NASA Technical Memorandum 85735

Scientific and Technical Information
Output of the Langley Research Center
for Calendar Year 1983

JANUARY 1984
NASA Technical Memorandum 85735

Scientific and Technical Information
Output of the Langley Research Center
for Calendar Year 1983

Compiled by
Research Information and Applications Division
Langley Research Center
Hampton, Virginia

NASA
National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23665
1984
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FOREWORD

This report contains a listing of Langley Research Center's scientific and technical research output for calendar year 1983.

The intent of this report is to provide a greater awareness of the broad scope of results and the importance of the research and development work conducted by scientists and engineers at Langley. This current awareness is mandated by the National Aeronautics and Space Act of 1958, which provides for the widest practical dissemination of NASA research.

During the calendar year 1983, Langley's contributions to NASA and non-NASA literature included 157 NASA Formal Reports, 121 Quick-Release Technical Memorandums, 260 Contractor Reports, 168 Journal Articles and Other Publications, 477 Meeting Presentations, 206 Technical Talks, 8 Computer Programs, 136 Tech Briefs, and 28 Patents. In addition, during the year 19 conferences, symposia, and workshops were sponsored or cosponsored by Langley and held locally.

Comments or suggestions concerning this publication should be addressed to the Research Information and Applications Division, Mail Stop 180A, NASA Langley Research Center, Hampton, Virginia 23665.

Jess G. Ross
Chief, Research Information and Applications Division
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<td>Jan. 3-6</td>
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<td>4. Langley Conference on Shuttle Performance: Lessons Learned</td>
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<td>Jim J. Jones and James P. Arrington</td>
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<td>287</td>
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<tr>
<td>5. NASA Space Station Technology Workshop</td>
<td>Mar. 28-31</td>
<td>Robert L. Wright and Aubrey G. Price</td>
<td>1</td>
<td>740</td>
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<tr>
<td>7. NASA Workshop on Tough Composite Materials</td>
<td>May 24-26</td>
<td>Louis F. Vosteen</td>
<td>6</td>
<td>130</td>
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<tr>
<td>8. NASA/ASTM Second United States/Japan Conference on Composite Materials</td>
<td>June 6-8</td>
<td>George L. Roderick</td>
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<td>168</td>
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<td>9. NASA Workshop on Transonic Unsteady Aerodynamics and Aeroelasticity</td>
<td>June 22-23</td>
<td>John W. Edwards</td>
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<td>10. NASA/MSFC Applications of Tethers in Space Workshop</td>
<td>June 15-17</td>
<td>Paul M. Siemers III</td>
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<td>11. STEP Experiment Requirements Workshop</td>
<td>June 29 - July 1</td>
<td>Marcus L. Brumfield</td>
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<tr>
<td>12. Workshop on Advanced Materials/Structures Technology for Rotorcraft</td>
<td>Aug. 17-19</td>
<td>Robert J. Huston</td>
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<tr>
<td>15. 1st Annual NASA Aircraft Controls Workshop</td>
<td>Oct. 25-27</td>
<td>Gary F. Beasley</td>
<td>9</td>
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<tr>
<td>16. SIAM Conference on Parallel Processing for Scientific Computing</td>
<td>Nov. 10-11</td>
<td>Milton E. Rose</td>
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<tr>
<td>17. NASA/AHS Annual Meeting</td>
<td>Nov. 29 - Dec. 1</td>
<td>Otis S. Childress, Jr.</td>
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<td><strong>Total</strong></td>
<td><strong>115</strong></td>
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INTRODUCTION

The NASA Langley Research Center is one of the Nation's leading laboratories for research and development in the sciences of aeronautics and space technology. Langley conducts basic and applied research in fluid and flight mechanics, structures and materials, acoustics and noise reduction, measurement and instrumentation systems, numerical methods and techniques, data systems, electronics, physics, chemistry, and Earth and space sciences.

This publication is a compilation of Langley's scientific and technical research output for 1983 which is processed through the Center's Research Information and Applications Division, an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. This document is intended as a reference summary for researchers and as a current awareness publication for the scientific, research, and academic community.

The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. Details of the availability of the research references in this document are found in the section, "Availability," on page vii.

The citations are grouped first by Langley Directorates, then by the Langley Office or Division to which the senior author or innovator belongs. Citations are listed alphabetically by author or innovator under the following headings: Formal Reports (Technical Papers, Technical Memorandums, Conference Publications, Reference Publications, and Special Publications), Quick-Release Technical Memorandums, Contractor Reports, Journal Articles and Other Publications, Meeting Presentations, Technical Talks, Computer Programs, Tech Briefs, and Patents. If a citation has more than one author, it is listed only once under the first author's name. The subject category number used to index the citation and the Research Technology Objectives and Plans (RTOP) number are noted below citations when appropriate.

Computer Programs listed are those which were submitted by Langley to COSMIC in 1983.

The NASA Tech Briefs cited have either been published or submitted in 1983 for publication in "NASA Tech Briefs," a quarterly journal for United States industry, entrepreneurs, and academia. Subscriptions to this journal are available through the NASA Technology Utilization Program by writing to the Director, Technology Transfer Division, NASA Scientific and Technical Information, P. O. Box 8757, Baltimore/Washington International Airport, Maryland 21240.

Patents listed, which are owned in whole or in part by Langley Research Center personnel, have been published in issues of "Scientific and Technical Aerospace Reports" (STAR), a NASA announcement journal for report literature. A subscription to STAR is available from the U.S. Government Printing Office (GPO) or to qualified recipients from the NASA Scientific and Technical Information Facility (STIF).
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<th>Category</th>
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<tr>
<td>Formal Reports</td>
<td>National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161</td>
</tr>
<tr>
<td>Quick-Release Technical Memorandums</td>
<td>NASA Scientific and Technical Information Facility (STIF) P. O. Box 8757 Baltimore/Washington International Airport, MD 21240</td>
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<tr>
<td>Contractor Reports</td>
<td>NASA Industrial Applications Centers (IAC) (See Appendix for addresses of IAC's)</td>
</tr>
<tr>
<td>Computer Programs</td>
<td>Computer Software Management and Information Center (COSMIC) 112 Barrow Hall University of Georgia Athens, GA 30602</td>
</tr>
<tr>
<td>Langley Tech Briefs</td>
<td>Office of Technology Utilization and Applications Mail Stop 139A NASA Langley Research Center Hampton, VA 23665</td>
</tr>
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<td>(also Technical Support Packages (TSP's))</td>
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   (Avail: NTIS Subject Category 64 RTOP 505-31-83)

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(Avail: NTIS Subject Category 64 RTOP 505-31-83)
(Avail: NTIS Subject Category 02 RTOP 505-31-83)

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(Avail: NTIS Subject Category 64 RTOP 505-31-83)


Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

   (Subject Category 05 RTOP 534-02-13)

Technical Talks

   (Subject Category 05 RTOP 534-02-13)

Computer Programs

No computer programs.

Tech Briefs

PUBLICATIONS FOR AERONAUTICAL SYSTEMS OFFICE

Formal Reports


Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 02 RTOