOLOGY FOR THE FUTURE: IN-SPACE TECHNOLOGY EXPERIMENTS PROGRAM, PART 2
ROGER A. BRECKENRIDGE, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.),

LENWOOD G. CLARK, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), KELLI F. WILLSHIRE, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), SHERWIN M. BECK, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and LISA D. COLLIER, comp. (Computer Technology Associates, Inc., Hampton, VA.) Jun. 1991 304 p Workshop held in Atlanta, GA, 6-9 Dec. 1988
(RTOP 506-44-41-01)
(NASA-CP-10073-PT-2; NAS 1.55:10073-PT-2) Avail: CASI HC A14/MF A03

CONFERENCES, INDUSTRIES, NASA SPACE PROGRAMS, SPACE STATIONS, UNIVERSITY PROGRAM

N91-29209*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
RESOURCE ENVELOPE CONCEPTS FOR MISSION PLANNING
K. Y. IBRAHIM (National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.), J. D. WEILER (National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.), and J. C. TOKAZ (Sverdrup Technology, Inc., Huntsville, AL.) Aug. 1991 74 p
(NASA-TP-3139; M-666; NAS 1.60:3139) Avail: CASI HC A04/MF A01

COST ANALYSIS, MISSION PLANNING, RESOURCES MANAGEMENT, SPACE STATION FREEDOM, SPACE STATIONS

N92-31251*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
GRAPHITE/EPOXY COMPOSITE ADAPTERS FOR THE SPACE SHUTTLE/CENTAUR VEHICLE
HAROLD J. KASPER and DARRYL S. RING (General Dynamics Corp., San Diego, CA.) Sep. 1990 34 p
(NAS3-2290)
(NASA-TP-3014; E-4969; NAS 1.60:3014) Avail: CASI HC A03/MF A01

ADAPTERS, CENTAUR LAUNCH VEHICLE, COMPOSITE STRUCTURES, GRAPHITE-EPOXY COMPOSITES, LAUNCH VEHICLE CONFIGURATIONS, SPACE SHUTTLE PAYLOADS, SPACECRAFT CONSTRUCTION MATERIALS, SPACECRAFT DESIGN, SPACECRAFT STRUCTURES, STRUCTURAL ANALYSIS, UPPER STAGE ROCKET ENGINES

N92-32456*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
RELIABILITY TRAINING
VINCENT R. LALLI, ed., HENRY A. MALEC, ed. (Siemens Stromberg-Carlson, Albuquerque, NM.), RICHARD B. DILLARD (Martin Marietta Corp., Orlando, FL.), KAM L. WONG (Hughes Aircraft Co., El Segundo, CA.), FRANK J. BARBER, and FRANK J. BARINA Jun. 1992 225 p A reliability/probability device as supplement
(RTOP 572-10-00)
(NASA-RP-1253; E-5456; NAS 1.61:1253) Avail: CASI HC A10/MF A03

Discussed here is failure physics, the study of how products, hardware, software, and systems fail and what can be done about it. The intent is to impart useful information, to extend the limits of production capability, and to assist in achieving low cost reliable products. A review of reliability for the years 1940 to 2000 is given. Next, a review of mathematics is given as well as a description of what elements contribute to product failures. Basic reliability theory and the disciplines that allow us to control and eliminate failures are elucidated. Author

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SPACE TRANSPORTATION

Includes passenger and cargo space transportation, e.g., shuttle operations; and space rescue techniques.

N91-27180*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LAUNCH VEHICLE INTEGRATION OPTIONS FOR A LARGE EARTH SCIENCES GEOSTATIONARY PLATFORM CONCEPT
JAMES L. GARRISON and LAWRENCE F. ROWELL Jul. 1991 49 p
(RTOP 506-49-21-02)
(NASA-TP-3083; L-16819; NAS 1.60:3083) Avail: CASI HC A03/MF A01

EARTH SCIENCES, GEOSYNCHRONOUS ORBITS, LAUNCH VEHICLES, ORBIT TRANSFER VEHICLES, ORBITAL ASSEMBLY, PAYLOAD INTEGRATION, SPACE ERECTABLE STRUCTURES, SPACE STATIONS, SPACECRAFT LAUNCHING, SYNCHRONOUS PLATFORMS

N92-15082*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SEALS FLOW CODE DEVELOPMENT
Mar. 1991 172 p Workshop held in Cleveland, OH, 26 Mar. 1991
(RTOP 506-42-72)
(NASA-CP-10070; E-6219; NAS 1.55:10070) Avail: CASI HC A08/MF A02

COMPUTATIONAL FLUID DYNAMICS, MATHEMATICAL MODELS, PUMP SEALS

N92-20676*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
PAYLOAD BAY DOORS AND RADIATOR PANELS FAMILIARIZATION HANDBOOK
JOHN A. GODBOLD 1992 92 p LIMITED REPRODUCIBILITY: More than 20% of this document may be affected by color photographs Original contains color illustrations
(NASA-TM-107793; NASA-TP-POD-2; NAS 1.15:107793)

AERODYNAMIC FORCES, BAYS (STRUCTURAL UNITS), CONTAMINATION, DOORS, FAIRINGS, PANELS, PAYLOADS, SPACE SHUTTLES, THERMAL PROTECTION

N92-22660*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPACE TRANSPORTATION MATERIALS AND STRUCTURES TECHNOLOGY WORKSHOP. VOLUME 1: EXECUTIVE SUMMARY
F. W. CAZIER, JR., comp. and J. E. GARDNER, comp. Apr. 1992 34 p Workshop held in Newport News, VA, 23-26 Sep. 1991
(RTOP 506-43-31-07)
(NASA-CP-3148-VOL-1; L-17098; NAS 1.55:3148-VOL-1) Avail: CASI HC A03/MF A01

GOVERNMENT/INDUSTRY RELATIONS, SPACE TRANSPORTATION, SPACECRAFT CONSTRUCTION MATERIALS, SPACECRAFT STRUCTURES, STRUCTURAL ENGINEERING

17

SPACE COMM., SPACECRAFT COMM., COMMAND & TRACKING

Includes telemetry; space communications networks; astronavigation and guidance; and radio blackout.

N92-11039*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SPACE NETWORK CONTROL CONFERENCE ON RESOURCE ALLOCATION CONCEPTS AND APPROACHES
KAREN L. MOE, ed. Sep. 1991 298 p Conference held in Greenbelt, MD, 12-13 Dec. 1990
(NASA-CP-3124; REPT-91B00130; NAS 1.55:3124) Avail: CASI HC A13/MF A03
ALGORITHMS, DATA LINKS, NETWORK CONTROL, RESOURCE ALLOCATION, SPACE COMMUNICATION

N92-19762*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DESTINATION-DIRECTED, PACKET-SWITCHING ARCHITECTURE FOR 30/20-GHZ FDMA/TDM GEOSTATIONARY COMMUNICATIONS SATELLITE NETWORK
WILLIAM D. IVANCIC and MARY JO SHALKHAUSER Feb. 1992 14 p Previously announced as N92-14204
(RTOP 650-60-21)
(NASA-TP-3201; E-6539; NAS 1.60:3201) Avail: CASI HC A03/MF A01
ARCHITECTURE (COMPUTERS), COMMUNICATION SATELLITES, FREQUENCY DIVISION MULTIPLEXING, PACKET SWITCHING, SATELLITE COMMUNICATION, SATELLITE NETWORKS, TIME DIVISION MULTIPLEXING

N92-22001*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ADVANCED MODULATION AND CODING TECHNOLOGY CONFERENCE
Feb. 1992 324 p Conference held in Cleveland, OH, 21-22 Jun. 1989
(RTOP 650-60-21)
(NASA-CP-10053; E-5535; NAS 1.55:10053) Avail: CASI HC A14/MF A03
CODING, CONFERENCES, FREQUENCY SHIFT KEYING, MODULATION, PHASE SHIFT KEYING, SATELLITE COMMUNICATION, SATELLITE INSTRUMENTS

N92-26667*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SMALL EXPLORER DATA SYSTEM MIL-STD-1773 FIBER OPTIC BUS
MARK FLANEGAN and KEN LABEL Jun. 1992 30 p
(NASA-TP-3227; NAS 1.60:3227; REPT-92B00041) Avail: CASI HC A03/MF A01
DATA SYSTEMS, EXPLORER SATELLITES, FIBER OPTICS, SMALL SCIENTIFIC SATELLITES, SPACECRAFT EQUIPMENT

N92-33933*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
THE EFFECTS OF VIDEO COMPRESSION ON ACCEPTABILITY OF IMAGES FOR MONITORING LIFE SCIENCES EXPERIMENTS
RICHARD F. HAINES (Foothill-De Anza Community Coll., Los Altos Hills, CA.) and SHERRY L. CHUANG Jul. 1992 18 p Presented at the IEEE Computer Society Data Compression Conference, Snowbird, UT, 24-26 Mar. 1992
(RTOP 476-14-03)
(NASA-TP-3239; A-92040; NAS 1.60:3239) Avail: CASI HC A03/MF A01
ACCEPTABILITY, ALGORITHMS, BANDWIDTH, DATA COMPRESSION, IMAGE RESOLUTION, LIFE SCIENCES, PULSE COMMUNICATION, VIDEO DATA

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.

N91-11041*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THERMAL-DISTORTION ANALYSIS OF A SPACECRAFT BOX TRUSS IN GEOSTATIONARY ORBIT
PATRICK A. COSGROVE (Lockheed Engineering and Sciences Co., Hampton, VA.), JEFFERY T. FARMER, and LAWRENCE F. ROWELL Washington Nov. 1990 26 p
(RTOP 506-49-21-02)
(NASA-TP-3054; L-16828; NAS 1.60:3054) Avail: CASI HC A03/MF A01
DISTORTION, GEOSYNCHRONOUS ORBITS, HEAT FLUX, POINTING CONTROL SYSTEMS, SYNCHRONOUS PLATFORMS, THERMAL ANALYSIS, TRUSSES

N91-17114*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ON-ORBIT STRUCTURAL DYNAMIC PERFORMANCE OF A 15-METER MICROWAVE RADIOMETER ANTENNA
DEBORAH M. WAHLS (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JEFFERY T. FARMER (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and DAVID W. SLEIGHT (Illinois Univ., Urbana.) Washington Dec. 1990 44 p
(RTOP 506-49-21-02)
(NASA-TP-3041; L-16795; NAS 1.60:3041) Avail: CASI HC A03/MF A01
ANTENNA DESIGN, COMPUTER AIDED DESIGN, GEOSYNCHRONOUS ORBITS, MICROWAVE RADIOMETERS, MODAL RESPONSE, STRUCTURAL DESIGN, SYNCHRONOUS PLATFORMS

N91-18186*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE 5TH ANNUAL NASA SPACECRAFT CONTROL LABORATORY EXPERIMENT (SCOLE) WORKSHOP, PART 1
LAWRENCE W. TAYLOR, JR., comp. Dec. 1990 383 p Workshop held in Lake Arrowhead, CA, 31 Oct. 1988
(RTOP 506-46-11-01)
(NASA-CP-10057-PT-1; NAS 1.55:10057-PT-1) Avail: CASI HC A17/MF A03
CONTROL SYSTEMS DESIGN, LARGE SPACE STRUCTURES, MATHEMATICAL MODELS, SPACECRAFT CONTROL

N91-18189*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SECOND CONFERENCE ON NDE FOR AEROSPACE REQUIREMENTS
KENNETH W. WOODIS, comp. (National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.), CRAIG C. BRYSON, comp. (National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.), and GARY L. WORKMAN, comp. (Alabama Univ., Huntsville.) Washington Dec. 1990 276 p Conference held in Huntsville, AL, 22-24 Aug. 1989; sponsored by NASA. Marshall Space Flight Center and Alabama Univ.
(NASA-CP-3091; M-646; NAS 1.55:3091) Avail: CASI HC A13/MF A03
ACOUSTIC MEASUREMENT, AEROSPACE SYSTEMS,

COMPUTER AIDED TOMOGRAPHY, CONFERENCES, INSPECTION, NONDESTRUCTIVE TESTS, ULTRASONIC FLAW DETECTION

N91-18199* National Aeronautics and Space Administration, Washington, DC.
LARGE SPACE STRUCTURES AND SYSTEMS IN THE SPACE STATION ERA: A BIBLIOGRAPHY WITH INDEXES
JOHN J. FERRAINOLO, ed. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) Nov. 1990 350 p
(NASA-SP-7085(01); NAS 1.21:7085(01)) Avail: CASI HC A15

Bibliographies and abstracts are listed for 1372 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1990 and June 30, 1990. 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

N91-19122*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE 5TH ANNUAL NASA SPACECRAFT CONTROL LABORATORY EXPERIMENT (SCOLE) WORKSHOP, PART 2
LAWRENCE W. TAYLOR, JR., *comp.* Dec. 1990 369 p Workshop held in Lake Arrowhead, CA, 31 Oct. 1988
(RTOP 506-46-11-01)
(NASA-CP-10057-PT-2; NAS 1.55:10057-PT-2) Avail: CASI HC A16/MF A03

CONFERENCES, CONTROL SYSTEMS DESIGN, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE SPACECRAFT, LARGE SPACE STRUCTURES, MATHEMATICAL MODELS, SPACECRAFT CONTROL

N91-19126*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SIXTEENTH SPACE SIMULATION CONFERENCE CONFIRMING SPACEWORTHINESS INTO THE NEXT MILLENNIUM
JOSEPH L. STECHER, III, ed. Washington Nov. 1990 464 p Symposium held in Albuquerque, NM, 5-8 Nov. 1990; sponsored by NASA, Inst. of Environmental Sciences, AIAA, and the American Society for Testing and Materials
(NASA-CP-3096; REPT-90B00146; NAS 1.55:3096) Avail: CASI HC A20/MF A04

CONFERENCES, SPACE ENVIRONMENT SIMULATION, SPACECRAFT CONTAMINATION, THERMAL SIMULATION

N91-21185*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
A NEW FABRICATION METHOD FOR PRECISION ANTENNA REFLECTORS FOR SPACE FLIGHT AND GROUND TEST
G. RICHARD SHARP, JOYCE S. WANHAINEN, and DEAN A. KETELSEN Washington Mar. 1991 19 p Presented at the 13th International Communications Satellite Systems Conference, Los Angeles, CA, 11-15 Mar. 1990; sponsored by AIAA Previously announced in IAA as A90-25627 Original contains color illustrations
(RTOP 650-60-20)
(NASA-TP-3078; E-5176; NAS 1.60:3078) Avail: CASI HC A03/MF A01; 2 functional color pages

ANTENNA DESIGN, COMMUNICATION SATELLITES, DESIGN ANALYSIS, FABRICATION, REFLECTOR ANTENNAS, REFLECTORS, SATELLITE ANTENNAS

N91-21188*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROSPACE APPLICATIONS OF MAGNETIC SUSPENSION TECHNOLOGY, PART 1
NELSON J. GROOM, ed. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and COLIN P. BRITCHER, ed. (Old Dominion Univ., Norfolk, VA.) Mar. 1991 377 p Workshop held in Hampton, VA, 25-27 Sep. 1990
(RTOP 590-14-11-02)
(NASA-CP-10066-PT-1; NAS 1.55:10066-PT-1) Avail: CASI HC A17/MF A03

AEROSPACE ENGINEERING, MAGNETIC SUSPENSION, REDUCED GRAVITY, SUPERCONDUCTIVITY, TECHNOLOGY UTILIZATION

N91-21203*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROSPACE APPLICATIONS OF MAGNETIC SUSPENSION TECHNOLOGY, PART 2
NELSON J. GROOM, ed. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and COLIN P. BRITCHER, ed. (Old Dominion Univ., Norfolk, VA.) Mar. 1991 394 p Workshop held in Hampton, VA, 25-27 Sep. 1990
(RTOP 590-14-11-02)
(NASA-CP-10066-PT-2; NAS 1.55:10066-PT-2) Avail: CASI HC A17/MF A04

CONTROL SYSTEMS DESIGN, CONTROL THEORY, MAGNETIC BEARINGS, MAGNETIC SUSPENSION, POINTING CONTROL SYSTEMS, SUPERCONDUCTIVITY

N91-22302*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RIGID-BODY-CONTROL SUBSYSTEM SIZING FOR AN EARTH SCIENCE GEOSTATIONARY PLATFORM
A. DON SCOTT (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JAMES A. DURICY (George Washington Univ., Hampton, VA.), and CHERYL C. JACKSON (Flight Mechanics and Control, Inc., Hampton, VA.) Washington May 1991 22 p
(RTOP 506-49-21-02)
(NASA-TP-3087; L-16796; NAS 1.60:3087) Avail: CASI HC A03/MF A01

CONTROL SYSTEMS DESIGN, EARTH SCIENCES, POINTING CONTROL SYSTEMS, REACTION WHEELS, RIGID STRUCTURES, SATELLITE ATTITUDE CONTROL, SPACECRAFT CONTROL, SYNCHRONOUS PLATFORMS

N91-22307*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FOURTH NASA WORKSHOP ON COMPUTATIONAL CONTROL OF FLEXIBLE AEROSPACE SYSTEMS, PART 1
LAWRENCE W. TAYLOR, JR., comp. Mar. 1991 457 p Workshop held in Williamsburg, VA, 11-13 Jul. 1990
(RTOP 506-46-11-01)
(NASA-CP-10065-PT-1; NAS 1.55:10065-PT-1) Avail: CASI HC A20/MF A04

AEROSPACE SYSTEMS, CONTROL SYSTEMS DESIGN, CONTROL THEORY, FLEXIBLE SPACECRAFT, ROBOT CONTROL, SPACECRAFT CONTROL

N91-22331*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FOURTH NASA WORKSHOP ON COMPUTATIONAL CONTROL OF FLEXIBLE AEROSPACE SYSTEMS, PART 2
LAWRENCE W. TAYLOR, JR., comp. Mar. 1991 464 p Workshop held in Williamsburg, VA, 11-13 Jul. 1990
(RTOP 506-46-11-01)
(NASA-CP-10065-PT-2; NAS 1.55:10065-PT-2) Avail: CASI HC A20/MF A04

AEROSPACE SYSTEMS, AIRCRAFT CONTROL, CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE SPACECRAFT, FLEXIBLE WINGS, FLUTTER, LARGE SPACE STRUCTURES, OPTIMAL CONTROL, ROBOTICS, VIBRATION DAMPING

N91-27182*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PACKAGING, DEVELOPMENT, AND ON-ORBIT ASSEMBLY OPTIONS FOR LARGE GEOSTATIONARY SPACECRAFT
WILLIAM T. DAVIS (National Aeronautics and Space

Administration. Langley Research Center, Hampton, VA.) and CHARLES B. KING (Bionetics Corp., Hampton, VA.) Washington Jul. 1991 34 p
(RTOP 506-49-31-01)
(NASA-TP-3088; L-16863; NAS 1.60:3088) Avail: CASI HC A03/MF A01
GEOSYNCHRONOUS ORBITS, LARGE SPACE STRUCTURES, LAUNCH VEHICLES, ORBITAL ASSEMBLY, PAYLOAD INTEGRATION, SPACE ERECTABLE STRUCTURES, SPACECRAFT DESIGN, SYNCHRONOUS SATELLITES

N91-28191* National Aeronautics and Space Administration, Washington, DC.
LARGE SPACE STRUCTURES AND SYSTEMS IN THE SPACE STATION ERA: A BIBLIOGRAPHY WITH INDEXES
JOHN J. FERRAINOLO, comp. and GEORGE F. LAWRENCE, comp. May 1991 329 p
(NASA-SP-7085(02); NAS 1.21:7085(02)) Avail: CASI HC A15
Bibliographies and abstracts are listed for 1219 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1990 and December 31, 1990. The 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

N92-11087*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MULTIDISCIPLINARY OPTIMIZATION OF CONTROLLED SPACE STRUCTURES WITH GLOBAL SENSITIVITY EQUATIONS
SHARON L. PADULA, BENJAMIN B. JAMES, PHILIP C. GRAVES (Vigyan Research Associates, Inc., Hampton, VA.), and STANLEY E. WOODARD Nov. 1991 39 p
(RTOP 506-43-41-01)
(NASA-TP-3130; NAS 1.60:3130) Avail: CASI HC A03/MF A01
CONTROL SYSTEMS DESIGN, LARGE SPACE STRUCTURES, OPTIMIZATION, SPACECRAFT CONTROL, SPACECRAFT DESIGN, SPACECRAFT STRUCTURES, WEIGHT REDUCTION

N92-17098*# National Aeronautics and Space Administration, Washington, DC.
BEYOND THE BASELINE 1991: PROCEEDINGS OF THE SPACE STATION EVOLUTION SYMPOSIUM. VOLUME 1: SPACE STATION FREEDOM, PART 1
Sep. 1991 336 p Symposium held in League City, TX, 6-8 Aug. 1991
(NASA-CP-10083-VOL-1-PT-1; S-653-VOL-1-PT-1; NAS 1.55:10083-VOL-1-PT-1) Avail: CASI HC A15/MF A03
SPACE STATION FREEDOM, SPACECRAFT CONFIGURATIONS, SPACECRAFT DESIGN, USER REQUIREMENTS

N92-17348*# National Aeronautics and Space Administration, Washington, DC.
BEYOND THE BASELINE 1991: PROCEEDINGS OF THE SPACE STATION EVOLUTION SYMPOSIUM. VOLUME 2: SPACE STATION FREEDOM, PART 2
Sep. 1991 464 p Symposium held in League City, TX, 6-8 Aug. 1991
(NASA-CP-10083-VOL-2-PT-2; S-653-VOL-2-PT-2; NAS 1.55:10083-VOL-2-PT-2) Avail: CASI HC A20/MF A04
CONFERENCES, EVOLUTION (DEVELOPMENT), PROJECT PLANNING, SOFTWARE ENGINEERING, SPACE STATION FREEDOM, SYSTEMS ENGINEERING

N92-17409*# National Aeronautics and Space Administration, Washington, DC.
BEYOND THE BASELINE 1991: PROCEEDINGS OF THE SPACE STATION EVOLUTION SYMPOSIUM. VOLUME 1: SPACE STATION FREEDOM, PART 2
Sep. 1991 369 p Symposium held in League City, TX, 6-8 Aug. 1991
(NASA-CP-10083-VOL-1-PT-2; S-653-VOL-1-PT-2; NAS 1.55:10083-VOL-1-PT-2) Avail: CASI HC A16/MF A03
CONFERENCES, EXPERT SYSTEMS, SPACE STATION FREEDOM

N92-17768*# National Aeronautics and Space Administration, Washington, DC.
BEYOND THE BASELINE 1991: PROCEEDINGS OF THE SPACE STATION EVOLUTION SYMPOSIUM. VOLUME 2: SPACE STATION FREEDOM, PART 1
Sep. 1991 273 p Symposium held in League City, TX, 6-8 Aug. 1991
(NASA-CP-10083-VOL-2-PT-1; S-653-VOL-2-PT-1; NAS 1.55:10083-VOL-2-PT-1) Avail: CASI HC A12/MF A03
AEROSPACE ENGINEERING, CONFERENCES, DISTRIBUTED PARAMETER SYSTEMS, FUNCTIONAL DESIGN SPECIFICATIONS, MISSION PLANNING, PROJECT PLANNING, SPACE STATION FREEDOM, SPACECRAFT DESIGN, USER REQUIREMENTS

N92-22317* National Aeronautics and Space Administration, Washington, DC.
LARGE SPACE STRUCTURES AND SYSTEMS IN THE SPACE STATION ERA: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 03)
Dec. 1991 324 p
(NASA-SP-7085(03); NAS 1.21:7085(03)) Avail: CASI HC A14
Bibliographies and abstracts are listed for 1221 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1991 and June 30, 1991. Topics covered include large space structures and systems, space stations, extravehicular activity, thermal environments and control, tethering, spacecraft power supplies, structural concepts and control systems, electronics, advanced materials, propulsion, policies and international cooperation, vibration and dynamic controls, robotics and remote operations, data and communication systems, electric power generation, space commercialization, orbital transfer, and human factors engineering. Author

N92-27721*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTERNATIONAL SYMPOSIUM ON MAGNETIC SUSPENSION TECHNOLOGY, PART 1
NELSON J. GROOM, ed. and COLIN P. BRITCHER, ed. (Old Dominion Univ., Norfolk, VA.) Washington May 1992 470 p Symposium held in Hampton, VA, 19-23 Aug. 1991
(RTOP 590-14-11-02)
(NASA-CP-3152-PT-1; L-17092-PT-1; NAS 1.55:3152-PT-1)
Avail: CASI HC A20/MF A04
CONFERENCES, CONTROL EQUIPMENT, MAGNETIC BEARINGS, MAGNETIC CONTROL, MAGNETIC LEVITATION VEHICLES, MAGNETIC SUSPENSION, SUPERCONDUCTING MAGNETS

N92-27788*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTERNATIONAL SYMPOSIUM ON MAGNETIC SUSPENSION TECHNOLOGY, PART 2
NELSON J. GROOM, ed. (Cray Research, Inc., Albuquerque, NM.) and COLIN P. BRITCHER, ed. (Old Dominion Univ., Norfolk, VA.) Washington May 1992 459 p Symposium held in Hampton, VA, 19-23 Aug. 1991
(RTOP 590-14-11-02)
(NASA-CP-3152-PT-2; L-17092-PT-2; NAS 1.55:3152-PT-2)
Avail: CASI HC A20/MF A04
CONTROL SYSTEMS DESIGN, MAGNETIC BEARINGS, MAGNETIC SUSPENSION, SUPERCONDUCTING MAGNETS, SUPERCONDUCTIVITY

N92-28730*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ONGOING PROGRESS IN SPACECRAFT CONTROLS
DAVE GHOSH, ed. (Lockheed Engineering and Sciences Co., Hampton, VA.) Jul. 1992 143 p Workshop held in Hampton, VA, 13 Jan. 1992
(RTOP 506-59-61-01)
(NASA-CP-10099; NAS 1.55:10099) Avail: CASI HC A07/MF A02
ADAPTIVE CONTROL, CONTROL SYSTEMS DESIGN, DYNAMIC STRUCTURAL ANALYSIS, MANNED MARS MISSIONS, MANNED SPACECRAFT, NASA SPACE PROGRAMS, ROBOTICS, SPACE EXPLORATION, SPACECRAFT CONTROL

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SPACECRAFT INSTRUMENTATION

N92-25147*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FEASIBILITY STUDY OF A LOW-ENERGY GAMMA RAY SYSTEM FOR MEASURING QUANTITY AND FLOW RATE OF SLUSH HYDROGEN
JAG J. SINGH, CHIH-PING SHEN, and DANNY R. SPRINKLE (Old Dominion Univ., Norfolk, VA.) Apr. 1992 14 p
(RTOP 307-50-10-02)
(NASA-TP-3150; L-16980; NAS 1.60:3150) Avail: CASI HC A03/MF A01
FEASIBILITY ANALYSIS, FLOW VELOCITY, GAMMA RAYS, SLUSH HYDROGEN, X RAYS

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SPACECRAFT PROPULSION AND POWER

Includes main propulsion systems and components, e.g., rocket engines; and spacecraft auxiliary power sources.

N91-11800*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
METALLIZED PROPELLANTS FOR THE HUMAN EXPLORATION OF MARS
BRYAN A. PALASZEWSKI Nov. 1990 14 p
(RTOP 506-42-00)
(NASA-TP-3062; E-5544; NAS 1.60:3062) Avail: CASI HC A03/MF A01
EARTH ORBITS, LAUNCHING, MANNED MARS MISSIONS, METAL PROPELLANTS, MISSION PLANNING, PAYLOADS, SPACE TRANSPORTATION

N91-15308*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LUNAR MISSIONS USING CHEMICAL PROPULSION: SYSTEM DESIGN ISSUES
BRYAN PALASZEWSKI Jan. 1991 13 p Presented at the 26th Joint Propulsion Conference, Orlando, FL, 16-18 Jul. 1990; sponsored in part by AIAA, ASME, SAE, and ASEE Previously announced as A90-47221
(RTOP 506-42-51)
(NASA-TP-3065; E-5542; NAS 1.60:3065) Avail: CASI HC A03/MF A01
CHEMICAL PROPULSION, HYDRAZINES, LUNAR BASES, METAL PROPELLANTS, PAYLOADS, PROPELLANT ADDITIVES, PROPULSION SYSTEM CONFIGURATIONS, PROPULSION SYSTEM PERFORMANCE, SPACE TRANSPORTATION

N91-19182*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY, 1989
Washington Jan. 1991 515 p Tenth conference held in Cleveland, OH, 7-9 Nov. 1989
(RTOP 506-41-11)
(NASA-CP-3107; E-5728; NAS 1.55:3107) Avail: CASI HC A22/MF A04
CONFERENCES, PHOTOVOLTAIC CELLS, PHOTOVOLTAIC CONVERSION, SOLAR ARRAYS, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

N91-24307*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRUCTURAL INTEGRITY AND DURABILITY OF REUSABLE SPACE PROPULSION SYSTEMS
Apr. 1989 259 p Conference held in Cleveland, OH, 18-19 Apr. 1989
(RTOP 553-13-00)
(NASA-CP-10030; E-4628; NAS 1.55:10030) Avail: CASI HC A12/MF A03
CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, LIFE (DURABILITY), PREDICTION ANALYSIS TECHNIQUES, PROPULSION SYSTEM CONFIGURATIONS, REUSABLE ROCKET ENGINES

N91-25176*# National Aeronautics and Space Administration, Washington, DC.
SPACE TRANSPORTATION PROPULSION TECHNOLOGY SYMPOSIUM. VOLUME 1: EXECUTIVE SUMMARY
May 1991 36 p Symposium held in State College, PA, 25-29 Jun. 1990
(NASA-CP-3112; NAS 1.55:3112) Avail: CASI HC A03/MF A01
BOOSTER ROCKET ENGINES, PROPULSION, PROPULSION SYSTEM CONFIGURATIONS, SPACE TRANSPORTATION, SPACE TRANSPORTATION SYSTEM

N91-28193*# National Aeronautics and Space Administration, Washington, DC.
SPACE TRANSPORTATION PROPULSION TECHNOLOGY SYMPOSIUM. VOLUME 2: SYMPOSIUM PROCEEDINGS
May 1991 693 p Symposium held in State College, PA, 25-29 Jun. 1990
(NASA-CP-3112-VOL-2; NAS 1.55:3112-VOL-2) Avail: CASI HC A99/MF A06
PROPULSION SYSTEM CONFIGURATIONS, PROPULSION SYSTEM PERFORMANCE, SPACE TRANSPORTATION, SPACE TRANSPORTATION SYSTEM, SPACECRAFT POWER SUPPLIES

N91-28235*# National Aeronautics and Space Administration, Washington, DC.
SPACE TRANSPORTATION PROPULSION TECHNOLOGY SYMPOSIUM. VOLUME 3: PANEL SESSION SUMMARIES AND PRESENTATIONS
May 1991 620 p Symposium held in State College, PA, 25-29 Jun. 1990
(NASA-CP-3112-VOL-3; NAS 1.55:3112-VOL-3) Avail: CASI HC A99/MF A06
CONFERENCES, PROPULSION SYSTEM CONFIGURATIONS, SPACE TRANSPORTATION, SPACE TRANSPORTATION SYSTEM, SPACECRAFT PROPULSION

N91-30203*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY CONFERENCE
Aug. 1991 471 p The 11th Conference was held in Cleveland, OH, 7-9 May 1991
(RTOP 506-41-11)
(NASA-CP-3121; E-6161; NAS 1.55:3121) Avail: CASI HC A20/MF A04
AEROSPACE ENVIRONMENTS, CONFERENCES, ELECTRON

IRRADIATION, EXPOSURE, PHOTOVOLTAIC CONVERSION, PROTON IRRADIATION, RADIATION DAMAGE, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

N92-10044*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
MAGNETOPLASMADYNAMIC THRUSTER WORKSHOP
1991 178 p Workshop held in Washington, DC, 16 May 1991; sponsored in part by NASA, Washington
(RTOP 506-42-31)
(NASA-CP-10084; E-6518; NAS 1.55:10084) Avail: CASI HC A09/MF A02
CONFERENCES, ELECTRIC ROCKET ENGINES, LOW THRUST PROPULSION, MAGNETOPLASMADYNAMICS, PLASMA PROPULSION

N92-11088*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
NUCLEAR THERMAL PROPULSION: A JOINT NASA/DOE/DOD WORKSHOP
JOHN S. CLARK, ed. 1991 500 p Workshop held in Cleveland, OH, 10-12 Jul. 1990
(RTOP 593-71-00)
(NASA-CP-10079; E-6456; NAS 1.55:10079) Avail: CASI HC A21/MF A04
NUCLEAR ENGINE FOR ROCKET VEHICLES, NUCLEAR PROPULSION, PROJECT MANAGEMENT, PROJECT PLANNING, PROPULSION SYSTEM CONFIGURATIONS, PROPULSION SYSTEM PERFORMANCE, REACTOR DESIGN, REACTOR TECHNOLOGY, RESEARCH PROJECTS, ROCKET ENGINE DESIGN

N92-12052*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
AUTOMATING A SPACECRAFT ELECTRICAL POWER SYSTEM USING EXPERT SYSTEMS
L. F. LOLLAR Washington Oct. 1991 22 p
(NASA-TP-3161; M-670; NAS 1.60:3161) Avail: CASI HC A03/MF A01
AUTOMATIC CONTROL, AUTONOMY, BREADBOARD MODELS, EXPERT SYSTEMS, SPACE STATION FREEDOM, SPACECRAFT POWER SUPPLIES

N92-14108*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
LIMIT CYCLE VIBRATIONS IN TURBOMACHINERY
S. G. RYAN Dec. 1991 84 p
(NASA-TP-3181; M-676; NAS 1.60:3181) Avail: CASI HC A05/MF A01
ROTOR DYNAMICS, ROTORS, SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS, TURBOMACHINERY, VIBRATION

N92-17151*# *National Aeronautics and Space Administration.* Lewis Research Center, Cleveland, OH.
UPPER STAGES USING LIQUID PROPULSION AND METALLIZED PROPELLANTS
BRYAN A. PALASZEWSKI Washington Feb. 1992 22 p
(RTOP 506-42-72)
(NASA-TP-3191; E-6105; NAS 1.60:3191) Avail: CASI HC A03/MF A01
GELLED PROPELLANTS, INERTIAL UPPER STAGE, LAUNCH VEHICLES, METAL PROPELLANTS, PROPELLANT ADDITIVES, SPACE MISSIONS, SPACE TRANSPORTATION, SPACE TRANSPORTATION SYSTEM, SPACECRAFT PROPULSION

N92-20949*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
OPTICAL MEASUREMENTS ON SOLID SPECIMENS OF SOLID ROCKET MOTOR EXHAUST AND SOLID ROCKET MOTOR SLAG
F. E. ROBERTS, III Washington Dec. 1991 20 p
(RTOP 476-50-03)
(NASA-TP-3177; M-674; NAS 1.60:3177) Avail: CASI HC A03/MF A01
ABSORPTIVITY, COMBUSTION PRODUCTS, EXHAUST EMISSION, OPTICAL MEASUREMENT, ROCKET EXHAUST, SLAGS, SOLID PROPELLANT ROCKET ENGINES, SOLID ROCKET PROPELLANTS, SPACE DEBRIS, SPACE SHUTTLE BOOSTERS, THERMAL EMISSION

N92-21517*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ROCKET-BASED COMBINED-CYCLE (RBCC) PROPULSION TECHNOLOGY WORKSHOP. TUTORIAL SESSION
1992 259 p Workshop held in Huntsville, AL, 23-27 Mar. 1992; *sponsored by NASA, Washington*
(RTOP 590-21-11)
(NASA-CP-10090; E-6929; NAS 1.55:10090) Avail: CASI HC A12/MF A03
AEROSPACE PLANES, ENGINE PARTS, HYPERSONIC FLIGHT, ROCKET ENGINE DESIGN, ROCKET ENGINES

N92-27130*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE 1990 NASA AEROSPACE BATTERY WORKSHOP
LEWIS M. KENNEDY, comp. Washington May 1991 888 p Workshop held in Huntsville, AL, 4-6 Dec. 1990
(NASA-CP-3119; M-661; NAS 1.55:3119) Avail: CASI HC A99/MF A10
AEROSPACE ENGINEERING, CONFERENCES, LITHIUM SULFUR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES, SILVER ZINC BATTERIES, SPACECRAFT POWER SUPPLIES, TECHNOLOGY ASSESSMENT

23

CHEMISTRY AND MATERIALS (GENERAL)

N91-20207*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NATIONAL EDUCATORS' WORKSHOP: UPDATE 1988. STANDARD EXPERIMENTS IN ENGINEERING MATERIALS SCIENCE AND TECHNOLOGY
JAMES E. GARDNER, comp. (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and JAMES A. JACOBS, comp. (Norfolk State Univ., VA.) Washington Jan. 1990 83 p Workshop held in Gaithersburg, MD, 10-12 May 1988; sponsored by NASA, Washington and NIST, Gaithersburg, MD
(NAG1-976; RTOP 505-63-01-15)
(NASA-CP-3060; L-16732; NAS 1.55:3060) Avail: CASI HC A05/MF A01
CONFERENCES, EDUCATION, EXPERIMENTATION, FRACTURE MECHANICS, FRACTURING, HIGH TEMPERATURE SUPERCONDUCTORS, INSPECTION, RADIOGRAPHY, RESEARCH AND DEVELOPMENT, TECHNOLOGIES

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COMPOSITE MATERIALS

Includes physical, chemical, and mechanical properties of laminates and other composite materials.

N91-10127*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRUCTURAL PROPERTIES OF LAMINATED DOUGLAS FIR/EPOXY COMPOSITE MATERIAL

DAVID A. SPERA (Sverdrup Technology, Inc., Cleveland, OH.), JACK B. ESGAR (Gougeon Bros., Inc., Bay City, MI.), MEADE GOUGEON, and MICHAEL D. ZUTECK (Gougeon Bros., Inc., Bay City, MI.) May 1990 140 p
(NAS3-25266; DE-AI01-76ET-20320; RTOP 776-33-41)
(NASA-RP-1236; E-4720; NAS 1.61:1236; DOE/NASA/20320-76)
Avail: CASI HC A07/MF A02

This publication contains a compilation of static and fatigue strength data for laminated-wood material made from Douglas fir and epoxy. Results of tests conducted by several organizations are correlated to provide insight into the effects of variables such as moisture, size, lamina-to-lamina joint design, wood veneer grade, and the ratio of cyclic stress to steady stress during fatigue testing. These test data were originally obtained during development of wood rotor blades for large-scale wind turbines of the horizontal-axis (propeller) configuration. Most of the strength property data in this compilation are not found in the published literature. Test sections ranged from round cylinders 2.25 in. in diameter to rectangular slabs 6 by 24 in. in cross section and approximately 30 ft. long. All specimens were made from Douglas fir veneers 0.10 in. thick, bonded together with the WEST epoxy system developed for fabrication and repair of wood boats. Loading was usually parallel to the grain. Size effects (reduction in strength with increase in test volume) are observed in some of the test data, and a simple mathematical model is presented that includes the probability of failure. General characteristics of the wood/epoxy laminate are discussed, including features that make it useful for a wide variety of applications. Author

N91-13492*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN INVESTIGATION OF MICROSTRUCTURAL CHARACTERISTICS OF CONTACT-LENS POLYMERS
JAG J. SINGH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), ABE EFTEKHARI (Analytical Services and Materials, Inc., Hampton, VA.), BILLY T. UPCHURCH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and KAREN S. BURNS (Old Dominion Univ., Norfolk, VA.) Washington Dec. 1990 12 p
(RTOP 412-20-26-01)
(NASA-TP-3034; L-16817; NAS 1.60:3034) Avail: CASI HC A03/MF A01

CONTACT LENSES, GASEOUS DIFFUSION, MICROSTRUCTURE, PERMEABILITY, VOLUME

N91-14437*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
OUTGASSING DATA FOR SELECTING SPACECRAFT MATERIALS, REVISION 2
WILLIAM A. CAMPBELL, JR. and JOHN J. SCIALDONE Washington Nov. 1990 398 p
(NASA-RP-1124-REV-2; REPT-90B00138-REV-2; NAS 1.61:1124-REV-2; NASA-RP-1014; NASA-TN-D-7362; NASA-TN-D-8008) Avail: CASI HC A17/MF A04

Outgassing data, derived from tests at 398 K (125 C) for 24 hours in vacuum as per ASTM E 595-77, were 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

N91-18215*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPRESSION BEHAVIOR OF GRAPHITE-THERMOPLASTIC AND GRAPHITE-EPOXY PANELS WITH CIRCULAR HOLES OR IMPACT DAMAGE
DAWN C. JEGLEY Washington Mar. 1991 18 p
(RTOP 505-63-01-09)
(NASA-TP-3071; L-16853; NAS 1.60:3071) Avail: CASI HC A03/MF A01

AXIAL COMPRESSION LOADS, GRAPHITE-EPOXY COMPOSITES, HOLE DISTRIBUTION (MECHANICS), IMPACT DAMAGE, LAMINATES, THERMOPLASTIC RESINS

N91-18216*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INVESTIGATION OF MICROSTRUCTURAL CHANGES IN POLYETHERETHER-KETONE FILMS AT CRYOGENIC TEMPERATURES BY POSITRON LIFETIME SPECTROSCOPY
JAG J. SINGH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), ABE EFTEKHARI (Analytical Services and Materials, Inc., Hampton, VA.), TERRY L. ST.CLAIR (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and DANNY R. SPRINKLE Washington Mar. 1991 13 p
(RTOP 506-43-21-05)
(NASA-TP-3064; L-16841; NAS 1.60:3064) Avail: CASI HC A03/MF A01

COOLING, MICROSTRUCTURE, PEEK, POSITRON ANNIHILATION, SPECTROSCOPY, TEMPERATURE EFFECTS

N91-21242*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A NOVEL METHOD OF TESTING THE SHEAR STRENGTH OF THICK HONEYCOMB COMPOSITES
A. J. HODGE and A. T. NETTLES Mar. 1991 16 p
(NASA-TP-3108; NAS 1.60:3108) Avail: CASI HC A03/MF A01

HONEYCOMB CORES, HONEYCOMB STRUCTURES, IMPACT DAMAGE, IMPACT TESTS, IMPACT TOLERANCES, SHEAR STRENGTH

N91-29240*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA WORKSHOP ON IMPACT DAMAGE TO COMPOSITES
C. C. POE, JR. Jul. 1991 476 p Workshop held in Hampton, Va, 19-20 Mar. 1991
(RTOP 505-63-50-04)
(NASA-CP-10075; NAS 1.55:10075) Avail: CASI HC A21/MF A04

COMPOSITE STRUCTURES, CONFERENCES, IMPACT DAMAGE, POLYMER MATRIX COMPOSITES

N92-10067*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PROPERTIES OF THREE GRAPHITE/TOUGHENED RESIN COMPOSITES
DONALD L. SMITH (Lockheed Engineering and Sciences Co., Hampton, VA.) and MARVIN B. DOW Washington Sep. 1991 50 p
(RTOP 505-63-50-05)
(NASA-TP-3102; L-16910; NAS 1.60:3102) Avail: CASI HC A03/MF A01

COMPRESSION TESTS, GRAPHITE-EPOXY COMPOSITES, IMPACT DAMAGE, IMPACT LOADS, IMPACT TESTS, LAMINATES

N92-11142*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
AN EXAMINATION OF THE DAMAGE TOLERANCE ENHANCEMENT OF CARBON/EPOXY USING AN OUTER LAMINA OF SPECTRA (R) Final Report
D. G. LANCE and A. T. NETTLES Washington Oct. 1991 33 p
(PROJ. 90-17)
(NASA-TP-3160; M-671; NAS 1.60:3160) Avail: CASI HC A03/MF A01

DAMAGE, EPOXY MATRIX COMPOSITES, IMPACT TESTS, PLATES (STRUCTURAL MEMBERS), POLYETHYLENES, RESIDUAL STRENGTH, TOLERANCES (MECHANICS)

N92-20679*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
OPTIMIZATION OF COMPOSITE SANDWICH COVER PANELS SUBJECTED TO COMPRESSIVE LOADINGS
JUAN R. CRUZ Dec. 1991 13 p

(RTOP 505-63-50-08)
(NASA-TP-3173; L-16942; NAS 1.60:3173) Avail: CASI HC A03/MF A01
COMPOSITE STRUCTURES, COMPRESSION LOADS, COMPUTER PROGRAMS, DESIGN ANALYSIS, OPTIMIZATION, SANDWICH STRUCTURES, STRUCTURAL DESIGN, WING PANELS

N92-20950*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A STATISTICAL COMPARISON OF TWO CARBON FIBER/EPOXY FABRICATION TECHNIQUES
A. J. HODGE Washington Dec. 1991 12 p
(NASA-TP-3179; M-673; NAS 1.60:3179) Avail: CASI HC A03/MF A01
AUTOCLAVES, CARBON FIBER REINFORCED PLASTICS, CARBON FIBERS, COMPRESSIVE STRENGTH, CURING, EPOXY MATRIX COMPOSITES, PRESSES

N92-21605*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
AMSAHTS 1990: ADVANCES IN MATERIALS SCIENCE AND APPLICATIONS OF HIGH TEMPERATURE SUPERCONDUCTORS
LARRY H. BENNETT, ed., YURY FLOM, ed., and KISHIN MOORJANI, ed. (Johns Hopkins Univ., Laurel, MD.) Jan. 1991 488 p Conference held in Greenbelt, MD, 2-6 Apr. 1990; sponsored in cooperation with NASA, NIST, JHU, and DARPA Previously announced as N90-27792
(NASA-CP-3100; REPT-90B00018; NAS 1.55:3100) Avail: CASI HC A21/MF A04
HIGH TEMPERATURE SUPERCONDUCTORS, OXIDES, REACTION KINETICS, SURFACE REACTIONS, THERMODYNAMIC PROPERTIES

N92-23981*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF LOW-SPEED IMPACT DAMAGE AND DAMAGE LOCATION ON BEHAVIOR OF COMPOSITE PANELS
DAWN C. JEGLEY May 1992 27 p Presented at the 9th DOD/NASA/FAA Conference on Fibrous Composites in Structural Design, Lake Tahoe, NV, 4-7 Nov. 1991
(RTOP 505-63-50-08)
(NASA-TP-3196; L-17031; NAS 1.60:3196) Avail: CASI HC A03/MF A01
BUCKLING, GRAPHITE-EPOXY COMPOSITES, IMPACT DAMAGE, IMPACT TESTS, LAMINATES, LOW SPEED

N92-25160*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BUCKLING BEHAVIOR OF LONG SYMMETRICALLY LAMINATED PLATES SUBJECTED TO COMBINED LOADINGS
MICHAEL P. NEMETH May 1992 31 p Presented at the Ninth DoD/FAA Conference on Fibrous Composites in Structural Design, Lake Tahoe, NV, 4-7 Nov. 1991
(RTOP 505-63-50-07)
(NASA-TP-3195; L-17035; NAS 1.60:3195) Avail: CASI HC A03/MF A01
ANISOTROPIC PLATES, BENDING, BUCKLING, LAMINATES, LOADS (FORCES), STIFFNESS, STRUCTURAL ANALYSIS

N92-32513*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EIGHTH DOD/NASA/FAA CONFERENCE ON FIBROUS COMPOSITES IN STRUCTURAL DESIGN, PART 1
JAMES H. STARNES, JR., comp., HERMAN L. BOHON, comp. (Lockheed Engineering and Sciences Co., Hampton, VA.), and SHERRY B. GARZON, comp. Sep. 1990 383 p Conference held in Norfolk, VA, 28-30 Nov. 1989
(RTOP 505-63-01-09)
(NASA-CP-3087-PT-1; L-16832-PT-1; NAS 1.55:3087-PT-1)
Avail: CASI HC A17/MF A03
AIRCRAFT DESIGN, COMPOSITE STRUCTURES, CONFERENCES, FIBER COMPOSITES, FINITE ELEMENT METHOD, MATHEMATICAL MODELS, MECHANICAL PROPERTIES, STRUCTURAL DESIGN

N92-32574*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EIGHTH DOD/NASA/FAA CONFERENCE ON FIBROUS COMPOSITES IN STRUCTURAL DESIGN, PART 2
JAMES H. STARNES, JR., comp., HERMAN L. BOHON, comp. (Lockheed Engineering and Sciences Co., Hampton, VA.), and SHERRY B. GARZON, comp. Sep. 1990 315 p Conference held in Norfolk, VA, 28-30 Nov. 1989
(RTOP 505-63-01-09)
(NASA-CP-3087-PT-2; L-16832-PT-2; NAS 1.55:3087-PT-2)
Avail: CASI HC A14/MF A03
AIRCRAFT CONSTRUCTION MATERIALS, COMPOSITE STRUCTURES, CONFERENCES, FIBER COMPOSITES, STRUCTURAL ANALYSIS, STRUCTURAL DESIGN

25

INORGANIC AND PHYSICAL CHEMISTRY

Includes chemical analysis, e.g., chromatography; combustion theory; electrochemistry; and photochemistry.

N92-28374*# *National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.
AN ANALYSIS OF COMBUSTION STUDIES IN SHOCK EXPANSION TUNNELS AND REFLECTED SHOCK TUNNELS
CASIMIR J. JACHIMOWSKI Jul. 1992 12 p
(RTOP 505-62-40-04)
(NASA-TP-3224; L-17025; NAS 1.60:3224) Avail: CASI HC A03/MF A01
COMBUSTION CHAMBERS, COMBUSTION CHEMISTRY, COMBUSTION PHYSICS, HYPERSONIC FLIGHT, REACTION KINETICS, SHOCK TUNNELS

26

METALLIC MATERIALS

Includes physical, chemical, and mechanical properties of metals, e.g., corrosion; and metallurgy.

N91-13522*# *National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.
OXIDATION CHARACTERISTICS OF TI-25AL-10NB-3V-1MO INTERMETALLIC ALLOY
TERRYL A. WALLACE (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), RONALD K. CLARK (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), SANKARA N. SANKARAN (Analytical Services and Materials, Inc., Hampton, VA.), and KARL E. WIEDEMANN (Analytical Services and Materials, Inc., Hampton, VA.) Washington Dec. 1990 18 p
(RTOP 506-43-71-01)
(NASA-TP-3044; L-16808; NAS 1.60:3044) Avail: CASI HC A03/MF A01
ALUMINIDES, OXIDATION, REACTION KINETICS, TEMPERATURE EFFECTS, TITANIUM ALLOYS

N91-17208*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
ELECTROCHEMICAL STUDIES OF CORROSION INHIBITORS
M. D. DANFORD Washington Nov. 1990 21 p
(NASA-TP-3066; NAS 1.60:3066) Avail: CASI HC A03/MF A01

CORROSION, CORROSION PREVENTION, ELECTROCHEMISTRY, INHIBITORS, OXYGENATION, THERMODYNAMIC PROPERTIES

N91-20266*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SURFACE EFFECTS ON HYDROGEN PERMEATION THROUGH TI-14AL-21NB ALLOY
SANDARA N. SANKARAN (Analytical Services and Materials, Inc., Hampton, VA.), RONALD A. OUTLAW, and RONALD K. CLARK Washington Apr. 1991 15 p
(RTOP 506-43-71-01)
(NASA-TP-3109; L-16826; NAS 1.60:3109) Avail: CASI HC A03/MF A01
ALUMINUM ALLOYS, HYDROGEN, NIOBIUM ALLOYS, PERMEABILITY, PERMEATING, TITANIUM ALLOYS, ULTRAHIGH VACUUM

N91-29318*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE INTERACTION OF HYDROGEN WITH METAL ALLOYS
M. D. DANFORD and J. W. MONTANO Aug. 1991 38 p
(NASA-TP-3128; M-664; NAS 1.60:3128) Avail: CASI HC A03/MF A01
ALLOYS, GAS-METAL INTERACTIONS, GASEOUS DIFFUSION, HELIUM, HYDROGEN, HYDROGEN EMBRITTLEMENT, METAL HYDRIDES

N91-30318*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EQUIVALENT CRYSTAL THEORY OF ALLOYS
GUILLERMO BOZZOLO (Analex Corp., Fairview Park, OH.) and JOHN FERRANTE Sep. 1991 26 p
(RTOP 505-90-51)
(NASA-TP-3155; E-5996; NAS 1.60:3155) Avail: CASI HC A03/MF A01
BINARY ALLOYS, COHESION, CRYSTAL DEFECTS, CRYSTAL LATTICES, CRYSTAL STRUCTURE, ENERGY OF FORMATION, LATTICE PARAMETERS

N92-20063*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
LONG-TERM LIFE TESTING OF GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE (GOES) ENCODER LAMPS
CHARLES E. POWERS Feb. 1992 120 p
(RTOP 030-09-01-01)
(NASA-RP-1273; REPT-92B00013; NAS 1.61:1273) Avail: CASI HC A06/MF A02
The aging characteristics and lifetimes of tungsten filament encoder lamps were determined as a function of operating voltage and filament material. For pure tungsten and thoria doped (1 pct.) filament lamps, crystal grain growth over the center portion of the filament leads to the ultimate failure of the lamp. The development of notches associated with this grain growth is the cause of lamp burn out. Eventually, one of the notches will 'etch' through the filament, causing it to fail open. For rhenium doped (3 pct.) filament lamps, distortion of the filament leads to the ultimate failure of the lamp. The lifetime of these lamps is about 1 year at an operating voltage of 5.0 volts. The pure tungsten filament lamps have the longest average lifetime, and the thoria doped filament lamps have the shortest at 5.0 volts. The lifetimes of these lamps is about 7 years at an operating voltage of 3.5 volts. Data suggest that the rhenium doped lamps will have the longest average lifetime at 3.5 volts, and the thoria doped will have the shortest. These lifetimes are comparable to the desired lifetimes of 7 years. Author

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NONMETALLIC MATERIALS

Includes physical, chemical, and mechanical properties of plastics, elastomers, lubricants, polymers, textiles, adhesives, and ceramic materials.

N92-17070*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
HIGH-TEMPERATURE DURABILITY CONSIDERATIONS FOR HSCT COMBUSTOR
NATHAN S. JACOBSON Washington Jan. 1992 19 p
(RTOP 505-63-20)
(NASA-TP-3162; E-6343; NAS 1.60:3162) Avail: CASI HC A03/MF A01
CERAMIC MATRIX COMPOSITES, COMBUSTION CHAMBERS, HIGH TEMPERATURE TESTS, LININGS, REFRACTORY MATERIALS, THERMAL STABILITY

N92-22593*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SHORTCOMINGS IN GROUND TESTING, ENVIRONMENT SIMULATIONS, AND PERFORMANCE PREDICTIONS FOR SPACE APPLICATIONS
E. G. STASSINOPOULOS and G. J. BRUCKER (General Electric Co., West Long Branch, NJ.) Apr. 1992 18 p
(NASA-TP-3217; NAS 1.60:3217; REPT-92B00001) Avail: CASI HC A03/MF A01
ENVIRONMENT SIMULATION, GROUND TESTS, PERFORMANCE PREDICTION, RADIATION DAMAGE, SATELLITES, SINGLE EVENT UPSETS, SPACECRAFT

N92-27194*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF TEMPERATURE AND GAP OPENING RATE ON THE RESILIENCY OF CANDIDATE SOLID ROCKET BOOSTER O-RING MATERIALS
CYNTHIA L. LACH Jul. 1992 14 p
(RTOP 505-63-50-03)
(NASA-TP-3226; L-17023; NAS 1.60:3226) Avail: CASI HC A03/MF A01
DEFLECTION, ELASTOMERS, O RING SEALS, RESILIENCE, SEALING, TEMPERATURE EFFECTS

N92-31278*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
GIBBS FREE ENERGY OF REACTIONS INVOLVING SIC, SI3N4, H2, AND H2O AS A FUNCTION OF TEMPERATURE AND PRESSURE
M. A. ISHAM Aug. 1992 18 p
(RTOP 593-71-51)
(NASA-TP-3275; M-694; NAS 1.60:3275) Avail: CASI HC A03/MF A01
CERAMIC COATINGS, GIBBS FREE ENERGY, HYDROGEN, PRESSURE DEPENDENCE, SILICON CARBIDES, SILICON NITRIDES, SURFACE REACTIONS, TEMPERATURE DEPENDENCE, THERMODYNAMICS, WATER

29

MATERIALS PROCESSING

Includes space-based development of products and processes for commercial applications.

N92-13340*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
ANALYSIS OF GRAVITY-INDUCED PARTICLE MOTION AND FLUID PERFUSION FLOW IN THE NASA-DESIGNED ROTATING ZERO-HEAD-SPACE TISSUE CULTURE VESSEL
DAVID A. WOLF and RAY P. SCHWARZ (Krug International, Houston, TX.) Washington Oct. 1991 16 p
(RTOP 694-01-23-05)
(NASA-TP-3143; S-644; NAS 1.60:3143) Avail: CASI HC A03/MF A01
CULTURE TECHNIQUES, DIFFUSION, FLOW VELOCITY, FLUID MECHANICS, GRAVITATIONAL EFFECTS, PARTICLE MOTION, REDUCED GRAVITY, TISSUES (BIOLOGY)

N92-30263*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NATIONAL EDUCATORS' WORKSHOP: UPDATE 1991. STANDARD EXPERIMENTS IN ENGINEERING MATERIALS SCIENCE AND TECHNOLOGY
JAMES E. GARDNER, comp., JAMES A. JACOBS, comp. (Norfolk State Univ., VA.), and JAMES O. STIEGLER, comp. (Oak Ridge National Lab., TN.) Washington Jun. 1992 369 p Workshop held in Oak Ridge, TN, 12-14 Nov. 1991; sponsored by NASA, DOE, Norfolk State Univ., and NIST
(RTOP 505-63-50-01)
(NASA-CP-3151; L-17099; NAS 1.55:3151) Avail: CASI HC A16/MF A03
COMPOSITE MATERIALS, CONFERENCES, EDUCATION, EXPERIMENTATION, FRACTURE MECHANICS, METALLURGY, STRUCTURAL ANALYSIS

31

ENGINEERING (GENERAL)

Includes vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.

N91-25303*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
METHODS OF APPLIED DYNAMICS
M. H. RHEINFURTH and H. B. WILSON (Alabama Univ., Tuscaloosa.) Washington May 1991 210 p
(NASA-RP-1262; M-659; NAS 1.61:1262) Avail: CASI HC A10/MF A03
The monograph was prepared to give the practicing engineer a clear understanding of dynamics with special consideration given to the dynamic analysis of aerospace systems. It is conceived to be both a desk-top reference and a refresher for aerospace engineers in government and industry. It could also be used as a *supplement to standard texts for in-house training courses on the* subject. Beginning with the basic concepts of kinematics and dynamics, the discussion proceeds to treat the dynamics of a system of particles. Both classical and modern formulations of the Lagrange equations, including constraints, are discussed and applied to the dynamic modeling of aerospace structures using the modal synthesis technique. Author

N92-11218*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A GENERALIZED METHOD FOR MULTIPLE ROBOTIC MANIPULATOR PROGRAMMING APPLIED TO VERTICAL-UP WELDING
KENNETH R. FERNANDEZ (Vanderbilt Univ., Nashville, TN.), GEORGE E. COOK (Vanderbilt Univ., Nashville, TN.), KRISTINN ANDERSEN (Vanderbilt Univ., Nashville, TN.), ROBERT JOEL BARNETT, and SALEH ZEIN-SABATTOU (Vanderbilt Univ., Nashville, TN.) Washington Oct. 1991 30 p
(NASA-TP-3163; M-672; NAS 1.60:3163) Avail: CASI HC A03/MF A01
ALGORITHMS, MANIPULATORS, NUMERICAL CONTROL, *PLASMA ARC WELDING, ROBOT ARMS, ROBOT CONTROL,* ROBOT DYNAMICS

N92-13343*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A NONLINEAR ESTIMATOR FOR RECONSTRUCTING THE ANGULAR VELOCITY OF A SPACECRAFT WITHOUT RATE GYROS
M. E. POLITES and W. D. LIGHTSEY Washington Dec. 1991 24 p
(NASA-TP-3178; M-675; NAS 1.60:3178) Avail: CASI HC A03/MF A01
ANGULAR VELOCITY, ATTITUDE GYROS, AXES (REFERENCE LINES), ESTIMATORS, KALMAN FILTERS, NONLINEAR SYSTEMS, SATELLITE ATTITUDE CONTROL

N92-22235*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE ROLE OF FAILURE/PROBLEMS IN ENGINEERING: A COMMENTARY OF FAILURES EXPERIENCED - LESSONS LEARNED
R. S. RYAN Mar. 1992 142 p
(NASA-TP-3213; M-684; NAS 1.60:3213) Avail: CASI HC A07/MF A02
FAILURE ANALYSIS, HUBBLE SPACE TELESCOPE, SATURN 5 LAUNCH VEHICLES, SPACE SHUTTLE BOOSTERS, SPACE SHUTTLE MAIN ENGINE, SPACE SHUTTLES, TOTAL QUALITY MANAGEMENT

N92-28436*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
INTERNATIONAL WORKSHOP ON VIBRATION ISOLATION TECHNOLOGY FOR MICROGRAVITY SCIENCE APPLICATIONS
JOSEPH F. LUBOMSKI, ed. May 1992 405 p Workshop held in Cleveland, OH, 23-25 Apr. 1991
(RTOP 694-03-0C)
(NASA-CP-10094; E-7035; NAS 1.55:10094) Avail: CASI HC A18/MF A04
CONFERENCES, CONTROLLERS, REDUCED GRAVITY, *SPACE MANUFACTURING, SPACE SHUTTLES, SPACE STATION* FREEDOM, VIBRATION ISOLATORS

N92-29677*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
DEFINITION AND DESIGN OF AN EXPERIMENT TO TEST RASTER SCANNING WITH ROTATING UNBALANCED-MASS DEVICES ON GIMBALED PAYLOADS
W. D. LIGHTSEY, D. C. ALHORN, and M. E. POLITES Jun. 1992 19 p
(NASA-TP-3249; M-691; NAS 1.60:3249) Avail: CASI HC A03/MF A01
EXPERIMENT DESIGN, FEASIBILITY ANALYSIS, PAYLOADS, *RASTER SCANNING, ROTATING BODIES, SERVOMECHANISMS,* SERVOMOTORS

N92-30378*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CABLE COMPLIANCE
J. KERLEY, W. EKLUND (NSI Technology Services Corp.,

Greenbelt, MD.), R. BURKHARDT (NSI Technology Services Corp., Greenbelt, MD.), and P. ROSSONI Jun. 1992 138 p (NASA-TP-3216; NAS 1.60:3216; REPT-92B00026) Avail: CASI HC A07/MF A02

CABLES (ROPES), HUMAN FACTORS ENGINEERING, JOINTS (JUNCTIONS), MAN MACHINE SYSTEMS, PROSTHETIC DEVICES, ROBOT ARMS, ROBOTICS

N92-33601*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
RECONFIGURING THE RUM EXPERIMENT TO TEST CIRCULAR SCANNING WITH ROTATING UNBALANCED-MASS DEVICES ON GIMBALED PAYLOADS
M. E. POLITES and D. C. ALHORN Sep. 1992 19 p (NASA-TP-3282; M-696; NAS 1.60:3282) Avail: CASI HC A03/MF A01

COMPUTERIZED SIMULATION, ROTATION, SCANNERS, SCANNING, SERVOMECHANISMS, SERVOMOTORS

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COMMUNICATIONS AND RADAR

Includes radar; land and global communications; communications theory; and optical communications.

N91-27436*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
A THREE-DIMENSIONAL FINITE-ELEMENT THERMAL/MECHANICAL ANALYTICAL TECHNIQUE FOR HIGH-PERFORMANCE TRAVELING WAVE TUBES
KAREN F. BARTOS, E. BRIAN FITE, KURT A. SHALKHAUSER, and G. RICHARD SHARP Washington Jun. 1991 17 p Original contains color illustrations
(RTOP 650-60-20)
(NASA-TP-3081; E-5917; NAS 1.60:3081) Avail: CASI HC A03/MF A01; 5 functional color pages

COMPUTER PROGRAMS, FAILURE ANALYSIS, FINITE ELEMENT METHOD, STRUCTURAL FAILURE, THERMAL ANALYSIS, THREE DIMENSIONAL MODELS, TRAVELING WAVE TUBES

N92-14202*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE COMMUNICATIONS TECHNOLOGY CONFERENCE: ONBOARD PROCESSING AND SWITCHING
Washington Nov. 1991 288 p Conference held in Cleveland, OH, 12-14 Nov. 1991
(RTOP 650-60-21)
(NASA-CP-3132; E-6548; NAS 1.55:3132) Avail: CASI HC A13/MF A03

COMMUNICATION NETWORKS, COMMUNICATION SATELLITES, CONFERENCES, NETWORK CONTROL, ONBOARD DATA PROCESSING, SATELLITE COMMUNICATION, SATELLITE NETWORKS, SPACE COMMUNICATION, SWITCHING

N92-20404*# Johns Hopkins Univ., Laurel, MD. Applied Physics Lab.
PROPAGATION EFFECTS FOR LAND MOBILE SATELLITE SYSTEMS: OVERVIEW OF EXPERIMENTAL AND MODELING RESULTS
JULIUS GOLDHIRSH and WOLFHARD J. VOGEL Feb. 1992 142 p Prepared in cooperation with Texas Univ., Austin
(RTOP 643-10-03)
(NASA-RP-1274; NAS 1.61:1274) Avail: CASI HC A07/MF A02

Models developed and experiments performed to characterize the propagation environment associated with land mobile communication using satellites are discussed. Experiments were carried out with transmitters on stratospheric balloons, remotely piloted aircraft, helicopters, and geostationary satellites. This text is comprised of compiled experimental results for the expressed use of communications engineers, designers of planned Land Mobile Satellite Systems (LMSS), and modelers of propagation effects. The results presented here are mostly derived from systematic studies of propagation effects for LMSS geometries in the United States associated with rural and suburban regions. Where applicable, the authors also draw liberally from the results of other related investigations in Canada, Europe, and Australia. Frequencies near 1500 MHz are emphasized to coincide with frequency bands allocated for LMSS by the International Telecommunication Union, although earlier experimental work at 870 MHz is also included. Author

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ELECTRONICS AND ELECTRICAL ENGINEERING

Includes test equipment and maintainability; components, e.g., tunnel diodes and transistors; microminiaturization; and integrated circuitry.

N92-11252*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THE 23 TO 300 C DEMAGNETIZATION RESISTANCE OF SAMARIUM-COBALT PERMANENT MAGNETS
JANIS M. NIEDRA (Sverdrup Technology, Inc., Brook Park, OH.) and ERIC OVERTON Washington Nov. 1991 11 p
(RTOP 590-13-11)
(NASA-TP-3119; E-6123; NAS 1.60:3119) Avail: CASI HC A03/MF A01

COBALT, DEMAGNETIZATION, PERMANENT MAGNETS, SAMARIUM, TEMPERATURE EFFECTS

N92-20492*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
TIME-FREQUENCY REPRESENTATION OF A HIGHLY NONSTATIONARY SIGNAL VIA THE MODIFIED WIGNER DISTRIBUTION
T. F. ZOLADZ, J. H. JONES, and J. JONG (Wyle Labs., Inc., Huntsville, AL.) Washington Mar. 1992 35 p
(NASA-TP-3215; M-685; NAS 1.60:3215) Avail: CASI HC A03/MF A01

HIGH FREQUENCIES, SIGNAL ANALYSIS, SIGNAL PROCESSING, SPACE SHUTTLE MAIN ENGINE

34

FLUID MECHANICS AND HEAT TRANSFER

Includes boundary layers; hydrodynamics; fluidics; mass transfer; and ablation cooling.

N91-15499*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FLOW-INDUCED RESONANCE OF SCREEN-COVERED CAVITIES
PAUL T. SODERMAN Oct. 1990 48 p
(RTOP 505-61-11)
(NASA-TP-3052; A-89252; NAS 1.60:3052) Avail: CASI HC A03/MF A01

ACOUSTIC EXCITATION, AEROACOUSTICS, CAVITIES, PRESSURE OSCILLATIONS, RESONANT VIBRATION, SCREENS, VISCOUS FLOW, VORTEX SHEDDING

N91-17310*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RELATIVE EFFICIENCY AND ACCURACY OF TWO NAVIER-STOKES CODES FOR SIMULATING ATTACHED TRANSONIC FLOW OVER WINGS
DARYL L. BONHAUS and STEPHEN F. WORNOM Washington Feb. 1991 125 p
(RTOP 505-62-31-06)
(NASA-TP-3061; L-16811; NAS 1.60:3061) Avail: CASI HC A06/MF A02
COMPUTATIONAL GRIDS, FLOW DISTRIBUTION, NAVIER-STOKES EQUATION, PRESSURE DISTRIBUTION, TRANSONIC FLOW, WING PROFILES

N91-18381*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN UPWIND-BIASED SPACE MARCHING ALGORITHM FOR SUPERSONIC VISCOUS FLOW
FRANCIS A. GREENE Washington Mar. 1991 44 p
(RTOP 506-40-91-01)
(NASA-TP-3068; L-16788; NAS 1.60:3068) Avail: CASI HC A03/MF A01
ALGORITHMS, FLOW DISTRIBUTION, SPATIAL MARCHING, SUPERSONIC FLOW, VISCOUS FLOW

N91-20418*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
HYPERVELOCITY ATMOSPHERIC FLIGHT: REAL GAS FLOW FIELDS
JOHN T. HOWE Nov. 1990 249 p
(RTOP 506-40-91)
(NASA-RP-1249; A-90143; NAS 1.61:1249) Avail: CASI HC A11/MF A03
Flight in the atmosphere is examined from the viewpoint of including real gas phenomena in the flow field about a vehicle flying at hypervelocity. That is to say, the flow field is subject not only to compressible phenomena, but is dominated by energetic phenomena. There are several significant features of such a flow field. Spatially, its composition can vary by both chemical and elemental species. The equations which describe the flow field include equations of state and mass, species, elemental, and electric charge continuity; momentum; and energy equations. These are nonlinear, coupled, partial differential equations that were reduced to a relatively compact set of equations of a self-consistent manner (which allows mass addition at the surface at a rate comparable to the free-stream mass flux). The equations and their inputs allow for transport of these quantities relative to the mass-averaged behavior of the flow field. Thus transport of mass by chemical, thermal, pressure, and forced diffusion; transport of momentum by viscosity; and transport of energy by conduction, chemical considerations, viscosity, and radiative transfer are included. The last of these complicate the set of equations by making the energy equation a partial integrodifferential equation. Each phenomenon is considered and represented mathematically by one or more developments. The coefficients which pertain are both thermodynamically and chemically dependent. Solutions of the equations are presented and discussed in considerable detail, with emphasis on severe energetic flow fields. For hypervelocity flight in low-density environments where gaseous reactions proceed at finite rates, chemical nonequilibrium is considered and some illustrations are presented. Finally, flight where the flow field may be out of equilibrium, both chemically and thermodynamically, is presented briefly. Author

N91-22509*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUMERICAL STUDIES OF CONVECTIVE COOLING FOR A LOCALLY HEATED SKIN
STEPHEN J. SCOTTI Washington May 1991 22 p
(RTOP 506-43-71-04)
(NASA-TP-3100; L-16867; NAS 1.60:3100) Avail: CASI HC A03/MF A01
CONVECTIVE HEAT TRANSFER, COOLANTS, MATHEMATICAL MODELS, NATIONAL AEROSPACE PLANE PROGRAM, SKIN TEMPERATURE (NON-BIOLOGICAL), THERMAL PROTECTION

N91-24542*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
SATURATION POINT MODEL FOR THE FORMATION OF METAL NITRATE IN NITROGEN TETROXIDE OXIDIZER
PAUL R. TORRANCE Washington May 1991 19 p
(NASA-TP-3107; S-630; NAS 1.60:3107) Avail: CASI HC A03/MF A01
DIFFUSION, NITRATES, NITROGEN TETROXIDE, OXIDIZERS, SATURATION (CHEMISTRY)

N91-25352*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
AEROACOUSTIC AND AERODYNAMIC APPLICATIONS OF THE THEORY OF NONEQUILIBRIUM THERMODYNAMICS
W. CLIFTON HORNE (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), CHARLES A. SMITH (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), and KRISHNAMURTY KARAMCHETI (Florida Agricultural and Mechanical Univ., Tallahassee.) Washington Jun. 1991 26 p
(RTOP 505-61-00)
(NASA-TP-3118; A-90084; NAS 1.60:3118) Avail: CASI HC A03/MF A01
AEROACOUSTICS, AERODYNAMIC CHARACTERISTICS, ENERGY DISSIPATION, ENTROPY, FLOW STABILITY, NONEQUILIBRIUM THERMODYNAMICS, THERMODYNAMIC EQUILIBRIUM, VISCOUS FLOW

N92-10161*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUMERICAL ANALYSIS AND SIMULATION OF AN ASSURED CREW RETURN VEHICLE FLOW FIELD
K. JAMES WEILMUENSTER, ROBERT E. SMITH, JR., and FRANCIS A. GREENE Washington Sep. 1991 37 p
(RTOP 506-40-91-01)
(NASA-TP-3101; L-16836; NAS 1.60:3101) Avail: CASI HC A03/MF A01
FLOW DISTRIBUTION, HYPERSONIC FLOW, INVISCID FLOW, LIFTING REENTRY VEHICLES, RESCUE OPERATIONS, SPACE STATION FREEDOM

N92-11285*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALCULATIONS AND CURVE FITS OF THERMODYNAMIC AND TRANSPORT PROPERTIES FOR EQUILIBRIUM AIR TO 30000 K
ROOP N. GUPTA (Vigyan Research Associates, Inc., Hampton, VA.), KAM-PUI LEE, RICHARD A. THOMPSON, and JERROLD M. YOS (Textron Defense Systems, Wilmington, MA.) Washington Oct. 1991 76 p
(RTOP 506-40-91-01)
(NASA-RP-1260; L-16907; NAS 1.61:1260) Avail: CASI HC A05/MF A01
A self-consistent set of equilibrium air values were computed for enthalpy, total specific heat at constant pressure, compressibility factor, viscosity, total thermal conductivity, and total Prandtl number from 500 to 30,000 K over a range of 10(exp -4) atm to 10(exp 2) atm. The mixture values are calculated from the transport and thermodynamic properties of the individual species provided in a recent study by the authors. The concentrations of the individual species, required in the mixture relations, are obtained from a free energy minimization calculation procedure. Present calculations are based on an 11-species air model. For pressures less than 10(exp -2) atm and temperatures of about 15,000 K and greater, the concentrations of N(++) and O(++) become important, and consequently, they are included in the calculations determining the various properties. The computed properties are curve fitted as a function of temperature at a constant value of pressure. These curve fits reproduce the computed values within 5 percent

for the entire temperature range considered here at specific pressures and provide an efficient means for computing the flowfield properties of equilibrium air, provided the elemental composition remains constant at 0.24 for oxygen and 0.76 for nitrogen by mass. Author

N92-11299*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
MODELING OF THE HEAT TRANSFER IN BYPASS TRANSITIONAL BOUNDARY-LAYER FLOWS
FREDERICK F. SIMON and CRAIG A. STEPHENS (PRC Kentron, Inc., Edwards, CA.) Washington Oct. 1991 15 p
(RTOP 505-62-52)
(NASA-TP-3170; E-6046; NAS 1.60:3170) Avail: CASI HC A03/MF A01

BOUNDARY LAYER FLOW, BOUNDARY LAYER TRANSITION, BYPASSES, COMPUTERIZED SIMULATION, HEAT TRANSFER, K-EPSILON TURBULENCE MODEL, LEADING EDGES, PREDICTION ANALYSIS TECHNIQUES, TRANSITION FLOW

N92-20677*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIMULATION OF REAL-GAS EFFECTS ON PRESSURE DISTRIBUTIONS FOR AEROASSIST FLIGHT EXPERIMENT VEHICLE AND COMPARISON WITH PREDICTION
JOHN R. MICOL Apr. 1992 70 p
(RTOP 506-40-41-01)
(NASA-TP-3157; L-16923; NAS 1.60:3157) Avail: CASI HC A04/MF A01

AEROASSIST, BASE PRESSURE, BLUNT BODIES, DENSITY DISTRIBUTION, FOREBODIES, HYPERSONIC SPEED, ORBIT TRANSFER VEHICLES, PRESSURE DISTRIBUTION, REAL GASES, SIMULATION

N92-24514*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
WORKSHOP ON ENGINEERING TURBULENCE MODELING
LOUIS A. POVINELLI, ed., W. W. LIOU, ed., A. SHABBIR, ed., and T.-H. SHIH, ed. Mar. 1992 510 p Workshop held in Cleveland, OH, 21-22 Aug. 1991
(NASA ORDER C-99066-G; RTOP 505-62-21)
(NASA-CP-10088; E-6830; ICOMP-92-02; CMOTT-92-02; NAS 1.55:10088) Avail: CASI HC A22/MF A04

COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, PROPULSION, TURBULENCE, TURBULENCE MODELS

N92-24797*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMPLIFIED METHOD FOR THERMAL ANALYSIS OF A COWL LEADING EDGE SUBJECT TO INTENSE LOCAL SHOCK-WAVE-INTERFERENCE HEATING
DAVID M. MCGOWAN, CHARLES J. CAMARDA, and STEPHEN J. SCOTTI Washington Mar. 1992 40 p
(RTOP 506-43-31-04)
(NASA-TP-3167; L-16505; NAS 1.60:3167) Avail: CASI HC A03/MF A01

AERODYNAMIC HEATING, AERODYNAMIC INTERFERENCE, COWLINGS, HEAT AFFECTED ZONE, LEADING EDGES, SHOCK WAVES, THERMAL ANALYSIS

N92-31281*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STAGNATION-POINT HEAT-TRANSFER RATE PREDICTIONS AT AEROASSIST FLIGHT CONDITIONS
ROOP N. GUPTA, JIM J. JONES (Analytical Mechanics Associates, Inc., Hampton, VA.), and WILLIAM C. ROCHELLE (Lockheed Engineering and Sciences Co., Houston, TX.) Sep. 1992 21 p
(RTOP 506-40-91-02)
(NASA-TP-3208; L-17039; NAS 1.60:3208) Avail: CASI HC A03/MF A01

AEROASSIST, COMPUTATIONAL FLUID DYNAMICS, FLIGHT CONDITIONS, HYPERSONIC FLOW, HYPERSONIC HEAT TRANSFER, NAVIER-STOKES EQUATION, RADIATIVE HEAT TRANSFER, REACTING FLOW, SHOCK LAYERS, STAGNATION POINT, VISCOUS FLOW

N92-32245*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
TENTH WORKSHOP FOR COMPUTATIONAL FLUID DYNAMIC APPLICATIONS IN ROCKET PROPULSION, PART 2
R. W. WILLIAMS, comp. Washington Jul. 1992 755 p Workshop held in Huntsville, AL, 28-30 Apr. 1992
(NASA-CP-3163-PT-2; M-693-PT-2; NAS 1.55:3163-PT-2) Avail: CASI HC A99/MF A05

COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, HYDROGEN OXYGEN ENGINES, LIQUID PROPELLANT ROCKET ENGINES, PROPULSION SYSTEM CONFIGURATIONS, ROCKET ENGINE DESIGN, SOLID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT PROPULSION

N92-32278*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
TENTH WORKSHOP FOR COMPUTATIONAL FLUID DYNAMIC APPLICATIONS IN ROCKET PROPULSION, PART 1
R. W. WILLIAMS, comp. Washington Jul. 1992 721 p Workshop held in Huntsville, AL, 28-30 Apr. 1992
(NASA-CP-3163-PT-1; M-693-PT-1; NAS 1.55:3163-PT-1) Avail: CASI HC A99/MF A05

COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, GRID GENERATION (MATHEMATICS), HEAT TRANSFER, LIQUID PROPELLANT ROCKET ENGINES, PROPELLANT COMBUSTION, SOLID PROPELLANT ROCKET ENGINES, SPACECRAFT PROPULSION, TURBOMACHINERY

35

INSTRUMENTATION AND PHOTOGRAPHY

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography.

N91-14574*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
HIGH RESOLUTION, HIGH FRAME RATE VIDEO TECHNOLOGY
Washington May 1990 102 p Workshop held in Cleveland, OH, 11-12 May 1988 List of attendees included as supplement
(RTOP 694-03-03)
(NASA-CP-3080; E-5044; NAS 1.55:3080) Avail: CASI HC A06/MF A02

DATA COMPRESSION, DATA TRANSMISSION, FRAMES (DATA PROCESSING), HIGH RESOLUTION, IMAGE PROCESSING, IMAGING TECHNIQUES, VIDEO DATA

N91-22538*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-ENERGY POSITRON FLUX GENERATOR FOR MICROSTRUCTURAL CHARACTERIZATION OF THIN FILMS
JAG J. SINGH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), ABE EFTEKHARI (Analytical Services and Materials, Inc., Hampton, VA.), and TERRY L. ST.CLAIR Washington May 1991 19 p
(RTOP 506-43-21-05)
(NASA-TP-3074; L-16881; NAS 1.60:3074) Avail: CASI HC A03/MF A01

FILM THICKNESS, INSULATORS, MICROSTRUCTURE, POSITRON ANNIHILATION, SPECTROSCOPY, THIN FILMS, TUNGSTEN

N92-29228*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIXTEENTH INTERNATIONAL LASER RADAR CONFERENCE, PART 1
M. PATRICK MCCORMICK, ed. Washington Jul. 1992 407 p Conference held in Cambridge, MA, 20-24 Jul. 1992; sponsored by NASA. Langley Research Center, AFOSR, AF Phillips Lab., American Meteorological Society, and the Optical Society of America
(RTOP 665-45-20-21)
(NASA-CP-3158-PT-1; L-17126-PT-1; NAS 1.55:3158-PT-1)
Avail: CASI HC A18/MF A04

ATMOSPHERIC CIRCULATION, ATMOSPHERIC EFFECTS, BACKSCATTERING, CLIMATE CHANGE, IMAGING TECHNIQUES, OPTICAL RADAR, RADAR MEASUREMENT, REMOTE SENSING, RESEARCH FACILITIES, STRATOSPHERE, VOLCANOES

N92-31013*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIXTEENTH INTERNATIONAL LASER RADAR CONFERENCE, PART 2
M. PATRICK MCCORMICK, ed. Washington Jul. 1992 361 p Conference held in Cambridge, MA, 20-24 Jul. 1992; sponsored by NASA. Langley Research Center, AFOSR, AF Phillips Lab., American Meteorological Society, and the Optical Society of America
(RTOP 665-45-20-21)
(NASA-CP-3158-PT-2; L-17126-PT-2; NAS 1.55:3158-PT-2)
Avail: CASI HC A16/MF A03

CONFERENCES, DOPPLER RADAR, IMAGING TECHNIQUES, LASERS, MESOSPHERE, OPTICAL RADAR, OZONE, REMOTE SENSING, TROPOSPHERE

37

MECHANICAL ENGINEERING

Includes auxiliary systems (nonpower); machine elements and processes; and mechanical equipment.

N91-12956*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL AND ANALYTICAL EVALUATION OF EFFICIENCY OF HELICOPTER PLANETARY STAGE
TIMOTHY L. KRANTZ Nov. 1990 20 p Prepared in cooperation with Army Aviation Systems Command, Cleveland, OH
(DA PROJ. 1L1-6221147-A; RTOP 505-63-51)
(NASA-TP-3063; E-5268; NAS 1.60:3063; AVSCOM-TR-90-C-001)
Avail: CASI HC A03/MF A01

HELICOPTER PROPELLER DRIVE, HELICOPTERS, POWER LOSS, SYSTEM EFFECTIVENESS, TRANSMISSIONS (MACHINE ELEMENTS)

N91-30531*# Ohio State Univ., Columbus. Dept. of Mechanical Engineering.
FUNDAMENTALS OF FLUID LUBRICATION
BERNARD J. HAMROCK Washington NASA Aug. 1991 670 p Sponsored by NASA. Lewis Research Center
(RTOP 505-90-21)
(NASA-RP-1255; E-3758; NAS 1.61:1255) Avail: CASI HC A99/MF A06

The aim is to coordinate the topics of design, engineering dynamics, and fluid dynamics in order to aid researchers in the area of fluid film lubrication. The lubrication principles that are covered can serve as a basis for the engineering design of machine elements. The fundamentals of fluid film lubrication are presented clearly so that students that use the book will have confidence in their ability to apply these principles to a wide range of lubrication situations. Some guidance on applying these fundamentals to the solution of engineering problems is also provided. *Author*

N91-30540*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE EFFECT OF BANDWIDTH ON TELEROBOT SYSTEM PERFORMANCE
MARK UEBEL (Maryland Univ., College Park.), MICHAEL S. ALI (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), and IOANNIS MINIS (Maryland Univ., College Park.) Sep. 1991 44 p
(NASA-TP-3152; REPT-91E02561; NAS 1.60:3152) Avail: CASI HC A03/MF A01

BANDWIDTH, FEEDBACK CONTROL, ROBOT CONTROL, TELEROBOTICS

N92-10195*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
A METHOD FOR DETERMINING SPIRAL-BEVEL GEAR TOOTH GEOMETRY FOR FINITE ELEMENT ANALYSIS
ROBERT F. HANDSCHUH and FAYDOR L. LITVIN (Illinois Univ., Chicago.) Aug. 1991 16 p Original contains color illustrations
(DA PROJ. 1L1-62211-A-47-A; RTOP 505-63-51)
(NASA-TP-3096; E-5837; NAS 1.60:3096; AVSCOM-TR-91-C-020; AD-A242332) Avail: CASI HC A03/MF A01; 1 functional color page

APPLICATIONS PROGRAMS (COMPUTERS), COMPUTER AIDED DESIGN, FINITE ELEMENT METHOD, GEAR TEETH, MATHEMATICAL MODELS, SURFACE GEOMETRY, THREE DIMENSIONAL MODELS

N92-14346*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ROTORDYNAMIC INSTABILITY PROBLEMS IN HIGH-PERFORMANCE TURBOMACHINERY, 1990
Washington Oct. 1991 458 p Workshop held in College Station, TX, 21-23 May 1990; sponsored by Texas A and M Univ. and NASA. Lewis Research Center
(RTOP 553-13-00)
(NASA-CP-3122; E-5628; NAS 1.55:3122) Avail: CASI HC A20/MF A04

CONFERENCES, ROTOR DYNAMICS, STRUCTURAL VIBRATION, TURBOMACHINERY, VIBRATION DAMPING

N92-30396*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DEVELOPMENT OF A FULL-SCALE TRANSMISSION TESTING PROCEDURE TO EVALUATE ADVANCED LUBRICANTS
DAVID G. LEWICKI, HARRY J. DECKER, and JOHN T. SHIMSKI (Naval Air Propulsion Test Center, Trenton, NJ.) Aug. 1992 25 p
(DA PROJ. 1L1-62211-A-47-A; RTOP 505-63-36)
(NASA-TP-3265; E-6531; NAS 1.60:3265; AVSCOM-TR-91-C-026)
Avail: CASI HC A03/MF A01

GEARS, HELICOPTER PROPELLER DRIVE, LUBRICANT TESTS, LUBRICATING OILS, LUBRICATION, ROTARY WINGS, TEST STANDS, TRANSMISSIONS (MACHINE ELEMENTS), WEAR TESTS

38

QUALITY ASSURANCE AND RELIABILITY

Includes product sampling procedures and techniques; and quality control.

N91-14618*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AXISYMMETRIC SHELL ANALYSIS OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER FIELD JOINT

MICHAEL P. NEMETH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and MELVIN S. ANDERSON (Old Dominion Univ., Norfolk, VA.) Washington Jan. 1991 55 p
(RTOP 505-63-01-08)
(NASA-TP-3033; L-16746; NAS 1.60:3033) Avail: CASI HC A04/MF A01

DYNAMIC STRUCTURAL ANALYSIS, JOINTS (JUNCTIONS), O RING SEALS, SOLID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE BOOSTERS

39

STRUCTURAL MECHANICS

Includes structural element design and weight analysis; fatigue; and thermal stress.

N91-10301*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RESEARCH IN STRUCTURES, STRUCTURAL DYNAMICS AND MATERIALS, 1990
JEAN-FRANCOIS M. BARTHELEMY, comp. and AHMED K. NOOR, comp. (George Washington Univ., Hampton, VA.) Washington Mar. 1990 283 p The 31st conference was held in Long Beach, CA, 2-4 Apr. 1990; sponsored by AIAA, ASME, ASCE, AHS, and ASC
(RTOP 505-63-01-07)
(NASA-CP-3064; L-16735; NAS 1.55:3064) Avail: CASI HC A13/MF A03

BEAMS (SUPPORTS), BUCKLING, COMPOSITE STRUCTURES, CONFERENCES, CONTROL SYSTEMS DESIGN, DYNAMIC RESPONSE, DYNAMIC STRUCTURAL ANALYSIS, LOADS (FORCES)

N91-10328*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
DESIGN OF CONTROL LAWS FOR FLUTTER SUPPRESSION BASED ON THE AERODYNAMIC ENERGY CONCEPT AND COMPARISONS WITH OTHER DESIGN METHODS
ELI NISSIM (Technion - Israel Inst. of Tech., Haifa.) Oct. 1990 59 p Previously anounced in IAA as A89-31100
(RTOP 505-66-71)
(NASA-TP-3056; H-1549; NAS 1.60:3056; AIAA PAPER 89-1212) Avail: CASI HC A04/MF A01

AEROELASTIC RESEARCH WINGS, CONTROL SYSTEMS DESIGN, CONTROL THEORY, ENERGY METHODS, FLUTTER ANALYSIS, VIBRATION DAMPING

N91-13750*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FREE VIBRATIONS OF THIN-WALLED SEMICIRCULAR GRAPHITE-EPOXY COMPOSITE FRAMES
AHMED K. NOOR (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), HUEY D. CARDEN (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and JEANNE M. PETERS (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.) Washington Nov. 1990 43 p Original contains color illustrations
(NAG1-730; RTOP 505-63-01-11)
(NASA-TP-3010; L-16726; NAS 1.60:3010) Avail: CASI HC A03/MF A01; 4 functional color pages

COMPOSITE STRUCTURES, FRAMES, GRAPHITE-EPOXY COMPOSITES, LAMINATES, STRUCTURAL ANALYSIS, STRUCTURAL VIBRATION, VIBRATION EFFECTS

N91-13751*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FAILURE BEHAVIOR OF GENERIC METALLIC AND COMPOSITE AIRCRAFT STRUCTURAL COMPONENTS UNDER CRASH LOADS
HUEY D. CARDEN and MARTHA P. ROBINSON Washington Nov. 1990 48 p
(RTOP 505-63-01-11)
(NASA-RP-1239; L-16744; NAS 1.61:1239) Avail: CASI HC A03/MF A01

Failure behavior results are presented from crash dynamics research using concepts of aircraft elements and substructure not necessarily designed or optimized for energy absorption or crash loading considerations. To achieve desired new designs incorporating improved energy absorption capabilities often requires an understanding of how more conventional designs behave under crash loadings. Experimental and analytical data are presented which indicate some general trends in the failure behavior of a class of composite structures including individual fuselage frames, skeleton subfloors with stringers and floor beams without skin covering, and subfloors with skin added to the frame-stringer arrangement. Although the behavior is complex, a strong similarity in the static/dynamic failure behavior among these structures is illustrated through photographs of the experimental results and through analytical data of generic composite structural models.
Author

N91-16413*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PLATE AND BUTT-WELD STRESSES BEYOND ELASTIC LIMIT, MATERIAL AND STRUCTURAL MODELING
V. VERDERAIME Washington Jan. 1991 63 p
(NASA-TP-3075; M-654; NAS 1.60:3075) Avail: CASI HC A04/MF A01

AXIAL LOADS, BENDING, SAFETY FACTORS, STRESS ANALYSIS, STRESS-STRAIN RELATIONSHIPS, STRUCTURAL ANALYSIS, WELDED JOINTS

N91-20503*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BUCKLING AND VIBRATION ANALYSIS OF A SIMPLY SUPPORTED COLUMN WITH A PIECEWISE CONSTANT CROSS SECTION
MARK S. LAKE and MARTIN M. MIKULAS, JR. Washington Mar. 1991 13 p
(RTOP 506-43-41-02)
(NASA-TP-3090; L-16854; NAS 1.60:3090) Avail: CASI HC A03/MF A01

BUCKLING, COLUMNS (SUPPORTS), DYNAMIC STRUCTURAL ANALYSIS, STRUCTURAL STABILITY, STRUCTURAL VIBRATION, TAPERING

N91-20506*# Computer Software Management and Information Center, Athens, GA.
NINETEENTH NASTRAN (R) USERS' COLLOQUIUM
Washington NASA Apr. 1991 194 p Colloquium held in Williamsburg, VA, 22-26 Apr. 1991 Sponsored by NASA, Washington
(NASA-CP-3111; NAS 1.55:3111) Avail: CASI HC A09/MF A03

CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS

N91-21556*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DETERMINATION OF THE FLIGHT HARDWARE CONFIGURATION OF AN ENERGY ABSORBING ATTENUATOR FOR THE PROPOSED SPACE STATION CREW AND EQUIPMENT TRANSLATION AID CART
EDWIN L. FASANELLA (Lockheed Engineering and Sciences Co., Hampton, VA.), KAREN E. JACKSON (Army Aviation Research and Development Command, Hampton, VA.), LISA E. JONES (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and JOHN E. TETER, JR. 1991 58 p

(RTOP 505-63-01-11)
(NASA-TP-3084; L-16852; NAS 1.60:3084; AD-A235901) Avail: CASI HC A04/MF A01
ATTENUATORS, BRAKES (FOR ARRESTING MOTION), CARTS, COLUMNS (SUPPORTS), HONEYCOMB STRUCTURES, RAIL TRANSPORTATION, SHOCK ABSORBERS, SPACE STATIONS

N91-22576*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPUTATIONAL METHODS FOR FRICTIONLESS CONTACT WITH APPLICATION TO SPACE SHUTTLE ORBITER NOSE-GEAR TIRES
KYUN O. KIM (George Washington Univ., Hampton, VA.), JOHN A. TANNER (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), AHMED K. NOOR (Virginia Univ., Charlottesville.), and MARTHA P. ROBINSON Washington May 1991 36 p Original contains color illustrations
(RTOP 505-63-41-02)
(NASA-TP-3073; L-16750; NAS 1.60:3073) Avail: CASI HC A03/MF A01; 2 functional color pages
AIRCRAFT TIRES, COMPUTATION, FINITE ELEMENT METHOD, FRICTIONLESS ENVIRONMENTS, LANDING GEAR, ROCKET NOSE CONES, ROLLING CONTACT LOADS, SPACE SHUTTLE ORBITERS, VARIATIONAL PRINCIPLES

N91-24603*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
THE 25TH AEROSPACE MECHANISMS SYMPOSIUM
May 1991 346 p Symposium held in Pasadena, CA, 8-10 May 1991; sponsored by NASA, Washington, California Inst. of Tech., and LMSC
(NAS7-918)
(NASA-CP-3113; NAS 1.55:3113) Avail: CASI HC A15/MF A03
ACTUATORS, AEROSPACE ENGINEERING, CONFERENCES, CRYOGENICS, GROUND SUPPORT EQUIPMENT, LATCHES, ROBOTICS, TRIBOLOGY, VACUUM

N92-18053*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF CRASH PULSE SHAPE ON SEAT STROKE REQUIREMENTS FOR LIMITING LOADS ON OCCUPANTS OF AIRCRAFT
HUEY D. CARDEN Washington Feb. 1992 23 p
(RTOP 505-63-50-09)
(NASA-TP-3126; L-16941; NAS 1.60:3126) Avail: CASI HC A03/MF A01
CRASHES, CRASHWORTHINESS, DYNAMIC TESTS, GENERAL AVIATION AIRCRAFT, LOADS (FORCES), SEATS, SHAPES

N92-19355*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
STRUCTURAL DETERMINISTIC SAFETY FACTORS SELECTION CRITERIA AND VERIFICATION
V. VERDERAIME Feb. 1992 50 p
(NASA-TP-3203; M-683; NAS 1.60:3203) Avail: CASI HC A03/MF A01
METALS, PROBABILITY THEORY, RELIABILITY ANALYSIS, SAFETY FACTORS, STANDARD DEVIATION, STRESS ANALYSIS, STRUCTURAL FAILURE, STRUCTURAL RELIABILITY

N92-21457*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE EFFECT OF ACCELERATION VERSUS DISPLACEMENT METHODS ON STEADY-STATE BOUNDARY FORCES
D. S. MCGHEE Washington NASA. Marshall Space Flight Center Apr. 1992 31 p
(NASA-TP-3218; M-686; NAS 1.60:3218) Avail: CASI HC A03/MF A01
CONSTRAINTS, COUPLED MODES, DYNAMIC STRUCTURAL ANALYSIS, LOADS (FORCES), MODAL RESPONSE, STEADY STATE, TRUNCATION ERRORS

N92-22227*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
IMPROVED ACCURACY FOR FINITE ELEMENT STRUCTURAL ANALYSIS VIA A NEW INTEGRATED FORCE METHOD
SURYA N. PATNAIK (Ohio Aerospace Inst., Brook Park.), DALE A. HOPKINS, ROBERT A. AIELLO, and LASZLO BERKE Apr. 1992 28 p
(RTOP 505-63-5B)
(NASA-TP-3204; E-5638; NAS 1.60:3204) Avail: CASI HC A03/MF A01
COMPUTER PROGRAMS, FINITE ELEMENT METHOD, MATHEMATICAL MODELS, MEASURE AND INTEGRATION, SOLID MECHANICS, STRESS-STRAIN RELATIONSHIPS, STRUCTURAL ANALYSIS

N92-23115*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL BEHAVIOR OF GRAPHITE-EPOXY Y-STIFFENED SPECIMENS LOADED IN COMPRESSION
P. DANIEL SYDOW and MARK J. SHUART May 1992 20 p
(RTOP 505-63-50-08)
(NASA-TP-3171; L-16918; NAS 1.60:3171) Avail: CASI HC A03/MF A01
COMPRESSION TESTS, GRAPHITE-EPOXY COMPOSITES, REINFORCED PLATES, STIFFENING, WEBS (SUPPORTS)

N92-24205*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THERMAL AND STRUCTURAL TESTS OF RENE 41 HONEYCOMB INTEGRAL-TANK CONCEPT FOR FUTURE SPACE TRANSPORTATION SYSTEMS
JOHN L. SHIDELER, ROGER A. FIELDS, LAWRENCE F. REARDON, and LESLIE GONG (National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.) May 1992 77 p
(RTOP 506-43-71-05)
(NASA-TP-3145; L-16752; NAS 1.60:3145) Avail: CASI HC A05/MF A01
HIGH TEMPERATURE TESTS, HONEYCOMB STRUCTURES, RENE 41, SANDWICH STRUCTURES, STRAIN MEASUREMENT, STRESS ANALYSIS, THERMAL ANALYSIS

N92-24324*# Computer Software Management and Information Center, Athens, GA.
TWENTIETH NASTRAN (R) USERS' COLLOQUIUM
Washington NASA Apr. 1992 188 p Colloquium held in Colorado Springs, CO, 27 Apr. - 1 May 1992 Sponsored by NASA, Washington
(NASA-CP-3145; NAS 1.55:3145) Avail: CASI HC A09/MF A02
FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS

N92-24546*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STIFFNESS AND STRENGTH TAILORING IN UNIFORM SPACE-FILLING TRUSS STRUCTURES
MARK S. LAKE Apr. 1992 30 p Presented at the Ninth DOD/NASA/FAA Conference on Fibrous Composites in Structural Design, Lake Tahoe, NV, 4-7 Nov. 1991
(RTOP 506-43-41-02)
(NASA-TP-3210; L-17001; NAS 1.60:3210) Avail: CASI HC A03/MF A01
CRYSTALLOGRAPHY, LOADS (FORCES), SPACECRAFT STRUCTURES, STIFFNESS, STRUCTURAL DESIGN, STRUCTURAL DESIGN CRITERIA, TRUSSES

N92-25067*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 26TH AEROSPACE MECHANISMS SYMPOSIUM
Washington May 1992 386 p Symposium held in Greenbelt,

MD, 13-15 May 1992; sponsored by NASA, Washington, California Inst. of Tech., and LMSC
(NASA-CP-3147; REPT-92B00052; NAS 1.55:3147) Avail: CASI HC A17/MF A04

ACTUATORS, AEROSPACE ENGINEERING, CONFERENCES, CONNECTORS, LARGE SPACE STRUCTURES, LATCHES

N92-25911*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPUTATIONAL STRUCTURES TECHNOLOGY FOR AIRFRAMES AND PROPULSION SYSTEMS
AHMED K. NOOR, comp. (Virginia Univ., Hampton.), JERROLD M. HOUSNER, comp., JAMES H. STARNES, JR., comp., DALE A. HOPKINS, comp., and CHRISTOS C. CHAMIS, comp. (National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.) Washington May 1992 516 p Workshops held in Cleveland, OH, 26-27 Jun. 1991 and in Hampton, VA, 4-5 Sep. 1991; sponsored by NASA, Washington and Virginia Univ., Hampton
(RTOP 505-63-53-01)
(NASA-CP-3142; L-17049; NAS 1.55:3142) Avail: CASI HC A22/MF A04

AIRCRAFT DESIGN, AIRCRAFT STRUCTURES, AIRFRAMES, CIVIL AVIATION, COMPUTER AIDED DESIGN, CONFERENCES, PROPULSION SYSTEM CONFIGURATIONS, SPACECRAFT DESIGN, SPACECRAFT STRUCTURES, STRUCTURAL ANALYSIS, STRUCTURAL DESIGN, SUPERSONIC TRANSPORTS

N92-25997*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STRESS CONCENTRATIONS FOR STRAIGHT-SHANK AND COUNTERSUNK HOLES IN PLATES SUBJECTED TO TENSION, BENDING, AND PIN LOADING
K. N. SHIVAKUMAR (Analytical Services and Materials, Inc., Hampton, VA.) and J. C. NEWMAN, JR. Jun. 1992 36 p
(RTOP 505-63-50-04)
(NASA-TP-3192; L-17027; NAS 1.60:3192) Avail: CASI HC A03/MF A01

BEND TESTS, FINITE ELEMENT METHOD, HOLES (MECHANICS), STRESS CONCENTRATION, TENSILE TESTS, THREE DIMENSIONAL MODELS

N92-26537*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
IDENTIFICATION OF LINEAR SYSTEMS BY AN ASYMPTOTICALLY STABLE OBSERVER
MINH Q. PHAN, LUCAS G. HORTA, JER-NAN JUANG, and RICHARD W. LONGMAN (Columbia Univ., New York, NY.) Jun. 1992 69 p
(RTOP 590-14-61-01)
(NASA-TP-3164; L-16940; NAS 1.60:3164) Avail: CASI HC A04/MF A01

EIGENVALUES, LINEAR SYSTEMS, MARKOV PROCESSES, NUMERICAL STABILITY, SYSTEM IDENTIFICATION

N92-26669*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
EFFECT OF TYPE OF LOAD ON STRESS ANALYSIS OF THIN-WALLED DUCTS
J. B. MIN and P. K. AGGARWAL Jun. 1992 18 p
(NASA-TP-3248; M-688; NAS 1.60:3248) Avail: CASI HC A03/MF A01

DUCTS, LOADS (FORCES), PIPES (TUBES), SPACE SHUTTLE MAIN ENGINE, STRESS ANALYSIS, THIN WALLS

N92-27974*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
DEVELOPMENT OF A TRUSS JOINT FOR ROBOTIC ASSEMBLY OF SPACE STRUCTURES
GEORGE F. PARMA Jul. 1992 31 p
(RTOP 472-46-07-17)
(NASA-TP-3214; S-763; NAS 1.60:3214) Avail: CASI HC A03/MF A01

FASTENERS, LARGE SPACE STRUCTURES, ORBITAL ASSEMBLY, ROBOTS, SPACE COMMERCIALIZATION, SPACE ERECTABLE STRUCTURES, TRUSSES

N92-28620*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
TYPES AND CHARACTERISTICS OF DATA FOR GEOMAGNETIC FIELD MODELING
R. A. LANGEL, ed. and R. T. BALDWIN, ed. (Hughes STX, Inc., Lanham, MD.) Washington Jun. 1992 353 p Symposium held in Vienna, Austria, 23 Aug. 1991
(NASA-CP-3153; REPT-92B00061; NAS 1.55:3153) Avail: CASI HC A16/MF A03

CONFERENCES, DATA REDUCTION, GEODESY, GEOMAGNETISM, GEOPHYSICS

N92-30106*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE 1991 INTERNATIONAL CONFERENCE ON AGING AIRCRAFT AND STRUCTURAL AIRWORTHINESS
CHARLES E. HARRIS, ed. Washington Jul. 1992 470 p Conference held in Washington, DC, 19-21 Nov. 1991; sponsored by NASA, Washington and FAA
(RTOP 538-02-10-01)
(NASA-CP-3160; L-17094; NAS 1.55:3160) Avail: CASI HC A20/MF A04

AGING (MATERIALS), AIRCRAFT INDUSTRY, AIRCRAFT MAINTENANCE, AIRCRAFT PERFORMANCE, AIRCRAFT RELIABILITY, AIRCRAFT STRUCTURES, CONFERENCES, NONDESTRUCTIVE TESTS

N92-31279*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANALYSIS AND PREDICTION OF MULTIPLE-SITE DAMAGE (MSD) FATIGUE CRACK GROWTH
D. S. DAWICKE (Analytical Mechanics Associates, Inc., Hampton, VA.) and J. C. NEWMAN, JR. Aug. 1992 18 p
(RTOP 505-63-50-04)
(NASA-TP-3231; L-17006; NAS 1.60:3231) Avail: CASI HC A03/MF A01

BOUNDARY ELEMENT METHOD, CRACK PROPAGATION, CRACKING (FRACTURING), DAMAGE, FATIGUE (MATERIALS), STRESS INTENSITY FACTORS

N92-31280*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
APPLICATIONS OF FEM AND BEM IN TWO-DIMENSIONAL FRACTURE MECHANICS PROBLEMS
J. B. MIN, B. E. STEEVE, and G. R. SWANSON Aug. 1992 23 p
(NASA-TP-3277; M-695; NAS 1.60:3277) Avail: CASI HC A03/MF A01

BOUNDARIES, BOUNDARY ELEMENT METHOD, CRACK TIPS, ELASTIC PLATES, FINITE ELEMENT METHOD, FRACTURE MECHANICS, PLANE STRAIN, STRESS INTENSITY FACTORS

N92-33476*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
INFLUENCE OF MASS MOMENT OF INERTIA ON NORMAL MODES OF PRELOADED SOLAR ARRAY MAST
SASAN C. ARMAND and PAUL LIN (Cleveland State Univ., OH.) Aug. 1992 12 p
(RTOP 474-46-10)
(NASA-TP-3273; E-6847; NAS 1.60:3273) Avail: CASI HC A03/MF A01

BEAMS (SUPPORTS), BENDING, DYNAMIC CHARACTERISTICS, DYNAMIC STRUCTURAL ANALYSIS, MOMENTS OF INERTIA, SOLAR ARRAYS, SPACECRAFT ANTENNAS, SPACECRAFT STRUCTURES, VIBRATION MODE

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GEOSCIENCES (GENERAL)

N91-20541*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
WEST ANTARCTIC ICE SHEET INITIATIVE. VOLUME 1: SCIENCE AND IMPLEMENTATION PLAN
ROBERT A. BINDSCHADLER, ed. Washington Apr. 1990 61 p Conference held in Greenbelt, MD, 16-18 Oct. 1990
(NSF DPP-90-17562)
(NASA-CP-3115-VOL-1; REPT-91A01040-VOL-1; NAS 1.55:3115-VOL-1) Avail: CASI HC A04/MF A01
ANTARCTIC REGIONS, CLIMATE CHANGE, ICE, ICE ENVIRONMENTS, METEOROLOGICAL PARAMETERS, PREDICTION ANALYSIS TECHNIQUES

N91-26573*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
WEST ANTARCTIC ICE SHEET INITIATIVE. VOLUME 2: DISCIPLINE REVIEWS
ROBERT A. BINDSCHADLER, ed. Washington May 1991 147 p Workshop held in Greenbelt, MD, 16-18 Oct. 1990; sponsored in part by NASA, Washington, and NSF, Washington, DC
(NASA-CP-3115-VOL-2; REPT-91A01040-VOL-2; NAS 1.55:3115-VOL-2) Avail: CASI HC A07/MF A02
ANTARCTIC REGIONS, CLIMATOLOGY, ICE, SEA LEVEL

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EARTH RESOURCES AND REMOTE SENSING

Includes remote sensing of earth resources by aircraft and spacecraft; photogrammetry; and aerial photography.

N91-15615*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
MULTISOURCE DATA INTEGRATION IN REMOTE SENSING
JAMES C. TILTON, ed. Washington Jan. 1991 155 p Workshop held in College Park, MD, 14-15 Jun. 1990; sponsored by NASA. Goddard Space Flight Cetner and IEEE
(NASA-CP-3099; REPT-90B00122; NAS 1.55:3099) Avail: CASI HC A08/MF A02
DATA ACQUISITION, DATA INTEGRATION, IMAGE ANALYSIS, IMAGE PROCESSING, MULTISENSOR APPLICATIONS, REMOTE SENSING, REMOTE SENSORS

N91-30588*# National Aeronautics and Space Administration, Washington, DC.
EARTH OBSERVATIONS AND GLOBAL CHANGE DECISION MAKING: A SPECIAL BIBLIOGRAPHY, 1991
Jun. 1991 99 p
(NASA-SP-7092; NAS 1.21:7092) Avail: CASI HC A05/MF A02
The first section of the bibliography contains 294 bibliographic citations and abstracts of relevant reports, articles, and documents announced in 'Scientific and Technical Aerospace Reports (STAR)' and 'International Aerospace Abstracts (IAA)'. These abstracts are categorized by the following major subject divisions: aeronautics, astronautics, chemistry and materials, engineering, geosciences, life sciences, mathematical and computer sciences, physics, social sciences, space sciences and general. Following the abstract section, seven indexes are provided for further assistance.
Author

N91-32528*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
INTERNATIONAL WORKSHOP ON STRATOSPHERIC AEROSOLS: MEASUREMENTS, PROPERTIES, AND EFFECTS
RUDOLF F. PUESCHEL, ed. Feb. 1991 76 p Workshop held at Moffett Field, CA, 27-30 Mar. 1990; sponsored in part by IAMAP Radiation Commission and the NASA Upper Atmosphere Research Program
(RTOP 573-01-21-04)
(NASA-CP-3114; A-90293; NAS 1.55:3114) Avail: CASI HC A05/MF A01
AEROSOLS, CLIMATOLOGY, ICE CLOUDS, POLAR METEOROLOGY, SOOT, STRATOSPHERE, VOLCANOES

N92-10208*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MISSION DESCRIPTION AND IN-FLIGHT OPERATIONS OF ERBE INSTRUMENTS ON ERBS AND NOAA 9 SPACECRAFT, NOVEMBER 1984 - JANUARY 1986
WILLIAM L. WEAVER (ST Systems Corp., Hampton, VA.), KATHRYN A. BUSH (ST Systems Corp., Hampton, VA.), CHRIS J. HARRIS (ST Systems Corp., Hampton, VA.), CLAYTON E. HOWERTON, and CAROL J. TOLSON (STX Corp., Hampton, VA.) Washington Aug. 1991 282 p
(RTOP 665-45-20)
(NASA-RP-1256; L-16895; NAS 1.61:1256) Avail: CASI HC A13/MF A03
Instruments of the Earth Radiation Budget Experiment (ERBE) are operating on three different Earth orbiting spacecrafts: the Earth Radiation Budget Satellite (ERBS), NOAA-9, and NOAA-10. An overview is presented of the ERBE mission, in-orbit environments, and instrument design and operational features. An overview of science data processing and validation procedures is also presented. In-flight operations are described for the ERBE instruments aboard the ERBS and NOAA-9. Calibration and other operational procedures are described, and operational and instrument housekeeping data are presented and discussed.
Author

N92-32127*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MISSION DESCRIPTION AND IN-FLIGHT OPERATIONS OF ERBE INSTRUMENTS ON ERBS, NOAA 9, AND NOAA 10 SPACECRAFT Report, Feb. 1986 - Jan. 1987
WILLIAM L. WEAVER, KATHRYN A. BUSH (ST Systems Corp., Hampton, VA.), KEITH T. DEGNAN (ST Systems Corp., Hampton, VA.), CLAYTON E. HOWERTON (ST Systems Corp., Hampton, VA.), and CAROL J. TOLSON (ST Systems Corp., Hampton, VA.) Aug. 1992 217 p
(RTOP 665-45-20)
(NASA-RP-1279; L-17069; NAS 1.61:1279) Avail: CASI HC A10/MF A03
Instruments of the Earth Radiation Budget Experiment (ERBE) are operating on three different Earth-orbiting spacecraft. The Earth Radiation Budget Satellite (ERBS) is operated by NASA, and NOAA 9 and NOAA 10 weather satellites are operated by the National Oceanic and Atmospheric Administration (NOAA). This paper is the second in a series that describes the ERBE mission, and data processing and validation procedures. This paper describes the spacecraft and instrument operations for the second full year of in-orbit operations, which extend from February 1986 through January 1987. Validation and archival of radiation measurements made by ERBE instruments during this second year of operation were completed in July 1991. This period includes the only time, November 1986 through January 1987, during which all ERBE instruments aboard the ERBE, NOAA 9, and NOAA 10 spacecraft were simultaneously operational. This paper covers normal and special operations of the spacecraft and instruments, operational anomalies, and the responses of the instruments to in-orbit and seasonal variations in the solar environment. Author

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ENERGY PRODUCTION AND CONVERSION

Includes specific energy conversion systems, e.g., fuel cells; global sources of energy; geophysical conversion; and windpower.

N91-32549*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY
Sep. 1991 244 p Third Conference held in Cleveland, OH, 9-10 Apr. 1991
(RTOP 506-41-21)
(NASA-CP-3125; E-6089; NAS 1.55:3125) Avail: CASI HC A11/MF A03
ELECTRIC BATTERIES, ELECTROCHEMISTRY, FUEL CELLS

N92-22740*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE 1991 NASA AEROSPACE BATTERY WORKSHOP
JEFFREY C. BREWER, comp. Washington Feb. 1992 855 p Workshop held in Huntsville, AL, 29-31 Oct. 1991
(NASA-CP-3140; M-682; NAS 1.55:3140) Avail: CASI HC A99/MF A10
CONFERENCES, ELECTRIC BATTERIES, METAL AIR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES, SILVER ZINC BATTERIES, SODIUM SULFUR BATTERIES, SPACECRAFT POWER SUPPLIES, ZINC-OXYGEN BATTERIES

N92-26895*# Lockheed Missiles and Space Co., Sunnyvale, CA.
MILSTAR'S FLEXIBLE SUBSTRATE SOLAR ARRAY: LESSONS LEARNED, ADDENDUM
JOHN GIBB 1990 17 p Presented at the 26th Aerospace Mechanisms Symposium
(NASA-CP-3147-ADD; NAS 1.55:3147-ADD) Avail: CASI HC A03/MF A01
SOLAR ARRAYS, SPACE STATION FREEDOM

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ENVIRONMENT POLLUTION

Includes atmospheric, noise, thermal, and water pollution.

N91-16466*# National Aeronautics and Space Administration, Washington, DC.
THE ATMOSPHERIC EFFECTS OF STRATOSPHERIC AIRCRAFT: A TOPICAL REVIEW
HAROLD S. JOHNSTON (California Univ., Berkeley.), M. J. PRATHER, and R. T. WATSON Jan. 1991 32 p
(NASA-RP-1250; NAS 1.61:1250) Avail: CASI HC A03/MF A01
In the late 1960s the aircraft industry became interested in developing a fleet of supersonic transports (SSTs). Between 1972 and 1975, the Climatic Impact Assessment Program (CIAP) studied the possible environmental impact of SSTs. For environmental and economic reasons, the fleet of SSTs was not developed. The Upper Atmosphere Research Program (UARP) has recently undertaken the responsibility of directing scientific research needed to assess the atmospheric impact of supersonic transports. The UARP and the High-Speed Research Program asked Harold Johnston to review the current understanding of aircraft emissions and their effect on the stratosphere. Johnston and his colleagues have recently re-examined the SST problem using current models for stratospheric ozone chemistry. A unique view is given here of the current scientific issues and the lessons learned since the beginning of CIAP, and it links the current research program with the assessment process that began two years ago. Author

N91-16467*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE ATMOSPHERIC EFFECTS OF STRATOSPHERIC AIRCRAFT: A CURRENT CONSENSUS
A. R. DOUGLASS (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), M. A. CARROLL (National Oceanic and Atmospheric Administration, Boulder, CO.), W. B. DEMORE (Jet Propulsion Lab., California Inst. of Tech., Pasadena.), J. R. HOLTON (Washington Univ., Seattle.), I. S. A. ISAKSEN (Oslo Univ. (Norway).), H. S. JOHNSTON (California Univ., Berkeley.), and M. K. W. KO (Atmospheric and Environmental Research, Inc., Cambridge, MA.) Jan. 1991 46 p
(NASA-RP-1251; NAS 1.61:1251) Avail: CASI HC A03/MF A01
In the early 1970's, a fleet of supersonic aircraft flying in the lower stratosphere was proposed. A large fleet was never built for economic, political, and environmental reasons. Technological improvements may make it economically feasible to develop supersonic aircraft for current markets. Some key results of earlier scientific programs designed to assess the impact of aircraft emissions on stratospheric ozone are reviewed, and factors that must be considered to assess the environmental impact of aircraft exhaust are discussed. These include the amount of nitrogen oxides injected in the stratosphere, horizontal transport, and stratosphere/troposphere assessment models are presented. Areas in which improvements in scientific understanding and model representation must be made to reduce the uncertainty in model calculations are identified. Author

N92-19121*# National Aeronautics and Space Administration, Washington, DC.
THE ATMOSPHERIC EFFECTS OF STRATOSPHERIC AIRCRAFT: A FIRST PROGRAM REPORT
MICHAEL J. PRATHER, HOWARD L. WESOKY, RICHARD C. MIAKE-LYE, ANNE R. DOUGLASS, RICHARD P. TURCO, DONALD J. WUEBBLES, MALCOLM K. W. KO, and ARTHUR L. SCHMELTEKOPF (National Oceanic and Atmospheric Administration, Washington, DC.) Jan. 1992 227 p
(NASA-RP-1272; NAS 1.61:1272) Avail: CASI HC A11/MF A03
Studies have indicated that, with sufficient technology development, high speed civil transport aircraft could be economically competitive with long haul subsonic aircraft. However, uncertainty about atmospheric pollution, along with community noise and sonic boom, continues to be a major concern; and this is addressed in the planned 6 yr HSRP begun in 1990. Building on NASA's research in atmospheric science and emissions reduction, the AESA studies particularly emphasizing stratospheric ozone effects. Because it will not be possible to directly measure the impact of an HSCT aircraft fleet on the atmosphere, the only means of assessment will be prediction. The process of establishing credibility for the predicted effects will likely be complex and involve continued model development and testing against climatological patterns. Lab simulation of heterogeneous chemistry and other effects will continue to be used to improve the current models. For individual titles, see N92-19122 through N92-19127.

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GEOPHYSICS

Includes aeronomy; upper and lower atmosphere studies; ionospheric and magnetospheric physics; and geomagnetism.

N91-18505*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SAM 2 MEASUREMENTS OF THE POLAR STRATOSPHERIC AEROSOL. VOLUME 9: OCTOBER 1982 - APRIL 1983
L. R. MCMASTER (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and K. A. POWELL (ST Systems Corp., Hampton, VA.) Washington Feb. 1991 77 p

(RTOP 665-10-40-04)
(NASA-RP-1244; L-16802-VOL-9; NAS 1.61:1244) Avail: CASI HC A05/MF A01

The Stratospheric Aerosol Measurement (SAM) II sensor aboard Nimbus 7 is providing 1.0 micron extinction measurements of Antarctic and Arctic stratospheric aerosols with a vertical resolution of 1 km. Representative examples and weekly averages including corresponding temperature profiles provided by NOAA for the time and place of each SAM II measurement are presented. Contours of aerosol extinction as a function of altitude and longitude or time are plotted, and aerosol optical depths are calculated for each week. Typical values of aerosol extinction and stratospheric optical depth in the Arctic are unusually large due to the presence of material from the El Chichon volcano eruption in the Spring of 1982. For example, the optical depth peaked at 0.068, more than 50 times background values. Typical values of aerosol extinction and stratospheric optical depth in the Antarctic varied considerably during this period due to the transport and arrival of the material from the El Chichon eruption. For example, the stratospheric optical depth varied from 0.002 in October 1982, to 0.021 in January 1983. Polar stratospheric clouds were observed during the Arctic winter, as expected. A representative sample is provided of the ninth 6-month period of data to be used in atmospheric and climatic studies. Author

N91-21641*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
VOLCANISM-CLIMATE INTERACTIONS
LOUIS S. WALTER, ed. and SHANAKA DESILVA, ed. (Lunar and Planetary Inst., Houston, TX.) Washington Feb. 1991 145 p Workshop held in College Park, MD, 18-19 Jun. 1990
(RTOP 465-44-11)
(NASA-CP-10062; REPT-91B00055; NAS 1.55:10062) Avail: CASI HC A07/MF A02

AEROSOLS, ATMOSPHERIC CHEMISTRY, ATMOSPHERIC MODELS, CLIMATE, CLOUD PHYSICS, CONFERENCES, GEOLOGY, PARTICLE SIZE DISTRIBUTION, VOLCANOLOGY

N92-32655*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
STEADY INDUCTION EFFECTS IN GEOMAGNETISM. PART 1A: STEADY MOTIONAL INDUCTION OF GEOMAGNETIC CHAOS
COERTE V. VOORHIES Sep. 1992 31 p
(NASA-TP-3272-PT-1A; NAS 1.60:3272-PT-1A; REPT-92B00100) Avail: CASI HC A03/MF A01

CHAOS, CORE FLOW, GEOMAGNETISM, KINEMATICS, MAGNETIC EFFECTS, MAGNETIC FLUX, MAGNETIC INDUCTION, PALEOMAGNETISM

N92-33097*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SAGE 1 DATA USER'S GUIDE
LEONARD R. MCMASTER, WILLIAM P. CHU, and MICHAEL W. ROWLAND (ST Systems Corp., Hampton, VA.) Aug. 1992 26 p
(RTOP 665-45-30-21)
(NASA-RP-1275; L-16879; NAS 1.61:1275) Avail: CASI HC A03/MF A01

A guide for using the data products from the Stratospheric Aerosol and Gas Experiment 1 (SAGE 1) for scientific investigations of stratospheric chemistry related to aerosol, ozone, nitrogen dioxide, dynamics, and climate change is presented. A detailed description of the aerosol profile tape, the ozone profile tape, and the nitrogen dioxide profile tape is included. These tapes are the SAGE 1 data products containing aerosol extinction data and ozone and nitrogen dioxide concentration data for use in the different scientific investigations. Brief descriptions of the instrument operation, data collection, processing, and validation, and some of the scientific analyses that were conducted are also included. Author

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METEOROLOGY AND CLIMATOLOGY

Includes weather forecasting and modification.

N91-10448*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FIRE SCIENCE RESULTS 1988
DAVID S. MCDOUGAL, ed. and H. SCOTT WAGNER, ed. Washington Jul. 1990 394 p Workshop held in Vail, CO, 11-15 Jul. 1988; sponsored in cooperation with NASA, NSF, ONR, DOE, AFGL, and NOAA
(RTOP 672-22-10-70)
(NASA-CP-3083; L-16814; NAS 1.55:3083) Avail: CASI HC A17/MF A04

CIRRUS CLOUDS, CLIMATOLOGY, CONFERENCES, FIRE (CLIMATOLOGY), MARINE METEOROLOGY, PARAMETERIZATION, SATELLITE OBSERVATION, STRATOCUMULUS CLOUDS

N91-13043*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
USER'S GUIDE: NIMBUS-7 EARTH RADIATION BUDGET NARROW-FIELD-OF-VIEW PRODUCTS. SCENE RADIANCE TAPE PRODUCTS, SORTING INTO ANGULAR BINS PRODUCTS, AND MAXIMUM LIKELIHOOD CLOUD ESTIMATION PRODUCTS
H. LEE KYLE (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), RICHARD R. HUCEK (Research and Data Systems, Inc., Greenbelt, MD.), BRIAN GROVEMAN (Research and Data Systems, Inc., Greenbelt, MD.), and RICHARD FREY (Research and Data Systems, Inc., Greenbelt, MD.) Nov. 1990 77 p
(NAS5-29373)
(NASA-RP-1246; REPT-90B00143; NAS 1.61:1246) Avail: CASI HC A05/MF A01

The archived Earth radiation budget (ERB) products produced from the Nimbus-7 ERB narrow field-of-view scanner are described. The principal products are broadband outgoing longwave radiation (4.5 to 50 microns), reflected solar radiation (0.2 to 4.8 microns), and the net radiation. Daily and monthly averages are presented on a fixed global equal area (500 sq km), grid for the period May 1979 to May 1980. Two independent algorithms are used to estimate the outgoing fluxes from the observed radiances. The algorithms are described and the results compared. The products are divided into three subsets: the Scene Radiance Tapes (SRT) contain the calibrated radiances; the Sorting into Angular Bins (SAB) tape contains the SAB produced shortwave, longwave, and net radiation products; and the Maximum Likelihood Cloud Estimation (MLCE) tapes contain the MLCE products. The tape formats are described in detail. Author

N91-14683*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LIMB-DARKENING FUNCTIONS AS DERIVED FROM ALONG-TRACK OPERATION OF THE ERBE SCANNING RADIOMETERS FOR AUGUST 1985
G. LOUIS SMITH (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), NATIVIDAD D. MANALO (Lockheed Engineering and Sciences Co., Hampton, VA.), and LEE M. AVIS Washington Dec. 1990 41 p
(RTOP 672-40-05-70)
(NASA-RP-1243; L-16779; NAS 1.61:1243) Avail: CASI HC A03/MF A01

During August 1985, the scanning radiometers of the Earth Radiation Budget Experiment aboard the Earth Radiation Budget Satellite (ERBS) and the NOAA-9 satellite were operated in along-track scanning modes. These data were analyzed to produce limb darkening functions for Earth-emitted radiation, which relates the radiance in any given direction to the radiant exitence. Limb

darkening functions are presented and shown as figures for day and night for each spacecraft. The scene types were computed using measurements within 10 deg of zenith. The models have values near zenith of 1.02 to 1.09, with values near 1.06 being typical. The typical value of the model is 1.06 for both day and night for ERBS, and for NOAA-9, the typical value at zenith is 1.06 for day and 1.05 for night. Mean models are formed for the ERBS and for the NOAA-9 results and are found to differ less than 1 percent, the ERBS results being the higher. The models vary about 1 percent with latitude near zenith. Author

N91-16500*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
NASA/MSFC FY90 GLOBAL SCALE ATMOSPHERIC PROCESSES RESEARCH PROGRAM REVIEW
FRED W. LESLIE, ed. Washington Oct. 1990 58 p Conference held in Huntsville, AL, 20-21 Aug. 1990
(NASA-CP-3093; M-651; NAS 1.55:3093) Avail: CASI HC A04/MF A01

ATMOSPHERIC CIRCULATION, ATMOSPHERIC MODELS, ATMOSPHERIC PHYSICS, ATMOSPHERIC SOUNDING, EARTH ATMOSPHERE, GLOBAL ATMOSPHERIC RESEARCH PROGRAM, METEOROLOGY, NUMERICAL WEATHER FORECASTING, REMOTE SENSING, WEATHER

N91-24719*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATLAS OF WIDE-FIELD-OF-VIEW OUTGOING LONGWAVE RADIATION DERIVED FROM NIMBUS 7 EARTH RADIATION BUDGET DATA SET, NOVEMBER 1985 TO OCTOBER 1987
T. DALE BESS and G. LOUIS SMITH Washington Jun. 1991 53 p
(RTOP 665-45-30-01)
(NASA-RP-1261; L-16934; NAS 1.61:1261) Avail: CASI HC A04/MF A01

An atlas of monthly outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 23 months of data from November 1985 to October 1987 . The data were derived from the second Earth Radiation Budget (ERB) package, which was flown on the Nimbus 7 Sun-synchronous satellite in 1987. This data set is a companion set and extension to similar atlases that documented 10 years of outgoing longwave radiation results from Nimbus 6 and Nimbus 7 satellites. This atlas and the companion atlases give a data set covering a 12-year time period and will be very useful in studying different aspects of our changing climate. The data set also provides a 3-year overlap with the current Earth Radiation Budget Experiment (ERBE). Author

N91-24720*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ATLAS OF THE EARTH'S RADIATION BUDGET AS MEASURED BY NIMBUS-7: MAY 1979 TO MAY 1980
H. LEE KYLE (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), RICHARD R. HUCEK (Research and Data Systems, Inc., Greenbelt, MD.), and BRENDA J. VALLETTE (Research and Data Systems, Inc., Greenbelt, MD.) Washington May 1991 137 p
(NAS5-29373)
(NASA-RP-1263; NAS 1.61:1263; REPT-91B00081) Avail: CASI HC A07/MF A02

This atlas describes the seasonal changes in the Earth's radiation budget for the 13-month period, May 1979 to May 1980. It helps to illustrate the strong feedback mechanisms by which the Earth's climate interacts with the top-of-the-atmosphere insolation to modify the energy that various regions absorb from the Sun. Cloud type and cloud amount, which are linked to the surface temperature and the regional climate, are key elements in this interaction. Annual, seasonal, and monthly maps of the albedo, outgoing longwave and net radiation, noontime cloud cover, and mean diurnal surface temperatures are presented. Annual and seasonal net cloud forcing maps are also given. All of the quantities were derived from Nimbus-7 satellite measurements except for the temperatures, which were used in the cloud detection algorithm and came originally from the Air Force 3-dimensional nephanalysis dataset. The seasonal changes are described. The interaction of clouds and the radiation budget is briefly discussed. Author

N91-25556*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE ROLE OF WATER VAPOR IN CLIMATE. A STRATEGIC RESEARCH PLAN FOR THE PROPOSED GEWEX WATER VAPOR PROJECT (GVAP)
D. OC. STARR, ed. and S. HARVEY MELFI, ed. Washington Jul. 1991 54 p Workshop held in Easton, MD, 30 Oct. - 1 Nov. 1990; sponsored by NASA and the GEWEX Science Steering Group
(NASA-CP-3120; REPT-91B00108; NAS 1.55:3120) Avail: CASI HC A04/MF A01

ATMOSPHERIC MOISTURE, CLIMATE, CLIMATE CHANGE, ENERGY BUDGETS, PRECIPITATION (METEOROLOGY), WATER VAPOR

N91-26651*# *National Aeronautics and Space Administration.* Goddard Space Flight Center, Greenbelt, MD.
NIMBUS-7 TOMS ANTARCTIC OZONE ATLAS: AUGUST - DECEMBER 1990
ARLIN J. KRUEGER (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), LANNING M. PENN (Research and Data Systems, Inc., Greenbelt, MD.), PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.), COURTNEY J. SCOTT (ST Systems Corp., Vienna, VA.), DAVID E. LARKO (ST Systems Corp., Vienna, VA.), and SCOTT D. DOIRON (ST Systems Corp., Vienna, VA.) Washington Jun. 1991 216 p
(NAS5-29373)
(NASA-RP-1264; REPT-91B00103; NAS 1.61:1264) Avail: CASI HC A10/MF A03

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 1990 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 1 Aug. through 31 Dec. 1990. The 1990 ozone hole developed in a manner similar to that of 1987 and 1989, reaching a comparable depth in early October. This was in sharp contrast to the much weaker hold of 1988. The 1990 ozone hole remained at polar latitudes as it filled in Nov., in contrast to other recent years when the hold drifted to mid-latitudes before disappearing. Daily ozone values above selected Southern Hemisphere stations are presented, along with comparisons of the 1990 ozone distribution to that of other years. A new calibration scheme (Version 6) was used to process 1990 ozone values, as well as to reprocess those of previous years. Author

N91-32599*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
THE 1991 INTERNATIONAL AEROSPACE AND GROUND CONFERENCE ON LIGHTNING AND STATIC ELECTRICITY, VOLUME 1
Aug. 1991 626 p Conference held in Cocoa Beach, FL, 16-19 Apr. 1991; sponsored in part by NASA, the National Interagency Coordination Group, and Florida Inst. of Tech.
(NASA-CP-3106-VOL-1; NAS 1.55:3106-VOL-1) Avail: CASI HC A99/MF A06

AEROSPACE VEHICLES, AIRCRAFT HAZARDS, AVIATION METEOROLOGY, CONFERENCES, ELECTROSTATICS, FLIGHT HAZARDS, LIGHTNING, LIGHTNING SUPPRESSION, STATIC ELECTRICITY

N91-32660*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
NASA/MSFC FY91 GLOBAL SCALE ATMOSPHERIC PROCESSES RESEARCH PROGRAM REVIEW

FRED W. LESLIE, ed. Washington Sep. 1991 94 p Conference held in Huntsville, AL, 28-31 May 1991
(NASA-CP-3126; M-669; NAS 1.55:3126) Avail: CASI HC A05/MF A01

ATMOSPHERIC PHYSICS, DATA PROCESSING, EARTH ATMOSPHERE, EARTH OBSERVATIONS (FROM SPACE), METEOROLOGICAL PARAMETERS, METEOROLOGY, SATELLITE OBSERVATION, WEATHER FORECASTING

N91-32693*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
THE 1991 INTERNATIONAL AEROSPACE AND GROUND CONFERENCE ON LIGHTNING AND STATIC ELECTRICITY, VOLUME 2
Aug. 1991 459 p Conference held in Cocoa Beach, FL, 16-19 Apr. 1991; sponsored in part by NASA, the National Interagency Coordination Group, and Florida Inst. of Tech.
(NASA-CP-3106-VOL-2; NAS 1.55:3106-VOL-2) Avail: CASI HC A20/MF A04

ELECTROMAGNETIC COUPLING, ELECTROMAGNETIC PULSES, LIGHTNING, STATIC ELECTRICITY, WEATHER FORECASTING

N92-33482*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INERTIAL OSCILLATION OF A VERTICAL ROTATING DRAFT WITH APPLICATION TO A SUPERCELL STORM
ROBERT C. COSTEN and LARRY V. STOCK (Hampton Univ., VA.) Sep. 1992 47 p A video recording supplement L-0592-97 N92-24346 is available from CASI $12 Original contains color illustrations
(RTOP 506-41-41-01)
(NASA-TP-3230; L-16987; NAS 1.60:3230) Avail: CASI HC A03/MF A01; 1 functional color page

ANTICYCLONES, ATMOSPHERIC CIRCULATION, ATMOSPHERIC PHYSICS, CORIOLIS EFFECT, INERTIA, MATHEMATICAL MODELS, OSCILLATIONS, THUNDERSTORMS, WIND SHEAR

N92-34246* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INERTIAL OSCILLATION OF A VERTICAL ROTATING DRAFT WITH APPLICATION TO A SUPERCELL STORM: VIDEO SUPPLEMENT TO NASA TECHNICAL PAPER 3230 (Video Recording)
ROBERT C. COSTEN and LARRY V. STOCK (Hampton Univ., VA.) 15 Sep. 1992 This supplements NASA-TP-3230; N92-33482 Video Recording: 8 min., color, sound, VHS
(RTOP 506-41-41-01)
(NASA-TP-3230-VIDEO-SUPPL; L-0592-97; NAS 1.60:3230-VIDEO-SUPPL) Avail: Issuing Activity (Center for AeroSpace Information) Video Recording $12

ATMOSPHERIC CIRCULATION, ATMOSPHERIC MODELS, COMPUTERIZED SIMULATION, MATHEMATICAL MODELS, OSCILLATIONS, ROTATION, THUNDERSTORMS, VERTICAL AIR CURRENTS

48

OCEANOGRAPHY

Includes biological, dynamic, and physical oceanography; and marine resources.

N92-25981*# National Aeronautics and Space Administration. Wallops Flight Facility, Wallops Island, VA.
NASA WALLOPS FLIGHT FACILITY AIR-SEA INTERACTION RESEARCH FACILITY
STEVEN R. LONG Jun. 1992 34 p
(NASA-RP-1277; REPT-92B00059; NAS 1.61:1277) Avail: CASI HC A03/MF A01

This publication serves as an introduction to the Air-Sea Interaction Research Facility at NASA/GSFC/Wallops Flight Facility. The purpose of this publication is to provide background information on the research facility itself, including capabilities, available instrumentation, the types of experiments already done, ongoing experiments, and future plans. Author

N92-27930*# National Aeronautics and Space Administration. Wallops Flight Facility, Wallops Island, VA.
A SELF-ZEROING CAPACITANCE PROBE FOR WATER WAVE MEASUREMENTS
STEVEN R. LONG Jun. 1992 45 p
(NASA-RP-1278; REPT-92B00058; NAS 1.61:1278) Avail: CASI HC A03/MF A01

The wave probe developed at the Air-Sea Interaction Research Facility was designed to measure the surface elevation fluctuations of water waves. Design criteria included being linear in response, self-zeroing to the mean water level, having multiple operating ranges so that the instrument's maximum output could be matched to the maximum surface elevation over varying conditions, and be as noise-free as possible. The purpose of this publication is to provide a detailed description of the design and construction of this probe. Author

51

LIFE SCIENCES (GENERAL)

N91-13842*# National Aeronautics and Space Administration, Washington, DC.
BIOLOGICAL LIFE SUPPORT TECHNOLOGIES: COMMERCIAL OPPORTUNITIES
MARK NELSON, ed. (Space Biospheres Ventures, Oracle, AZ.) and GERALD SOFFEN, ed. (Space Biospheres Ventures, Oracle, AZ.) Nov. 1990 117 p Workshop held in Tucson, AZ, 30 Oct. - 1 Nov. 1989
(NASA-CP-3094; NAS 1.55:3094) Avail: CASI HC A06/MF A02

BIOSPHERE, CLOSED ECOLOGICAL SYSTEMS, ENVIRONMENTAL ENGINEERING, REGENERATION (PHYSIOLOGY), SPACE COMMERCIALIZATION

52

AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

N91-10574*# National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, TX.
WORKSHOP ON EXERCISE PRESCRIPTION FOR LONG-DURATION SPACE FLIGHT
BERNARD A. HARRIS, JR., ed. and DONALD F. STEWART, ed. Washington Oct. 1989 125 p Workshop held in Houston, TX, 1986
(RTOP 073-36-00-00-72)
(NASA-CP-3051; S-597; NAS 1.55:3051) Avail: CASI HC A06/MF A02

BONE DEMINERALIZATION, CARDIOVASCULAR SYSTEM, DECONDITIONING, EXERCISE PHYSIOLOGY, LONG DURATION SPACE FLIGHT, MUSCULOSKELETAL SYSTEM, PHYSICAL EXERCISE, WEIGHTLESSNESS

N91-10594* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 341)
Oct. 1990 50 p
(NASA-SP-7011(341); NAS 1.21:7011(341)) Avail: CASI HC A03
This bibliography lists 133 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during September 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

N91-13063* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 342)
Nov. 1990 81 p
(NASA-SP-7011(342); NAS 1.21:7011(342)) Avail: CASI HC A05
This bibliography lists 208 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during October 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

N91-14711* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 343)
Dec. 1990 82 p
(NASA-SP-7011(343); NAS 1.21:7011(343)) Avail: CASI HC A05
This bibliography lists 125 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during January, 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

N91-14712* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 344)
Jan. 1991 92 p
(NASA-SP-7011(344); NAS 1.21:7011(344)) Avail: CASI HC A05
This bibliography lists 125 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during January, 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

N91-16547* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 345)
Jan. 1991 233 p
(NASA-SP-7011(345); NAS 1.21:7011(345)) Avail: CASI HC A11
This publication is a cumulative index to the abstracts contained in Supplements 333 through 344 of Aerospace Medicine and Biology: A Continuing Bibliography. Seven indexes are included -- subject, personal author, corporate source, foreign technology, contract number, report number, and accession number. Author

N91-18573*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
MICROBIOLOGY ON SPACE STATION FREEDOM
DUANE L. PIERSON, ed. (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), MICHAEL R. MCGINNIS, ed. (Texas Univ., Galveston.), S. K. MISHRA, ed. (Krug Life Sciences, Inc., Houston, TX.), and CHRISTINE F. WOGAN, ed. (Krug International, Houston, TX.) Washington Feb. 1991 40 p Conference held in Houston, TX, 6-8 Nov. 1989
(NASA-CP-3108; S-619; NAS 1.55:3108) Avail: CASI HC A03/MF A01
EXOBIOLOGY, HEALTH, MICROBIOLOGY, MICROORGANISMS, RESEARCH AND DEVELOPMENT, SPACE STATION FREEDOM, SPACE STATIONS, SPACECREWS

N91-19711*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
RESPONSES OF WOMEN TO ORTHOSTATIC AND EXERCISE STRESSES Technical Report, 1976 - 1977
G. W. HOFFLER (National Aeronautics and Space Administration. John F. Kennedy Space Center, Lompoc, CA.), M. M. JACKSON (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), R. L. JOHNSON (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), J. T. BAKER (Krug International, San Antonio, TX.), and D. TATRO (Bionetics Corp., Cocoa Beach, FL.) Washington Oct. 1990 77 p
(NAS9-14880; NAS10-11624)
(NASA-TP-3043; NAS 1.60:3043) Avail: CASI HC A05/MF A01
ANTHROPOMETRY, DATA BASES, FEMALES, HISTORIES, PHYSICAL EXERCISE, PHYSIOLOGY, REDUCED GRAVITY, STATISTICAL CORRELATION

N91-23700* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 346)
Feb. 1989 50 p
(NASA-SP-7011(346); NAS 1.21:7011(346)) Avail: CASI HC A03
This bibliography lists 134 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Jan. 1991. 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

N91-23701* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 347)
Feb. 1989 64 p
(NASA-SP-7011(347); NAS 1.21:7011(347)) Avail: CASI HC A04
This bibliography lists 166 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Feb. 1991. 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

N91-23702* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 348)
Apr. 1991 60 p
(NASA-SP-7011(348); NAS 1.21:7011(348)) Avail: CASI HC A04
This bibliography lists 154 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Mar. 1991. 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

N91-24731* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 349)

May 1991 50 p
(NASA-SP-7011(349); NAS 1.21:7011(349)) Avail: CASI HC A03
This bibliography lists 149 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during April, 1991. 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

N91-25600* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 350)
Jun. 1991 56 p
(NASA-SP-7011(350); NAS 1.21:7011(350)) Avail: CASI HC A04
This bibliography lists 152 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during May 1991. 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

N91-27756* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 351)
Jul. 1991 92 p
(NASA-SP-7011(351); NAS 1.21:7011(351)) Avail: CASI HC A05
This bibliography lists 255 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Jun. 1991. 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

N91-28729* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 352)
Aug. 1991 61 p
(NASA-SP-7011(352); NAS 1.21:7011(352)) Avail: CASI HC A04
This bibliography lists 147 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during July 1991. 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

N91-31760* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 353)
Feb. 1989 84 p
(NASA-SP-7011(353); NAS 1.21:7011(353)) Avail: CASI HC A05
This bibliography lists 238 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System in August 1991. Subject coverage includes: aerospace medicine and psychology, life support systems and controlled environments, safety equipment, exobiology and extraterrestrial life, biotechnology, human factors engineering, and flight crew behavior and performance. Author

N92-12404* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 354)
Oct. 1991 86 p
(NASA-SP-7011(354); NAS 1.21:7011(354)) Avail: CASI HC A05
This bibliography lists 225 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during September, 1991. 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

N92-12412* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 355)
Nov. 1991 59 p
(NASA-SP-7011(355); NAS 1.21:7011(355)) Avail: CASI HC A04
This bibliography lists 147 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during October, 1991. 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

N92-15538* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 356)
Dec. 1991 71 p
(NASA-SP-7011(356); NAS 1.21:7011(356)) Avail: CASI HC A04
This bibliography lists 192 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during November 1991. 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

N92-16553*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
EVALUATION OF NONINVASIVE CARDIAC OUTPUT METHODS DURING EXERCISE
ALAN D. MOORE (Krug Life Sciences, Inc., Houston, TX.), LINDA H. BARROWS (Krug Life Sciences, Inc., Houston, TX.), MICHAEL RASHID, and STEVEN F. SICONOLFI Jan. 1992 10 p
(NASA-TP-3174; S-657; NAS 1.60:3174) Avail: CASI HC A02/MF A01
BIOMEDICAL DATA, CARBON DIOXIDE, CARDIAC OUTPUT, REBREATHING

N92-16554*# National Aeronautics and Space Administration. *Lyndon B. Johnson Space Center, Houston, TX.*
FUEL UTILIZATION DURING EXERCISE AFTER 7 DAYS OF BED REST
LINDA H. BARROWS (Krug Life Sciences, Inc., Houston, TX.), BERNARD A. HARRIS (Krug Life Sciences, Inc., Houston, TX.), ALAN D. MOORE (Krug Life Sciences, Inc., Houston, TX.), and STEVEN F. SICONOLFI *Washington Jan. 1992* 11 p
(NASA-TP-3175; S-658; NAS 1.60:3175) Avail: CASI HC A03/MF A01
BED REST, CALORIC REQUIREMENTS, CARBOHYDRATE METABOLISM, GRAVITATIONAL EFFECTS, PHYSICAL EXERCISE, PHYSICAL FITNESS, PROTEINS

N92-17022*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
TECHNIQUES FOR DETERMINATION OF IMPACT FORCES DURING WALKING AND RUNNING IN A ZERO-G ENVIRONMENT
MICHAEL GREENISEN (Krug Life Sciences, Inc., Houston, TX.), MARLEI WALTON (Alabama Univ., Tuscaloosa.), PHILLIP BISHOP, and WILLIAM SQUIRES (Texas Lutheran Coll., Seguin.) Washington Jan. 1992 18 p
(NASA-TP-3159; S-651; NAS 1.60:3159) Avail: CASI HC A03/MF A01
BONE DEMINERALIZATION, GRAVITATIONAL PHYSIOLOGY, IMPACT LOADS, MUSCULOSKELETAL SYSTEM, REDUCED GRAVITY, WALKING, WEIGHTLESSNESS SIMULATION

N92-17645*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
ECCENTRIC AND CONCENTRIC MUSCLE PERFORMANCE FOLLOWING 7 DAYS OF SIMULATED WEIGHTLESSNESS
JUDITH C. HAYES (Krug Life Sciences, Inc., Houston, TX.), MARY L. ROPER (Krug Life Sciences, Inc., Houston, TX.), AUGUSTUS D. MAZZOCCA (Krug Life Sciences, Inc., Houston, TX.), JOHN J. MCBRINE (Krug Life Sciences, Inc., Houston, TX.), LINDA H. BARROWS (Krug Life Sciences, Inc., Houston, TX.), BERNARD A. HARRIS, and STEVEN F. SICONOLFI Washington Feb. 1992 13 p
(NASA-TP-3182; S-665; NAS 1.60:3182) Avail: CASI HC A03/MF A01
BED REST, HUMAN PERFORMANCE, MUSCLES, MUSCULAR FUNCTION, MUSCULOSKELETAL SYSTEM, WEIGHTLESSNESS SIMULATION

N92-21714* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 357)
Jan. 1992 69 p
(NASA-SP-7011(357); NAS 1.21:7011(357)) Avail: CASI HC A04
This bibliography lists 186 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Dec. 1991. Subject coverage includes: aerospace medicine and physiology, life support systems and man/system technology, protective clothing, exobiology and extraterrestrial life, planetary biology, and flight crew behavior and performance.
Author

N92-21715* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 359)
Feb. 1992 60 p
(NASA-SP-7011(359); NAS 1.21:7011(359)) Avail: CASI HC A04
This bibliography lists 164 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Jan. 1992. Subject coverage includes: aerospace medicine and physiology, life support systems and man/system technology, protective clothing, exobiology and extraterrestrial life, planetary biology, and flight crew behavior and performance.
Author

N92-22026* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 358)
Jan. 1992 229 p
(NASA-SP-7011(358); NAS 1.21:7011(358)) Avail: CASI HC A11
This publication is a cumulative index to the abstracts contained in Supplements 346 through 357 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

N92-22186*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MULTIPLE LESION TRACK STRUCTURE MODEL
JOHN W. WILSON, FRANCIS A. CUCINOTTA, and JUDY L. SHINN Mar. 1992 14 p Sponsored in part by the Armed Forces Radiobiology Research Institute
(RTOP 199-04-16-11)
(NASA-TP-3185; L-16988; NAS 1.60:3185) Avail: CASI HC A03/MF A01
CELL DIVISION, CELLS (BIOLOGY), HEAVY IONS, LESIONS, MATHEMATICAL MODELS, RADIATION DAMAGE, RADIATION EFFECTS, X RAYS

N92-27068* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 362)
May 1992 118 p
(NASA-SP-7011(362); NAS 1.21:7011(362)) Avail: CASI HC A06
This bibliography lists 357 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during May 1992. Subject coverage includes: aerospace medicine and physiology, life support systems and man/system technology, protective clothing, exobiology and extraterrestrial life, planetary biology, and flight crew behavior and performance.
Author

N92-27433* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 361)
Apr. 1992 56 p
(NASA-SP-7011(361); NAS 1.21:7011(361)) Avail: CASI HC A04
This bibliography lists 141 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Mar. 1992. Subject coverage includes: aerospace medicine and physiology, life support systems and man/system technology, protective clothing, exobiology and extraterrestrial life, planetary biology, and flight crew behavior and performance.
Author

N92-30987* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 363)
Jun. 1992 69 p
(NASA-SP-7011(363); NAS 1.21:7011(363)) Avail: CASI HC A04/MF A01
This bibliography lists 164 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during Jan. 1992. Subject coverage includes aerospace medicine and physiology, life support systems and man/system technology, protective clothing, exobiology and extraterrestrial life, planetary biology, and flight crew behavior and performance.
Author

N92-34154*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRACK STRUCTURE MODEL OF CELL DAMAGE IN SPACE FLIGHT
ROBERT KATZ (Nebraska Univ., Lincoln.), FRANCIS A. CUCINOTTA, JOHN W. WILSON, JUDY L. SHINN, and DUC M. NGO (Old Dominion Univ., Norfolk, VA.) Oct. 1992 32 p
(RTOP 199-04-16-11)
(NASA-TP-3235; L-17058; NAS 1.60:3235) Avail: CASI HC A03/MF A01
BIOLOGICAL EFFECTS, CELLS (BIOLOGY), EXPOSURE, EXTRATERRESTRIAL RADIATION, LINEAR ENERGY TRANSFER (LET), RADIATION DAMAGE, RELATIVE BIOLOGICAL EFFECTIVENESS (RBE), SURVIVAL

53

BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

N92-21467*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
VISUALLY GUIDED CONTROL OF MOVEMENT
WALTER W. JOHNSON, ed. and MARY K. KAISER, ed. Apr. 1991 236 p Workshop held at Moffett Field, CA, 26 Jun. - 14

Jul. 1989
(RTOP 505-67-51)
(NASA-CP-3118; A-90200; NAS 1.55:3118) Avail: CASI HC A11/MF A03
AIRCRAFT CONTROL, CONFERENCES, CONTROL THEORY, SPACE PERCEPTION, VISUAL CONTROL, VISUAL PERCEPTION

54

MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing.

N91-24744*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEMS: NATURAL AND ARTIFICIAL ECOSYSTEMS
ROBERT D. MACELROY, ed. (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), BRAD G. THOMPSON, ed. (Alberta Research Council, Edmonton (Canada).), THEODORE W. TIBBITTS, ed. (Wisconsin Univ., Madison.), and TYLER VOLK, ed. (New York Univ., New York.) Dec. 1989 185 p The 27th COSPAR Meeting was held in Espoo, Finland, 18-29 Jul. 1988; sponsored by Subcommission F.4
(RTOP 199-61-12)
(NASA-CP-10040; A-89105; NAS 1.55:10040) Avail: CASI HC A09/MF A02
ALGAE, CLOSED ECOLOGICAL SYSTEMS, ECOSYSTEMS, REGENERATION (PHYSIOLOGY), WASTE TREATMENT

N92-11638*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
HUMAN MACHINE INTERFACES FOR TELEOPERATORS AND VIRTUAL ENVIRONMENTS CONFERENCE
Mar. 1990 175 p Conference held in Santa Barbara, CA, 4-9 Mar. 1990
(NASA-CP-10071; NAS 1.55:10071; AD-A240716) Avail: CASI HC A08/MF A02
COMPUTERIZED SIMULATION, FLIGHT SIMULATION, MAN-COMPUTER INTERFACE, OPERATORS (PERSONNEL), SENSORY PERCEPTION, TELEOPERATORS

N92-16562*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
RELIABILITY OF A SHUTTLE REACTION TIMER
RUSSELL D. HAYS (Krug Life Sciences, Inc., Houston, TX.), AUGUSTUS D. MAZZOCCA (Krug Life Sciences, Inc., Houston, TX.), MICHAEL RASHID, and STEVEN F. SICONOLFI Washington Jan. 1992 9 p
(NASA-TP-3176; S-659; NAS 1.60:3176) Avail: CASI HC A02/MF A01
ASTRONAUT PERFORMANCE, AUDITORY STIMULI, BIOASTRONAUTICS, COMPONENT RELIABILITY, REACTION TIME, SPACE SHUTTLES, SWITCHES, TIMING DEVICES, VISUAL STIMULI

N92-19772*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
A METHOD OF EVALUATING EFFICIENCY DURING SPACE-SUITED WORK IN A NEUTRAL BUOYANCY ENVIRONMENT
MICHAEL C. GREENISEN (Krug International, Houston, TX.), PHILLIP WEST, FREDERICK K. NEWTON, JOHN H. GILBERT, and WILLIAM G. SQUIRES (Texas Lutheran Coll., Seguin.) Oct. 1991 11 p
(NASA-TP-3153; S-648; NAS 1.60:3153) Avail: CASI HC A03/MF A01
EXTRAVEHICULAR ACTIVITY, FATIGUE TESTS, NEUTRAL BUOYANCY SIMULATION, PHYSICAL EXERCISE, SPACE SUITS, WORK CAPACITY

N92-25961*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
NUTRITIONAL REQUIREMENTS FOR SPACE STATION FREEDOM CREWS
HELEN W. LANE (Krug Life Sciences, Inc., Houston, TX.), BARBARA L. RICE, and CHRISTINE F. WOGAN, ed. (Krug Life Sciences, Inc., Houston, TX.) Washington Jun. 1992 15 p Panel held in Houston, TX, 4-5 Feb. 1991
(NASA-CP-3146; S-672; NAS 1.55:3146) Avail: CASI HC A03/MF A01
ASTRONAUTS, BIOLOGICAL EFFECTS, NUTRITIONAL REQUIREMENTS, SPACE FLIGHT FEEDING, SPACE STATION FREEDOM

N92-26538*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
THE VALIDATION OF A HUMAN FORCE MODEL TO PREDICT DYNAMIC FORCES RESULTING FROM MULTI-JOINT MOTIONS
ABHILASH K. PANDYA (Lockheed Engineering and Sciences Co., Houston, TX.), JAMES C. MAIDA (Lockheed Engineering and Sciences Co., Houston, TX.), ANN M. ALDRIDGE (Texas Woman's Univ., Houston.), SCOTT M. HASSON (Texas Womens Univ. Research Inst., Denton.), and BARBARA J. WOOLFORD Jun. 1992 33 p
(NAS9-17900)
(NASA-TP-3206; S-670; NAS 1.60:3206) Avail: CASI HC A03/MF A01
HUMAN PERFORMANCE, INVERSE KINEMATICS, MUSCULAR STRENGTH, SHOULDERS, TORQUE, WRIST

N92-26682*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
CORRELATION AND PREDICTION OF DYNAMIC HUMAN ISOLATED JOINT STRENGTH FROM LEAN BODY MASS
ABHILASH K. PANDYA, SCOTT M. HASSON, ANN M. ALDRIDGE (Lockheed Engineering and Sciences Co., Houston, TX.), JAMES C. MAIDA, and BARBARA J. WOOLFORD Jun. 1992 64 p
(NAS9-17900)
(NASA-TP-3207; S-671; NAS 1.60:3207) Avail: CASI HC A04/MF A01
BIODYNAMICS, DYNAMIC MODELS, HUMAN BEINGS, JOINTS (ANATOMY), LEAST SQUARES METHOD, PREDICTION ANALYSIS TECHNIQUES, REGRESSION ANALYSIS, STATISTICAL CORRELATION, TORQUE

N92-28897*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
EXPERIMENTAL MEASUREMENT OF THE ORBITAL PATHS OF PARTICLES SEDIMENTING WITHIN A ROTATING VISCOUS FLUID AS INFLUENCED BY GRAVITY
DAVID A. WOLF and RAY P. SCHWARZ (Krug Life Sciences, Inc., Houston, TX.) Jun. 1992 19 p
(RTOP 694-01-23-05)
(NASA-TP-3200; S-668; NAS 1.60:3200) Avail: CASI HC A03/MF A01
BIOREACTORS, CELLS (BIOLOGY), CULTURE TECHNIQUES, REDUCED GRAVITY, ROTATING FLUIDS, SEDIMENTS, TISSUES (BIOLOGY), VISCOUS FLUIDS

55

SPACE BIOLOGY

Includes exobiology; planetary biology; and extraterrestrial life.

N91-14725*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
EXOBIOLOGY IN EARTH ORBIT: THE RESULTS OF SCIENCE WORKSHOPS HELD AT NASA, AMES RESEARCH CENTER
D. DEFREES, ed., D. BROWNLEE, ed., J. TARTER, ed., D. USHER, ed., W. IRVINE, ed., and H. KLEIN, ed. 1989 142 p Original contains color illustrations
(RTOP 199-52-12-01)
(NASA-SP-500; NAS 1.21:500) Avail: CASI HC A07/MF A02; also available SOD HC $6.50 as 033-000-01057-5; 5 functional color pages

The Workshops on Exobiology in Earth Orbit were held to explore concepts for orbital experiments of exobiological interest and make recommendations on which classes of experiments should be carried out. Various observational and experimental opportunities in Earth orbit are described including those associated with the Space Shuttle laboratories, spacecraft deployed from the Space Shuttle and expendable launch vehicles, the Space Station, and lunar bases. Specific science issues and technology needs are summarized. Finally, a list of recommended experiments in the areas of observational exobiology, cosmic dust collection, and in situ experiments is presented. M.G.

N91-15691*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
EXOBIOLOGY ON MARS
D. L. DEVINCENZI, ed., J. R. MARSHALL, ed., and D. ANDERSEN, ed. Dec. 1990 35 p Proceedings held at Moffett Field, CA, 27-28 Feb. 1989
(RTOP 199-59-12-05)
(NASA-CP-10055; A-90320; NAS 1.55:10055) Avail: CASI HC A03/MF A01

EQUIPMENT SPECIFICATIONS, EXOBIOLOGY, EXPERIMENT DESIGN, MARS (PLANET), MISSION PLANNING, NASA SPACE PROGRAMS, SPACE EXPLORATION, U.S.S.R. SPACE PROGRAM

N92-13588*# National Aeronautics and Space Administration, Washington, DC.
FOURTH SYMPOSIUM ON CHEMICAL EVOLUTION AND THE ORIGIN AND EVOLUTION OF LIFE Abstracts Only
ROBERT A. WHARTON, JR., ed., DALE T. ANDERSEN, ed., SARA E. BZIK, ed. (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), and JOHN D. RUMMEL, ed. Oct. 1991 129 p Symposium held at Moffett Field, CA, 24-27 Jul. 1990
(RTOP 199-52-00)
(NASA-CP-3129; NAS 1.55:3129) Avail: CASI HC A07/MF A02

BIOLOGICAL EVOLUTION, CHEMICAL EVOLUTION, CONFERENCES, COSMIC DUST, EXOBIOLOGY, GEOCHEMISTRY

59

MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

N91-20641*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
FOURTH ANNUAL WORKSHOP ON SPACE OPERATIONS APPLICATIONS AND RESEARCH (SOAR 90)
ROBERT T. SAVELY, ed. Washington Jan. 1991 495 p Workshop held in Albuquerque, NM, 26-28 Jun. 1990; sponsored by NASA, Washington, AF, and New Mexico Univ.
(NASA-CP-3103-VOL-1; S-618-VOL-1; NAS 1.55:3103-VOL-1)
Avail: CASI HC A21/MF A04

CONFERENCES, HUMAN FACTORS ENGINEERING, LIFE SCIENCES, OPERATIONS RESEARCH, ROBOTICS

N91-20702*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
FOURTH ANNUAL WORKSHOP ON SPACE OPERATIONS APPLICATIONS AND RESEARCH (SOAR 90)
ROBERT T. SAVELY, ed. Washington Jan. 1991 316 p Workshop held in Albuquerque, NM, 26-28 Jun. 1990; sponsored by NASA, Washington, AF, and New Mexico Univ.
(NASA-CP-3103-VOL-2; S-618-VOL-2; NAS 1.55:3103-VOL-2)
Avail: CASI HC A14/MF A03

CONFERENCES, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, MAN-COMPUTER INTERFACE, OXIDATION, SPACE SHUTTLE ORBITERS, SPACE STATIONS, SPACECRAFT CONSTRUCTION MATERIALS

N92-12425*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SPACE AND EARTH SCIENCE DATA COMPRESSION WORKSHOP
JAMES C. TILTON, ed. Washington Nov. 1991 85 p Workshop held in Snowbird, UT, 11 Apr. 1991; sponsored by NASA and IEEE
(RTOP 590-32-14-01)
(NASA-CP-3130; REPT-91B00149; NAS 1.55:3130) Avail: CASI HC A05/MF A01

DATA COMPRESSION, EARTH OBSERVATIONS (FROM SPACE), IMAGE PROCESSING, INFORMATION SYSTEMS, SIGNAL PROCESSING, SPACE OBSERVATIONS (FROM EARTH)

N92-22324*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
FIFTH ANNUAL WORKSHOP ON SPACE OPERATIONS APPLICATIONS AND RESEARCH (SOAR 1991), VOLUME 2
KUMAR KRISHEN, ed. Feb. 1992 391 p Workshop held in Houston, TX, 9-11 Jul. 1991; sponsored in cooperation with NASA, Washington, AF, and Houston Univ., Clear Lake, TX
(NASA-CP-3127-VOL-2; S-650-VOL-2; NAS 1.55:3127-VOL-2)
Avail: CASI HC A17/MF A04

AEROSPACE MEDICINE, CONFERENCES, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, LIFE SCIENCES, ROBOTICS, SPACE DEBRIS, SPACE PLASMAS, SPACE SHUTTLES, SPACE STATIONS, SPACECRAFT CONTROL

61

COMPUTER PROGRAMMING AND SOFTWARE

Includes computer programs, routines, and algorithms, and specific applications, e.g., CAD/CAM.

N91-17559*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA FORMAL METHODS WORKSHOP, 1990
RICKY W. BUTLER, comp. Nov. 1990 504 p Workshop held in Hampton, VA, 20-23 Aug. 1990; sponsored by NASA, Washington
(RTOP 505-66-21-01)
(NASA-CP-10052; NAS 1.55:10052) Avail: CASI HC A22/MF A04
AVIONICS, CONFERENCES, CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, FAULT TOLERANCE, FLIGHT CONTROL, LOGIC DESIGN

N91-25624*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
GUIDANCE, NAVIGATION, AND CONTROL SUBSYSTEM EQUIPMENT SELECTION ALGORITHM USING EXPERT SYSTEM METHODS
CHERYL L. ALLEN Washington May 1991 12 p
(RTOP 506-49-21-02)
(NASA-TP-3082; L-16896; NAS 1.60:3082) Avail: CASI HC A03/MF A01
ALGORITHMS, ARCHITECTURE (COMPUTERS), COMPUTER AIDED DESIGN, CONTROL SYSTEMS DESIGN, EXPERT SYSTEMS, SPACECRAFT DESIGN, SPACECRAFT INSTRUMENTS

N91-25629*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A SCHEME FOR BANDPASS FILTERING MAGNETOMETER MEASUREMENTS TO RECONSTRUCT TETHERED SATELLITE SKIPROPE MOTION
M. E. POLITES Washington Jun. 1991 25 p
(NASA-TP-3123; M-663; NAS 1.60:3123) Avail: CASI HC A03/MF A01
BANDPASS FILTERS, COMPUTERIZED SIMULATION, DYNAMIC STABILITY, MAGNETIC MEASUREMENT, SATELLITE CONTROL, SPACECRAFT MOTION, VIBRATION DAMPING

N92-11685*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CELLULAR REPAIR/MISREPAIR TRACK MODEL
JOHN W. WILSON and FRANCIS A. CUCINOTTA Washington Nov. 1991 11 p
(RTOP 199-04-16-11)
(NASA-TP-3124; L-16949; NAS 1.60:3124) Avail: CASI HC A03/MF A01
BIOLOGICAL EFFECTS, CELLS (BIOLOGY), KINETICS, LETHALITY, RADIATION EFFECTS, RELATIVE BIOLOGICAL EFFECTIVENESS (RBE)

N92-16568*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
SECOND CLIPS CONFERENCE PROCEEDINGS, VOLUME 1
JOSEPH GIARRATANO, ed. (Houston Univ., Clear Lake, TX.) and CHRISTOPHER J. CULBERT, ed. Sep. 1991 232 p Conference held in Houston, TX, 23-25 Sep. 1991
(NASA-CP-10085-VOL-1; S-662-VOL-1; NAS 1.55:10085-VOL-1) Avail: CASI HC A11/MF A03
COMPUTER AIDED DESIGN, CONFERENCES, EXPERT SYSTEMS, KNOWLEDGE REPRESENTATION

N92-16590*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
SECOND CLIPS CONFERENCE PROCEEDINGS, VOLUME 2
JOSEPH GIARRATANO, ed. (Houston Univ., Clear Lake, TX.) and CHRISTOPHER J. CULBERT, ed. Sep. 1991 280 p Conference held in Houston, TX, 23-25 Sep. 1991
(NASA-CP-10085-VOL-2; S-662-VOL-2; NAS 1.55:10085-VOL-2) Avail: CASI HC A13/MF A03
CONFERENCES, EXPERT SYSTEMS, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), SOFTWARE TOOLS

N92-23432*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
TECHNIQUE TO ELIMINATE COMPUTATIONAL INSTABILITY IN MULTIBODY SIMULATIONS EMPLOYING THE LAGRANGE MULTIPLIER
G. WATTS Apr. 1992 30 p
(NASA-TP-3220; M-687; NAS 1.60:3220) Avail: CASI HC A03/MF A01
COMPUTER TECHNIQUES, COMPUTERIZED SIMULATION, DYNAMICAL SYSTEMS, FLEXIBLE BODIES, LAGRANGE MULTIPLIERS

N92-24397*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SOFTWARE SURFACE MODELING AND GRID GENERATION STEERING COMMITTEE
ROBERT E. SMITH, ed. Washington Apr. 1992 510 p Workshop held in Hampton, VA, 28-30 Apr. 1992; sponsored by NASA, Washington
(RTOP 505-90-53-02)
(NASA-CP-3143; L-17093; NAS 1.55:3143) Avail: CASI HC A22/MF A04
COMPUTATIONAL FLUID DYNAMICS, COMPUTER AIDED DESIGN, CONFERENCES, GRID GENERATION (MATHEMATICS), MATHEMATICAL MODELS, SOFTWARE ENGINEERING, SURFACE PROPERTIES

62

COMPUTER SYSTEMS

Includes computer networks and special application computer systems.

N92-22285*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FAULT TOLERANCE OF ARTIFICIAL NEURAL NETWORKS WITH APPLICATIONS IN CRITICAL SYSTEMS
PETER W. PROTZEL, DANIEL L. PALUMBO, and MICHAEL K. ARRAS (Institute for Computer Applications in Science and Engineering, Hampton, VA.) Apr. 1992 50 p
(RTOP 307-50-10-12)
(NASA-TP-3187; L-16969; NAS 1.60:3187) Avail: CASI HC A03/MF A01
COMPUTERIZED SIMULATION, DISTRIBUTED PROCESSING, FAULT TOLERANCE, NEURAL NETS, PERFORMANCE TESTS, REAL TIME OPERATION, RELIABILITY ENGINEERING

N92-27589*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL VALIDATION OF CLOCK SYNCHRONIZATION ALGORITHMS
DANIEL L. PALUMBO and R. LYNN GRAHAM (PRC Kentron, Inc., Hampton, VA.) Jul. 1992 24 p
(RTOP 505-64-10-07)
(NASA-TP-3209; L-17015; NAS 1.60:3209) Avail: CASI HC A03/MF A01
ALGORITHMS, CLOCKS, FAILURE MODES, SYNCHRONISM, TIME MEASUREMENT

63

CYBERNETICS

Includes feedback and control theory, artificial intelligence, robotics and expert systems.

N91-20811*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
PROCEEDINGS OF THE SECOND JOINT TECHNOLOGY WORKSHOP ON NEURAL NETWORKS AND FUZZY LOGIC, VOLUME 2
ROBERT N. LEA, ed. and JAMES A. VILLARREAL, ed. Feb. 1991 278 p Workshop held in Houston, TX, 10-13 Apr. 1990; sponsored by NASA, Washington, NASA. Johnson Space Center, and Houston Univ.
(NASA-CP-10061-VOL-2; S-624-VOL-2; NAS 1.55:10061-VOL-2) Avail: CASI HC A13/MF A03
AUTOMATIC CONTROL, CONFERENCES, CONTROLLERS, DECISION MAKING, FUZZY SETS, IMAGE PROCESSING, NEURAL NETS, PATTERN RECOGNITION, SET THEORY, SPEECH RECOGNITION

N91-21778*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
PROCEEDINGS OF THE SECOND JOINT TECHNOLOGY WORKSHOP ON NEURAL NETWORKS AND FUZZY LOGIC, VOLUME 1
ROBERT N. LEA, ed. and JAMES VILLARREAL, ed. Feb. 1991 240 p Workshop held in Houston, TX, 10-13 Apr. 1990; sponsored by NASA, Washington, NASA. Johnson Space Center, and Houston Univ.
(NASA-CP-10061-VOL-1; S-624-VOL-1; NAS 1.55:10061-VOL-1) Avail: CASI HC A11/MF A03
CONFERENCES, DECISION MAKING, EXPERT SYSTEMS, FUZZY SETS, FUZZY SYSTEMS, LOGIC CIRCUITS, NEURAL NETS, SIGNAL PROCESSING

N91-22769*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1991 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE
JAMES L. RASH, ed. Washington May 1991 361 p Conference held in Greenbelt, MD, 13-15 May 1991
(NASA-CP-3110; REPT-91B00064; NAS 1.55:3110) Avail: CASI HC A16/MF A03
ARTIFICIAL INTELLIGENCE, COMPUTER VISION, CONFERENCES, CONTROL THEORY, INFORMATION MANAGEMENT, KNOWLEDGE REPRESENTATION, NEURAL NETS, ROBOTICS, SYSTEMS ENGINEERING

N92-23356*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1992 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE
JAMES L. RASH, ed. Washington 1992 251 p Conference held in Greenbelt, MD, 5-6 May 1992
(RTOP 030-09-01-25)
(NASA-CP-3141; REPT-92B00045; NAS 1.55:3141) Avail: CASI HC A12/MF A03
AEROSPACE ENGINEERING, ARTIFICIAL INTELLIGENCE, FAULT TOLERANCE, NEURAL NETS

N92-27763*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AUTOMATION AND ROBOTICS FOR SPACE-BASED SYSTEMS, 1991
ROBERT L. WILLIAMS, II, ed. May 1992 254 p Workshop was held in Hampton, VA, 10 Dec. 1991
(RTOP 595-11-22)
(NASA-CP-10098; NAS 1.55:10098) Avail: CASI HC A12/MF A03
LARGE SPACE STRUCTURES, ORBITAL ASSEMBLY, REMOTE MANIPULATOR SYSTEM, ROBOT ARMS, ROBOT CONTROL, ROBOTICS, ROBOTS, TELEROBOTICS

N92-28375*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SOFTWARE DESIGN FOR AUTOMATED ASSEMBLY OF TRUSS STRUCTURES
CATHERINE L. HERSTROM, CAROLYN GRANTHAM, CHERYL L. ALLEN, WILLIAM R. DOGGETT, and RALPH W. WILL Jun. 1992 47 p
(RTOP 506-43-41-02)
(NASA-TP-3198; L-16983; NAS 1.60:3198) Avail: CASI HC A03/MF A01
AUTOMATIC CONTROL, CONSTRUCTION, ORBITAL ASSEMBLY, SOFTWARE ENGINEERING, SPACE ERECTABLE STRUCTURES, TRUSSES

65

STATISTICS AND PROBABILITY

Includes data sampling and smoothing; Monte Carlo method; and stochastic processes.

N91-25741*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MODEL REDUCTION BY TRIMMING FOR A CLASS OF SEMI-MARKOV RELIABILITY MODELS AND THE CORRESPONDING ERROR BOUND
ALLAN L. WHITE and DANIEL L. PALUMBO May 1991 11 p Presented at the Annual Reliability and Maintainability Symposium, 1990
(RTOP 505-66-21)
(NASA-TP-3089; L-16862; NAS 1.60:3089) Avail: CASI HC A03/MF A01
COMPLEX SYSTEMS, ERROR ANALYSIS, MARKOV PROCESSES, MATHEMATICAL MODELS, RELIABILITY ANALYSIS

66

SYSTEMS ANALYSIS

Includes mathematical modeling; network analysis; and operations research.

N91-18753*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STRUCTURAL FACTORING APPROACH FOR ANALYZING STOCHASTIC NETWORKS
KELLY J. HAYHURST (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.) and DOUGLAS R. SHIER (College of William and Mary, Williamsburg, VA.) Washington Mar. 1991 24 p
(RTOP 505-66-21-01)
(NASA-TP-3069; L-16794; NAS 1.60:3069) Avail: CASI HC A03/MF A01
COMMUNICATION NETWORKS, CRITICAL PATH METHOD, DATA LINKS, STOCHASTIC PROCESSES

N92-33483*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ADVANCED TECHNIQUES IN RELIABILITY MODEL REPRESENTATION AND SOLUTION
DANIEL L. PALUMBO and DAVID M. NICOL (College of William and Mary, Williamsburg, VA.) Oct. 1992 18 p

(RTOP 505-64-10-07)
(NASA-TP-3242; L-17048; NAS 1.60:3242) Avail: CASI HC A03/MF A01

COMPUTER SYSTEMS PERFORMANCE, COMPUTERIZED SIMULATION, DISTRIBUTED PROCESSING, FAILURE ANALYSIS, FAILURE MODES, FAULT TOLERANCE, FLIGHT CONTROL, MATHEMATICAL MODELS, PARALLEL PROCESSING (COMPUTERS), RELIABILITY ANALYSIS, SOFTWARE TOOLS

70

PHYSICS (GENERAL)

N91-25755*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
THE 22ND ANNUAL PRECISE TIME AND TIME INTERVAL (PTTI) APPLICATIONS AND PLANNING MEETING
RICHARD L. SYDNOR, *ed.* May 1990 618 p *Meeting held in* Vienna, VA, 4-6 Dec. 1990
(NASA-CP-3116; NAS 1.55:3116; REPT-91B00084; AD-A239372) Avail: CASI HC A99/MF A06

ATOMIC CLOCKS, FREQUENCY STANDARDS, HYDROGEN MASERS, METEOROLOGY, SATELLITE INSTRUMENTS, TELECOMMUNICATION, TIME, TIME MEASUREMENT

N92-13756*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BENCHMARK SOLUTIONS FOR THE GALACTIC HEAVY-ION TRANSPORT EQUATIONS WITH ENERGY AND SPATIAL COUPLING
BARRY D. GANAPOL (Arizona Univ., Tucson.), LAWRENCE W. TOWNSEND (Old Dominion Univ., Norfolk, VA.), STANLEY L. LAMKIN (Old Dominion Univ., Norfolk, VA.), and JOHN W. WILSON Washington Oct. 1991 58 p
(RTOP 199-04-16-11)
(NASA-TP-3112; L-16909; NAS 1.60:3112) Avail: CASI HC A04/MF A01

GALACTIC COSMIC RAYS, HEAVY IONS, NEUTRONS, NUCLEAR INTERACTIONS, RADIATION DOSAGE, RADIATION SHIELDING, TRANSPORT THEORY

N92-33350*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
PROCEEDINGS OF THE 23RD ANNUAL PRECISE TIME AND TIME INTERVAL (PTTI) APPLICATIONS AND PLANNING MEETING
RICHARD L. SYDNOR, ed. (Jet Propulsion Lab., California Inst. of Tech., Pasadena.) et al Washington Jul. 1992 440 p Meeting held in Pasadena, CA, 3-5 Dec. 1991; sponsored by NASA. Goddard Space Flight Cetner, JPL, Naval Observatory, Space and Naval Warfare Systems Command, NRL, Army Electronics Technology and Devices Lab., and AFOSR
(NAS5-31000)
(NASA-CP-3159; REPT-92B00083; NAS 1.55:3159) Avail: CASI HC A19/MF A04

CONFERENCES, FREQUENCY STANDARDS, NAVIGATION SATELLITES, OPTICAL TRACKING, SATELLITE INSTRUMENTS, TIME MEASUREMENT, TRACKING NETWORKS, TRAPPED PARTICLES

71

ACOUSTICS

Includes sound generation, transmission, and attenuation.

N91-12315*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WAKE GEOMETRY EFFECTS ON ROTOR BLADE-VORTEX INTERACTION NOISE DIRECTIVITY
R. M. MARTIN (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), MICHAEL A. MARCOLINI (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), W. R. SPLETTSTOESSER (Flugwissenschaftliche Forschungsanstalt, Munich (Germany, F.R.).), and K.-J. SCHULTZ (Deutsche Forschungsanstalt fuer Luft- und Raumfahrt, Brunswick, Germany, F.R.) Nov. 1990 23 p Original contains color illustrations
(RTOP 505-63-51-06)
(NASA-TP-3015; L-16723; NAS 1.60:3015) Avail: CASI HC A03/MF A01; 6 functional color pages

BLADE TIPS, BLADE-VORTEX INTERACTION, INTERACTIONAL AERODYNAMICS, WAKES, WIND TUNNEL TESTS

N91-15848*# *National Aeronautics and Space Administration.* Lewis Research Center, Cleveland, OH.
MONOGRAPH ON PROPAGATION OF SOUND WAVES IN CURVED DUCTS
WOJCIECH ROSTAFINSKI Jan. 1991 97 p
(RTOP 505-69-61)
(NASA-RP-1248; E-5480; NAS 1.61:1248) Avail: CASI HC A05/MF A02

After reviewing and evaluating the existing material on sound propagation in curved ducts without flow, it seems strange that, except for Lord Rayleigh in 1878, no book on acoustics has treated the case of wave motion in bends. This monograph reviews the available analytical and experimental material, nearly 30 papers published on this subject so far, and concisely summarizes what has been learned about the motion of sound in hard-wall and acoustically lined cylindrical bends. Author

N91-16679*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND TURBINE ACOUSTICS
HARVEY H. HUBBARD and KEVIN P. SHEPHERD Dec. 1990 49 p Submitted for publication Prepared in cooperation with NASA, Lewis Research Center and American Society of Mechanical Engineers
(DE-AI01-76ET-20320; RTOP 776-33-41)
(NASA-TP-3057; E-5663; DOE/NASA/20320-77; NAS 1.60:3057) Avail: CASI HC A03/MF A01

ACOUSTICS, DYNAMIC STRUCTURAL ANALYSIS, HARMONICS, NOISE MEASUREMENT, PREDICTION ANALYSIS TECHNIQUES, SOUND WAVES, SPECTRA, WIND SHEAR, WIND TURBINES

N91-16682*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FOURTH INTERNATIONAL SYMPOSIUM ON LONG-RANGE SOUND PROPAGATION
WILLIAM L. WILLSHIRE, JR., comp. Washington Dec. 1990 274 p Symposium held in Hampton, VA, 16-17 May 1990; sponsored by NASA, Langley Research Center, Mississippi Univ., and Open Univ. of England
(RTOP 505-61-11-02)
(NASA-CP-3101; L-16875; NAS 1.55:3101) Avail: CASI HC A12/MF A03

ACOUSTIC MEASUREMENT, ACOUSTIC PROPAGATION, AIRCRAFT NOISE, CONFERENCES, NOISE INTENSITY, SOUND PROPAGATION

N91-19823*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
J-85 JET ENGINE NOISE MEASURED IN THE ONERA S1 WIND TUNNEL AND EXTRAPOLATED TO FAR FIELD
PAUL T. SODERMAN (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.), ALAIN JULIENNE (Office National d'Etudes et de Recherches Aerospatiales, Paris, France), and ADOLPH ATENCIO, JR. Washington Jan. 1991 181 p
(RTOP 307-50-81)
(NASA-TP-3053; A-89265; NAS 1.60:3053) Avail: CASI HC A09/MF A02
ANOMALIES, ENGINE NOISE, FAR FIELDS, J-85 ENGINE, SOUND FIELDS, SUBSONIC FLOW, WIND TUNNEL TESTS

N91-19824*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
LARGE-SCALE AEROACOUSTIC RESEARCH FEASIBILITY AND CONCEPTUAL DESIGN OF TEST-SECTION INSERTS FOR THE AMES 80- BY 120-FOOT WIND TUNNEL
PAUL T. SODERMAN and LARRY E. OLSEN Dec. 1990 50 p
(RTOP 307-50-62-11)
(NASA-TP-3020; A-88007; NAS 1.60:3020) Avail: CASI HC A03/MF A01
ACOUSTIC MEASUREMENT, ACOUSTIC PROPERTIES, AEROACOUSTICS, AERODYNAMIC CHARACTERISTICS, INSERTS, INSTALLING, LININGS, WALLS, WEDGES, WIND TUNNEL APPARATUS, WIND TUNNEL TESTS

N91-21828*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
ACOUSTIC AND AERODYNAMIC STUDY OF A PUSHER-PROPELLER AIRCRAFT MODEL
PAUL T. SODERMAN and W. CLIFTON HORNE Washington Sep. 1990 67 p
(RTOP 505-61-11)
(NASA-TP-3040; A-89038; NAS 1.60:3040) Avail: CASI HC A04/MF A01
AEROACOUSTICS, AIRCRAFT MODELS, AIRCRAFT WAKES, INTERACTIONAL AERODYNAMICS, PROPELLER BLADES, PROPELLER NOISE

N92-10598*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROACOUSTICS OF FLIGHT VEHICLES: THEORY AND PRACTICE. VOLUME 1: NOISE SOURCES
HARVEY H. HUBBARD, ed. Washington Aug. 1991 601 p Sponsored in cooperation with Wright Research and Development Center and Army Aviation Systems Command
(F33615-84-C-3202; RTOP 535-03-11-03)
(NASA-RP-1258-VOL-1; L-16926-VOL-1; NAS 1.61:1258-VOL-1; WRDC-TR-90-3052-VOL-1; AD-A241141) Avail: CASI HC A99/MF A06
Methodology recommended to evaluate aeroacoustic related problems is provided, and approaches to their solutions are suggested without extensive tables, nomographs, and derivations. Orientation is toward flight vehicles and emphasis is on underlying physical concepts. Theoretical, experimental, and applied aspects are covered, including the main formulations and comparisons of theory and experiment. The topics covered include: propeller and propfan noise, rotor noise, turbomachinery noise, jet noise classical theory and experiments, noise from turbulent shear flows, jet noise generated by large-scale coherent motion, airframe noise, propulsive lift noise, combustion and core noise, and sonic booms. For individual titles, see N92-10599 through N92-10608.

N92-11758*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANNOYANCE CAUSED BY ADVANCED TURBOPROP AIRCRAFT FLYOVER NOISE: COMPARISON OF DIFFERENT PROPELLER CONFIGURATIONS
DAVID A. MCCURDY Washington Oct. 1991 69 p
(RTOP 505-63-51-09)
(NASA-TP-3104; L-16850; NAS 1.60:3104) Avail: CASI HC A04/MF A01
AERODYNAMIC NOISE, AIRCRAFT NOISE, PROPELLER NOISE, PROPELLERS, PSYCHOACOUSTICS, TURBOFAN AIRCRAFT, TURBOPROP AIRCRAFT

N92-11765*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A LOUDNESS CALCULATION PROCEDURE APPLIED TO SHAPED SONIC BOOMS
KEVIN P. SHEPHERD and BRENDA M. SULLIVAN (Lockheed Engineering and Sciences Co., Hampton, VA.) Washington Nov. 1991 13 p
(RTOP 537-03-21-03)
(NASA-TP-3134; L-16913; NAS 1.60:3134) Avail: CASI HC A03/MF A01
LOUDNESS, SONIC BOOMS, SUPERSONIC TRANSPORTS

N92-14779*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROACOUSTICS OF FLIGHT VEHICLES: THEORY AND PRACTICE. VOLUME 2: NOISE CONTROL
HARVEY H. HUBBARD, ed. Washington Aug. 1991 443 p Sponsored in cooperation with the Army Aviation Systems Command
(F33615-84-C-3202; RTOP 535-03-11-03)
(NASA-RP-1258-VOL-2; L-16926-VOL-2; NAS 1.61:1258-VOL-2; WRDC-TR-90-3052-VOL-2) Avail: CASI HC A19/MF A04
Flight vehicles and the underlying concepts of noise generation, noise propagation, noise prediction, and noise control are studied. This volume includes those chapters that relate to flight vehicle noise control and operations: human response to aircraft noise; atmospheric propagation; theoretical models for duct acoustic propagation and radiation; design and performance of duct acoustic treatment; jet noise suppression; interior noise; flyover noise measurement and prediction; and quiet aircraft design and operational characteristics. For individual titles, see N92-14780 through N92-14787.

N92-20479*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANNOYANCE CAUSED BY AIRCRAFT EN ROUTE NOISE
DAVID A. MCCURDY Mar. 1992 40 p
(RTOP 535-03-11-03)
(NASA-TP-3165; L-16975; NAS 1.60:3165) Avail: CASI HC A03/MF A01
AIRCRAFT NOISE, ANECHOIC CHAMBERS, COMMERCIAL AIRCRAFT, JUDGMENTS, PROP-FAN TECHNOLOGY, TAKEOFF, TURBOFAN AIRCRAFT, TURBOPROP AIRCRAFT

N92-32948*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FOURTH AIRCRAFT INTERIOR NOISE WORKSHOP
DAVID G. STEPHENS, comp. Jul. 1992 335 p Workshop held in Friedrichshafen, Fed. Republic of Germany, 19-20 May 1992; sponsored by NASA, Society of Automotive Engineers, and the German Aerospace Research Establishment
(RTOP 535-03-11-03)
(NASA-CP-10103; NAS 1.55:10103) Avail: CASI HC A15/MF A03
AEROACOUSTICS, AERODYNAMIC NOISE, AIRCRAFT NOISE, CONFERENCES, NOISE MEASUREMENT, NOISE PREDICTION, NOISE REDUCTION

73

NUCLEAR AND HIGH-ENERGY PHYSICS

Includes elementary and nuclear particles; and reactor theory.

N91-13985*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INCLUSIVE INELASTIC SCATTERING OF HEAVY IONS AND NUCLEAR CORRELATIONS
FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.), LAWRENCE W. TOWNSEND (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JOHN W. WILSON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and GOVIND S. KHANDELWAL (Old Dominion Univ., Norfolk, VA.) Washington Nov. 1990 22 p
(RTOP 199-04-16-11)
(NASA-TP-3026; L-16793; NAS 1.60:3026) Avail: CASI HC A03/MF A01
ANGULAR DISTRIBUTION, HEAVY IONS, INELASTIC SCATTERING, ION SCATTERING, IONIC COLLISIONS, MOMENTUM TRANSFER, RELATIVISTIC PARTICLES

74

OPTICS

Includes light phenomena; and optical devices.

N92-22045*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
WORKSHOP ON SQUEEZED STATES AND UNCERTAINTY RELATIONS
DAESOO HAN, ed. (Maryland Univ., College Park.), Y. S. KIM, ed., and W. W. ZACHARY, ed. (Howard Univ., Washington, DC.) Washington Feb. 1992 385 p Workshop held in College Park, MD, 28-30 Mar. 1991
(NASA-CP-3135; REPT-92B00024; NAS 1.15:3135) Avail: CASI HC A17/MF A04
CONFERENCES, FIELD THEORY (PHYSICS), GROUP THEORY, HEISENBERG THEORY, LASERS, POINCARE PROBLEM, QUANTUM MECHANICS, QUANTUM OPTICS, QUANTUM THEORY, SQUEEZED STATES (QUANTUM THEORY)

75

PLASMA PHYSICS

Includes magnetohydrodynamics and plasma fusion.

N91-17713*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
CURRENT COLLECTION FROM SPACE PLASMAS
NAGENDRA SINGH, ed. (Alabama Univ., Huntsville.), K. H. WRIGHT, JR., ed. (Alabama Univ., Huntsville.), and NOBIE H. STONE, ed. Washington Dec. 1990 368 p Workshop held in Huntsville, AL, 24-25 Apr. 1989; sponsored by NASA. Marshall Space Flight Center and Alabama Univ.
(NASA-CP-3089; M-644; NAS 1.55:3089) Avail: CASI HC A16/MF A03
CONFERENCES, EARTH ORBITS, PLASMA PHYSICS, PLASMA PROBES, SPACE CHARGE, SPACE PLASMAS, SPACECRAFT CHARGING

76

SOLID-STATE PHYSICS

Includes superconductivity.

N92-10677*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
POSITRON LIFETIME MEASUREMENTS IN CHIRAL NEMATIC LIQUID CRYSTALS
JAG J. SINGH (Hampton Univ., VA.), ABE EFTEKHARI (Hampton Inst., VA.), and DEVENDRA S. PARMAR Oct. 1991 14 p
(NASA-TP-3122; L-16948; NAS 1.60:3122) Avail: CASI HC A03/MF A01
LIQUID CRYSTALS, OPTICAL ACTIVITY, POSITRON ANNIHILATION, POSITRONS, TIME MEASUREMENT

81

ADMINISTRATION AND MANAGEMENT

Includes management planning and research.

N91-11591*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
TWENTY-SECOND ANNUAL NASA SUPPLY AND EQUIPMENT MANAGEMENT CONFERENCE
1989 384 p Conference held in Cocoa Beach, FL, 5-7 Dec. 1989
(NASA-CP-10042; NAS 1.55:10042) Avail: CASI HC A17/MF A03
CONFERENCES, INVENTORIES, LOGISTICS, MANAGEMENT METHODS, PROJECT MANAGEMENT, REGULATIONS, SAFETY

N91-13347*# National Aeronautics and Space Administration, Washington, DC.
ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT
FRANCIS T. HOBAN, ed. Jul. 1990 57 p
(NASA-SP-6101(03); NAS 1.21:6101(03)) Avail: CASI HC A04/MF A01
This volume is the third in an ongoing series on aerospace project management at NASA. Articles in this volume cover the attitude of the program manager, program control and performance measurement, risk management, cost plus award fee contracting, lessons learned from the development of the Far Infrared Absolute Spectrometer (FIRAS), small projects management, and age distribution of NASA scientists and engineers. A section on resources for NASA managers rounds out the publication.
Author

N91-24936* National Aeronautics and Space Administration, Washington, DC.
MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS
Mar. 1991 195 p
(NASA-SP-7500(25); NAS 1.21:7500(25)) Avail: CASI HC A09
This bibliography lists 731 reports, articles and other documents introduced into the NASA Scientific and Technical Information System in 1990. 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

N91-28026*# National Aeronautics and Space Administration, Washington, DC.
ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT

FRANCIS T. HOBAN, ed. 1991 62 p
(NASA-SP-6101(04); NAS 1.21:6101(04)) Avail: CASI HC A04/MF A01

This volume is the third in an ongoing series on aerospace project management at NASA. Articles in this volume cover the attitude of the program manager, program control and performance measurement, risk management, cost plus award fee contracting, lessons learned from the development of the Far Infrared Absolute Spectrometer (FIRAS), small projects management, and age distribution of NASA scientists and engineers. A section on resources for NASA managers rounds out the publication. Author

N92-22665* National Aeronautics and Space Administration, Washington, DC.
CONTINUOUS IMPROVEMENT: A BIBLIOGRAPHY WITH INDEXES, 1989-1991
Feb. 1992 59 p
(NASA-SP-7097; NAS 1.21:7097) Avail: CASI HC A04

This bibliography contains 198 annotated references to reports and journal articles entered into the NASA Scientific and Technical Information Data base during 1989 to 1991. Author

N92-27080* National Aeronautics and Space Administration, Washington, DC.
MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS
Mar. 1992 168 p
(NASA-SP-7500(26); NAS 1.21:7500(26)) Avail: CASI HC A08

This bibliography lists 630 reports, articles and other documents introduced into the NASA Scientific and Technical Information System in 1991. 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

N92-27609*# National Aeronautics and Space Administration, Washington, DC.
ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT
FRANCIS T. HOBAN, ed. 1992 58 p
(NASA-SP-6101(05); NAS 1.21:6101(05)) Avail: CASI HC A04/MF A01

This volume is the fifth in an ongoing series on aerospace project management at NASA. Articles in this volume cover: an overview of the project cycle; SE&I management for manned space flight programs; shared experiences from NASA Programs and Projects - 1975; cost control for Mariner Venus/Mercury 1973; and the Space Shuttle - a balancing of design and politics. A section on resources for NASA managers rounds out the publication. Author

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DOCUMENTATION AND INFORMATION SCIENCE

Includes information management; information storage and retrieval technology; technical writing; graphic arts; and micrography.

N91-10804*# National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1988 EDITION OF THE NASA THESAURUS (SUPPLEMENT 4) Semiannual Report
Sep. 1990 26 p
(NASA-SP-7064-SUPPL-4; NAS 1.21:7064-SUPPL-4) Avail: CASI HC A03/MF A01

The four-part cumulative supplement to the 1988 edition of 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

N91-13374*# National Aeronautics and Space Administration, Washington, DC.
NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1989
Feb. 1990 61 p
(NASA-SP-7063(04); NAS 1.21:7063(04)) Avail: NTIS HC free as PR-869; NASA Scientific and Technical Information Facility, BWI Airport, MD free

This catalog lists 190 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 1989. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N91-17833* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 38)
Jan. 1991 64 p
(NASA-SP-7039(38)-SECT-1; NAS 1.21:7039(38)-SECT-1) Avail: CASI HC A04

Abstracts are provided for 132 patents and patent applications entered into the NASA scientific and technical information system during the period July 1990 through December 1990. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N91-17834* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 38)
Jan. 1991 537 p
(NASA-SP-7039(38)-SECT-2; NAS 1.21:7039(38)-SECT-2) Avail: CASI HC A23

A subject index is provided for over 4900 patents and patent applications for the period May 1969 through December 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

N91-19962*# National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1988 EDITION OF THE NASA THESAURUS (SUPPLEMENT 5) Semiannual Report
Mar. 1991 49 p
(NASA-SP-7064-SUPPL-5; NAS 1.21:7064-SUPPL-5) Avail: CASI HC A03/MF A01

The four-part cumulative supplement to the 1988 edition of 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

N91-24939*# National Aeronautics and Space Administration, Washington, DC.
NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1987-1990
Feb. 1991 174 p
(NASA-SP-7063(05); NAS 1.21:7063(05); AD-A235956) Avail: NTIS HC free as PR-890; NASA Center for AeroSpace Information, BWI Airport, MD free

This catalog lists 783 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered into NASA Scientific and Technical Information Database during the year's 1987 through 1990. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N91-27009*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
PROCEEDINGS OF THE SECOND ANNUAL NASA SCIENCE INTERNET USER WORKING GROUP CONFERENCE
LENORE A. JACKSON, ed. (ST Systems Corp., Lanham, MD.) and J. PATRICK GARY, ed. Washington May 1991 429 p Conference held in San Mateo, CA, 11-14 Feb. 1991
(RTOP 656-63-00)
(NASA-CP-3117; REPT-91B00089; NAS 1.55:3117) Avail: CASI HC A19/MF A04
COMPUTER INFORMATION SECURITY, COMPUTER NETWORKS, CONFERENCES, MANAGEMENT METHODS, POLICIES, SOFTWARE ENGINEERING

N91-28042* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 39)
Jul. 1991 63 p
(NASA-SP-7039(39)-SECT-1; NAS 1.21:7039(39)-SECT-1) Avail: CASI HC A04
Abstracts are provided for 154 patents and patent applications entered into the NASA scientific and technical information systems during the period Jan. 1991 through Jun. 1991. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N91-29088* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 39)
Jul. 1991 553 p
(NASA-SP-7039(39)-SECT-2; NAS 1.21:7039(39)-SECT-2) Avail: CASI HC A24
A subject index is provided for over 5000 patents and patent applications for the period May 1969 through June 1991. 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

N92-22508* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 40)
Jan. 1992 81 p
(NASA-SP-7039(40)-SECT-1; NAS 1.21:7039(40)-SECT-1) Avail: CASI HC A05
Abstracts are provided for 181 patents and patent applications entered into the NASA scientific and technical information system during the period July 1991 through December 1991. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N92-27081* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 40)
Jan. 1992 564 p
(NASA-SP-7039(40)-SECT-2; NAS 1.21:7039(40)-SECT-2) Avail: CASI HC A24
A subject index is provided for over 5100 patents and patent applications for the period May 1969 through December 1991. 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

N92-31455* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 41)
Jul. 1992 578 p
(NASA-SP-7039(41)-SECT-2; NAS 1.21:7039(41)-SECT-2) Avail: CASI HC A25
A subject index is provided for over 5200 patents and patent applications for the period May 1969 through June 1992. 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

88

SPACE SCIENCES (GENERAL)

N91-12401*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
MEASUREMENT AND CHARACTERIZATION OF THE ACCELERATION ENVIRONMENT ON BOARD THE SPACE STATION
CHARLES R. BAUGHER, ed. Washington Aug. 1990 669 p Workshop held in Guntersville, AL, 11-14 Aug. 1986; sponsored by Teledyne Brown Engineering
(NAS8-36122)
(NASA-CP-3088; M-639; NAS 1.55:3088) Avail: CASI HC A99/MF A06
ACCELERATION (PHYSICS), ACCELEROMETERS, CONFERENCES, REDUCED GRAVITY, SPACE COMMERCIALIZATION, SPACE PROCESSING, SPACE STATIONS, SPACECRAFT ENVIRONMENTS, SPACELAB, SPACELAB PAYLOADS

N91-14897*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
INTERSTELLAR DUST: CONTRIBUTED PAPERS
ALEXANDER G. G. M. TIELENS, ed. and LOUIS J. ALLAMANDOLA, ed. Dec. 1989 512 p Symposium held in Santa Clara, CA, 26-30 Jul. 1988; sponsored by NASA. Ames Research Center, NSF, and the International Astronomical Union
(NASA-CP-3036; A-89050; NAS 1.55:3036) Avail: CASI HC A22/MF A04
ASTRONOMICAL MODELS, CONFERENCES, COSMIC DUST, INFRARED ASTRONOMY, INFRARED RADIATION, INTERSTELLAR EXTINCTION, INTERSTELLAR MATTER, MOLECULAR CLOUDS, STAR FORMATION

N91-15930*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SPACE STATION FREEDOM TOXIC AND REACTIVE MATERIALS HANDLING
CHARLES R. BAUGHER, ed. Washington Jul. 1990 703 p Workshop held in Huntsville, AL, 29 Nov. - 1 Dec. 1988; sponsored by Teledyne Brown Engineering
(NAS8-36122)
(NASA-CP-3085; M-638; NAS 1.55:3085) Avail: CASI HC A99/MF A06
CONFERENCES, HAZARDS, MATERIALS HANDLING, MICROGRAVITY APPLICATIONS, SPACE PROCESSING, SPACE STATION FREEDOM, SPACE STATION PAYLOADS, TOXICITY

N92-11930*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
THE MICROGRAVITY ENVIRONMENT OF THE SPACE SHUTTLE COLUMBIA MIDDECK DURING STS-32
BONNIE J. DUNBAR, DONALD A. THOMAS, and JEFF N. SCHOESS (Honeywell, Inc., Bloomington, MN.) Washington Nov.

1991 59 p
(NASA-TP-3140; S-640; NAS 1.60:3140) Avail: CASI HC A04/MF A01
ACCELERATION (PHYSICS), ACCELEROMETERS, COLUMBIA (ORBITER), REDUCED GRAVITY, SPACE SHUTTLE PAYLOADS, SPACEBORNE EXPERIMENTS

N92-11931*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
THE MICROGRAVITY ENVIRONMENT OF THE SPACE SHUTTLE COLUMBIA PAYLOAD BAY DURING STS-32
BONNIE J. DUNBAR, ROBERT L. GIESECKE, and DONALD A. THOMAS Washington Nov. 1991 51 p
(NASA-TP-3141; S-641; NAS 1.60:3141) Avail: CASI HC A04/MF A01
ACCELERATION (PHYSICS), ACCELEROMETERS, BAYS (STRUCTURAL UNITS), COLUMBIA (ORBITER), GRAVITATIONAL EFFECTS, REDUCED GRAVITY, SPACE SHUTTLE MISSION 61-C, SPACE SHUTTLE PAYLOADS, SPACEBORNE EXPERIMENTS

N92-33478*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
ORBITAL DEBRIS: TECHNICAL ISSUES AND FUTURE DIRECTIONS
ANDREW POTTER, ed. Sep. 1992 316 p Proceedings held in Baltimore, MD, 16-19 Apr. 1990; sponsored by AIAA and DOD
(NASA-CP-10077; S-637; NAS 1.55:10077) Avail: CASI HC A14/MF A03
COLLISIONS, CONFERENCES, EARTH ORBITAL ENVIRONMENTS, HYPERVELOCITY IMPACT, IMPACT DAMAGE, SPACE DEBRIS, SPACECRAFT SHIELDING

89

ASTRONOMY

Includes radio, gamma-ray, and infrared astronomy; and astrometry.

N91-32006*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
DEVELOPMENT OF THE BURST AND TRANSIENT SOURCE EXPERIMENT (BATSE)
J. M. HORACK Sep. 1991 322 p
(NASA-RP-1268; M-668; NAS 1.61-1268) Avail: CASI HC A14/MF A03
The Burst and Transient Source Experiment (BATSE), one of four instruments on the Gamma Ray Observatory, consists of eight identical detector modules mounted on the corners of the spacecraft. Developed at MSFC, BATSE is the most sensitive gamma ray burst detector flown to date. Details of the assembly and test phase of the flight hardware development are presented. Results and descriptions of calibrations performed at MSFC, TRW, and KSC are documented extensively. With the presentation of each calibration results, the reader is provided with the means to access raw calibration data for further review or analysis. Author

90

ASTROPHYSICS

Includes cosmology; celestial mechanics; space plasmas; and interstellar and interplanetary gases and dust.

N91-14100*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
THE INTERSTELLAR MEDIUM IN EXTERNAL GALAXIES: SUMMARIES OF CONTRIBUTED PAPERS
DAVID J. HOLLENBACH, ed. (National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.) and HARLEY A. THRONSON, JR., ed. (Wyoming Univ., Laramie.) Washington Jul. 1990 431 p Second conference held in the Grand Teton National Park, WY, 3-7 Jul. 1989; sponsored by NASA, NSF, and Wyoming Univ.
(RTOP 188-44-53)
(NASA-CP-3084; A-90075; NAS 1.55:3084) Avail: CASI HC A19/MF A04
CARBON MONOXIDE, CONFERENCES, COSMIC DUST, GALAXIES, INTERSTELLAR MATTER, RADIO ASTRONOMY, RADIO EMISSION, STAR FORMATION

N91-16858*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PAIRED AND INTERACTING GALAXIES: INTERNATIONAL ASTRONOMICAL UNION COLLOQUIUM NO. 124
JACK W. SULENTIC, ed. (Alabama Univ., Tuscaloosa.), WILLIAM C. KEEL, ed. (Alabama Univ., Tuscaloosa.), and C. M. TELESCO, ed. Nov. 1990 738 p Colloquium held in Tuscaloosa, AL, 4-7 Dec. 1989; sponsored by NASA, the International Astronomical Union, and Alabama Univ., Tuscaloosa
(NASA-CP-3098; M-652; NAS 1.55:3098) Avail: CASI HC A99/MF A06
ACTIVE GALACTIC NUCLEI, ASTRONOMY, COLLISIONS, CONFERENCES, GALACTIC CLUSTERS, GALACTIC STRUCTURE, INTERACTING GALAXIES, RADIO ASTRONOMY, STAR FORMATION, STARBURST GALAXIES

N92-21874*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE COMPTON OBSERVATORY SCIENCE WORKSHOP
CHRIS R. SHRADER, ed. (Computer Sciences Corp., Beltsville, MD.), NEIL GEHRELS, ed., and BRIAN DENNIS, ed. Washington Feb. 1992 552 p Workshop held in Annapolis, MD, 23-25 Sep. 1991
(NASA-CP-3137; REPT-92B00035; NAS 1.55:3137) Avail: CASI HC A24/MF A04
ASTRONOMICAL SPECTROSCOPY, ASTROPHYSICS, CONFERENCES, GAMMA RAY ASTRONOMY, GAMMA RAY BURSTS, GAMMA RAY OBSERVATORY, GAMMA RAY TELESCOPES

91

LUNAR AND PLANETARY EXPLORATION

Includes planetology; and manned and unmanned flights.

N91-24965* National Aeronautics and Space Administration, Washington, DC.
INTERNATIONAL EXPLORATION OF MARS. A SPECIAL BIBLIOGRAPHY
Jun. 1991 66 p
(NASA-SP-7091; NAS 1.21:7091) Avail: CASI HC A04
This bibliography lists 173 reports, articles, and other documents introduced into the NASA Scientific and Technical Information

Database on the exploration of Mars. Historical references are cited for background. The bibliography was created for the 1991 session of the International Space University. Author

N91-27057*# National Aeronautics and Space Administration. *Ames Research Center, Moffett Field, CA.*
SAND AND DUST ON MARS
RONALD GREELEY (Arizona State Univ., Tempe.) and ROBERT M. HABERLE May 1991 65 p Workshop held in Tempe, AZ, 4-5 Feb. 1991
(NCC2-346; RTOP 151-01-60-03)
(NASA-CP-10074; A-91130; NAS 1.55:10074) Avail: CASI HC A04/MF A01
CHEMICAL PROPERTIES, DUST, DUST STORMS, ELECTROSTATICS, MARS SURFACE, MINERALOGY, SANDS, WIND TUNNEL TESTS

N92-28345*# National Aeronautics and Space Administration, Washington, DC.
PLANETARY GEOSCIENCES, 1989-1990
MARIA T. ZUBER, ed. (National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.), ODETTE B. JAMES, ed. (Geological Survey, Washington, DC.), JONATHAN I. LUNINE, ed. (Arizona Univ., Tucson.), GLENN J. MACPHERSON, ed. (Smithsonian Institution, Washington, DC.), and ROGER J. PHILLIPS, ed. (Southern Methodist Univ., Dallas, TX.) 1992 81 p LIMITED REPRODUCIBILITY: More than 20% of this document may be affected by color photographs Original contains color illustrations
(NASA-SP-508; NAS 1.21:508; LC-91-33408; ISBN-0-16-036173-7)
NASA's Planetary Geosciences Programs (the Planetary Geology and Geophysics and the Planetary Material and Geochemistry Programs) provide support and an organizational framework for scientific research on solid bodies of the solar system. These research and analysis programs support scientific research aimed at increasing our understanding of the physical, chemical, and dynamic nature of the solid bodies of the solar system: the Moon, the terrestrial planets, the satellites of the outer planets, the rings, the asteroids, and the comets. This research is conducted using a variety of methods: laboratory experiments, theoretical approaches, data analysis, and Earth analog techniques. Through research supported by these programs, we are expanding our understanding of the origin and evolution of the solar system. This document is intended to provide an overview of the more significant scientific findings and discoveries made this year by scientists supported by the Planetary Geosciences Program. To a large degree, these results and discoveries are the measure of success of the programs. Author

N92-30302*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ELECTRICAL AND CHEMICAL INTERACTIONS AT MARS WORKSHOP, PART 1 Final Report
1992 31 p Workshop held in Cleveland, OH, 19-20 Nov. 1991
(RTOP 506-41-41)
(NASA-CP-10093; E-7016-1; NAS 1.55:10093) Avail: CASI HC A03/MF A01
AEROSPACE ENVIRONMENTS, CHEMICAL COMPOSITION, CONFERENCES, ELECTRICAL PROPERTIES, ENVIRONMENT MODELS, INTERACTIONS, MARS SURFACE, SPACE EXPLORATION

92

SOLAR PHYSICS

Includes solar activity, solar flares, solar radiation and sunspots.

N91-12456*# National Aeronautics and Space Administration. *Goddard Space Flight Center, Greenbelt, MD.*
CLIMATE IMPACT OF SOLAR VARIABILITY
KENNETH H. SCHATTEN, ed. and ALBERT ARKING, ed. Washington Aug. 1990 367 p Conference held in Greenbelt, MD, 24-27 Apr. 1990
(NASA-CP-3086; REPT-90B00129; NAS 1.55:3086) Avail: CASI HC A16/MF A03
CLIMATE, CLIMATE CHANGE, CLIMATOLOGY, CONFERENCES, ENVIRONMENT EFFECTS, GREENHOUSE EFFECT, LUMINOSITY, MAN ENVIRONMENT INTERACTIONS, SOLAR ACTIVITY EFFECTS, SOLAR RADIATION, SUN

N91-31061*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
ANALYSES OF RISKS ASSOCIATED WITH RADIATION EXPOSURE FROM PAST MAJOR SOLAR PARTICLE EVENTS
MARK D. WEYLAND (Rockwell International Corp., Houston, TX.), WILLIAM ATWELL (Rockwell International Corp., Houston, TX.), FRANCIS A. CUCINOTTA (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JOHN W. WILSON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and ALVA C. HARDY Aug. 1991 37 p
(NASA-TP-3137; S-639; NAS 1.60:3137) Avail: CASI HC A03/MF A01
AEROSPACE ENVIRONMENTS, COMPUTERIZED SIMULATION, HEMATOPOIETIC SYSTEM, RADIATION DOSAGE, RADIATION HAZARDS, RADIATION SHIELDING, SOLAR CORPUSCULAR RADIATION

93

SPACE RADIATION

Includes cosmic radiation; and inner and outer earth's radiation belts.

N91-16981*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CELLULAR TRACK MODEL OF BIOLOGICAL DAMAGE TO MAMMALIAN CELL CULTURES FROM GALACTIC COSMIC RAYS
FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.), ROBERT KATZ (Nebraska Univ., Lincoln.), JOHN W. WILSON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), LAWRENCE W. TOWNSEND (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JOHN E. NEALY (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and JUDY L. SHINN Washington Feb. 1991 13 p
(RTOP 199-04-16-11)
(NASA-TP-3055; L-16831; NAS 1.60:3055) Avail: CASI HC A03/MF A01
BIOLOGICAL MODELS (MATHEMATICS), CELLS (BIOLOGY), DAMAGE ASSESSMENT, GALACTIC COSMIC RAYS, HEAVY IONS, RADIATION DAMAGE, RADIATION PROTECTION, RELATIVE BIOLOGICAL EFFECTIVENESS (RBE)

N91-17999*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RADIATION PROTECTION FOR HUMAN MISSIONS TO THE MOON AND MARS

LISA C. SIMONSEN and JOHN E. NEALY Washington Feb. 1991 27 p
(RTOP 326-83-10-50)
(NASA-TP-3079; L-16892; NAS 1.60:3079) Avail: CASI HC A03/MF A01

GALACTIC COSMIC RAYS, LUNAR SURFACE, MARS SURFACE, NUCLEONS, RADIATION PROTECTION, RADIATION SHIELDING, SPACE STATIONS

N91-23017*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
IMPROVEMENTS IN COMPUTATIONAL ACCURACY OF BRYNTRN (A BARYON TRANSPORT CODE)
JUDY L. SHINN (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JOHN W. WILSON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), MARK WEYLAND (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), and FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.) Washington May 1991 37 p
(RTOP 199-04-16-11)
(NASA-TP-3093; L-16898; NAS 1.60:3093) Avail: CASI HC A03/MF A01

ALGORITHMS, BARYONS, COMPUTER PROGRAMS, EXTRATERRESTRIAL RADIATION, RADIATION COUNTERS, RADIATION DOSAGE, RADIATION SHIELDING, RADIATION TRANSPORT

N91-26107*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RADIATION RISK PREDICTIONS FOR SPACE STATION FREEDOM ORBITS
FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.), WILLIAM ATWELL (Rockwell International Corp., Houston, TX.), MARK WEYLAND (Rockwell International Corp., Houston, TX.), ALVA C. HARDY (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), JOHN W. WILSON (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), LAWRENCE W. TOWNSEND (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), JUDY L. SHINN (National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.), and ROBERT KATZ (Nebraska Univ., Lincoln.) Washington Jun. 1991 22 p
(RTOP 199-04-16-11)
(NASA-TP-3098; L-16903; NAS 1.60:3098) Avail: CASI HC A03/MF A01

BIOLOGICAL MODELS (MATHEMATICS), CELLS (BIOLOGY), IRRADIATION, PHYSIOLOGICAL EFFECTS, RADIATION EFFECTS, RADIATION HAZARDS, SPACE STATION FREEDOM, SPACE STATIONS

N92-15956*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSPORT METHODS AND INTERACTIONS FOR SPACE RADIATIONS
JOHN W. WILSON (California Univ., Berkeley. Lawrence Berkeley Lab.), LAWRENCE W. TOWNSEND (Old Dominion Univ., Norfolk, VA.), WALTER S. SCHIMMERLING (Old Dominion Univ., Norfolk, VA.), GOVIND S. KHANDELWAL, FERDOUS S. KHAN, JOHN E. NEALY, FRANCIS A. CUCINOTTA, LISA C. SIMONSEN, JUDY L. SHINN, and JOHN W. NORBURY (Rider Coll., Lawrenceville, NJ.) Washington Dec. 1991 615 p
(RTOP 199-04-16-11)
(NASA-RP-1257; L-16882; NAS 1.61:1257) Avail: CASI HC A99/MF A06

A review of the program in space radiation protection at the Langley Research Center is given. The relevant Boltzmann equations are given with a discussion of approximation procedures for space applications. The interaction coefficients are related to solution of the many-body Schroedinger equation with nuclear and electromagnetic forces. Various solution techniques are discussed to obtain relevant interaction cross sections with extensive comparison with experiments. Solution techniques for the Boltzmann equations are discussed in detail. Transport computer code validation is discussed through analytical benchmarking, comparison with other codes, comparison with laboratory experiments and measurements in space. Applications to lunar and Mars missions are discussed. Author

N92-15959*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HZETRN: A HEAVY ION/NUCLEON TRANSPORT CODE FOR SPACE RADIATIONS
JOHN W. WILSON (Old Dominion Univ., Norfolk, VA.), SANG Y. CHUN (Old Dominion Univ., Norfolk, VA.), FOROOZ F. BADAVI, LAWRENCE W. TOWNSEND, and STANLEY L. LAMKIN (Analytical Services and Materials, Inc., Hampton, VA.) Dec. 1991 47 p
(RTOP 593-42-11-01)
(NASA-TP-3146; L-16952; NAS 1.60:3146) Avail: CASI HC A03/MF A01

COMPUTER PROGRAMS, HEAVY IONS, NUCLEONS, PARTICLE INTERACTIONS, RADIATION SHIELDING, SPACECRAFT SHIELDING

N92-22218*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN EFFICIENT HZETRN (A GALACTIC COSMIC RAY TRANSPORT CODE)
JUDY L. SHINN and JOHN W. WILSON Apr. 1992 17 p
(RTOP 593-42-21)
(NASA-TP-3147; L-16954; NAS 1.60:3147) Avail: CASI HC A03/MF A01

COMPUTER PROGRAMS, ENERGETIC PARTICLES, GALACTIC COSMIC RAYS, GRID GENERATION (MATHEMATICS), INTERPOLATION, MATHEMATICAL MODELS, RADIATION SHIELDING, SPATIAL MARCHING, TRANSPORT THEORY

N92-25100*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MIRACAL: A MISSION RADIATION CALCULATION PROGRAM FOR ANALYSIS OF LUNAR AND INTERPLANETARY MISSIONS
JOHN E. NEALY, SCOTT A. STRIEPE, and LISA C. SIMONSEN Washington May 1992 16 p
(RTOP 593-42-31-01)
(NASA-TP-3211; L-17044; NAS 1.60:3211) Avail: CASI HC A03/MF A01

COMPUTER PROGRAMS, MANNED SPACE FLIGHT, MATHEMATICAL MODELS, RADIATION DOSAGE, RADIATION TOLERANCE, SPACE EXPLORATION

99

GENERAL

N91-15975*# National Aeronautics and Space Administration, Washington, DC.
ENGINES AND INNOVATION: LEWIS LABORATORY AND AMERICAN PROPULSION TECHNOLOGY
VIRGINIA PARKER DAWSON 1991 277 p
(NASA-SP-4306; NAS 1.21:4306; LC-90-20747) Avail: CASI HC A13/MF A03

This book is an institutional history of the NASA Lewis Research Center, located in Cleveland, Ohio, from 1940, when Congress authorized funding for a third laboratory for the National Advisory Committee for Aeronautics, through the 1980s. The history of the laboratory is discussed in relation to the development of American propulsion technology, with particular focus on the transition in

the 1940s from the use of piston engines in airplanes to jet propulsion and that from air-breathing engines to rocket technology when the National Aeronautics and Space Administration was established in 1958. The personalities and research philosophies of the people who shaped the history of the laboratory are discussed, as is the relationship of Lewis Research Center to the Case Institute of Technology. Author

N91-23021*# National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY 2000, VOLUME 1
Mar. 1991 416 p Conference held in Washington, DC, 27-28 Nov. 1990
(NASA-CP-3109-VOL-1; NAS 1.55:3109-VOL-1) Avail: CASI HC A18/MF A04
ARTIFICIAL INTELLIGENCE, COMPUTER PROGRAMS, COMPUTER SYSTEMS DESIGN, ROBOTICS, TECHNOLOGY UTILIZATION

N91-24041*# National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY 2000, VOLUME 2
1991 369 p Conference held in Washington, DC, 27-28 Nov. 1990
(NASA-CP-3109-VOL-2; NAS 1.55:3109-VOL-2) Avail: CASI HC A16/MF A03
CONFERENCES, INFORMATION DISSEMINATION, NASA PROGRAMS, PRODUCT DEVELOPMENT, TECHNOLOGY TRANSFER, TECHNOLOGY UTILIZATION

N91-24972*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FIRST LDEF POST-RETRIEVAL SYMPOSIUM ABSTRACTS
ARLENE S. LEVINE, comp. Jun. 1991 145 p Symposium held in Kissimmee, FL, 2-8 Jun. 1991
(RTOP 196-88-00-03)
(NASA-CP-10072; NAS 1.55:10072) Avail: CASI HC A07/MF A02
ATMOSPHERIC EFFECTS, EXTRATERRESTRIAL RADIATION, LONG DURATION EXPOSURE FACILITY, LONG TERM EFFECTS, RADIATION DOSAGE

N91-28060*# National Aeronautics and Space Administration, Washington, DC.
FIRST AMONG EQUALS: THE SELECTION OF NASA SPACE SCIENCE EXPERIMENTS
JOHN E. NAUGLE 1990 145 p
(NASA-SP-4215; NAS 1.21:4215) Avail: CASI HC A07/MF A02
The process is recounted by which NASA and the scientific community have, since 1958, selected individual experiments for NASA space missions. It explores the scientific and organizational issues involved in the selection process and discusses the significance of the process in the character and accomplishments of U.S. space activities. Author

N92-22423*# *National Aeronautics and Space Administration*, Washington, DC.
TECHNOLOGY 2001: THE SECOND NATIONAL TECHNOLOGY TRANSFER CONFERENCE AND EXPOSITION, VOLUME 1
Dec. 1991 527 p Conference held in San Jose, CA, 3-5 Dec. 1991
(NASA-CP-3136-VOL-1; NAS 1.55:3136-VOL-1) Avail: CASI HC A23/MF A04
ARTIFICIAL INTELLIGENCE, BIOTECHNOLOGY, CONFERENCES, MANUFACTURING, ROBOTICS, TECHNOLOGY TRANSFER

N92-22676*# National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY 2001: THE SECOND NATIONAL TECHNOLOGY TRANSFER CONFERENCE AND EXPOSITION, VOLUME 2
Dec. 1991 518 p Conference held in San Jose, CA, 3-5 Dec. 1991
(NASA-CP-3136-VOL-2; NAS 1.55:3136-VOL-2) Avail: CASI HC A22/MF A04
GOVERNMENT/INDUSTRY RELATIONS, MANUFACTURING, ROBOTICS, TECHNOLOGY TRANSFER

N92-23280*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LDEF: 69 MONTHS IN SPACE. FIRST POST-RETRIEVAL SYMPOSIUM, PART 1
ARLENE S. LEVINE, ed. Washington Jan. 1992 603 p *Symposium held in Kissimmee, FL, 2-8 Jun. 1991; sponsored by* NASA, Washington Original contains color illustrations
(RTOP 196-88-00-03)
(NASA-CP-3134-PT-1; L-17042-PT-1; NAS 1.55:3134-PT-1)
CONFERENCES, LONG DURATION EXPOSURE FACILITY, POSTFLIGHT ANALYSIS, SPACEBORNE EXPERIMENTS

N92-24806*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LDEF: 69 MONTHS IN SPACE. FIRST POST-RETRIEVAL SYMPOSIUM, PART 2
ARLENE S. LEVINE, ed. Jan. 1992 588 p Symposium held in Kissimmee, FL, 2-8 Jun. 1991; sponsored by NASA, Washington Original contains color illustrations
(RTOP 196-88-00-03)
(NASA-CP-3134-PT-2; L-17042-PT-2; NAS 1.55:3134-PT-2)
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EXTRATERRESTRIAL ENVIRONMENTS, LONG DURATION EXPOSURE FACILITY, RADIATION EFFECTS, SPACEBORNE EXPERIMENTS

N92-28344*# National Aeronautics and Space Administration, Washington, DC.
NASA ENGINEERS AND THE AGE OF APOLLO

SYLVIA DOUGHTY FRIES 1992 232 p
(NASA-SP-4104; NAS 1.21:4104; LC-90-39761;
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A historical account of NASA's Apollo era engineers is presented. This book is based on interviews that were conducted with fifty-one 'typical' engineers. Author

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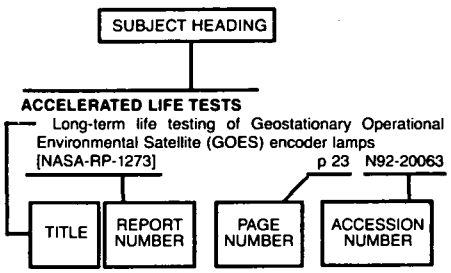

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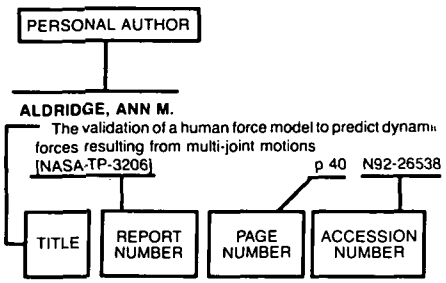

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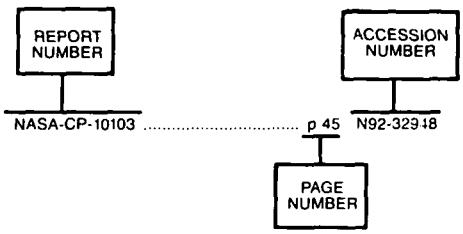

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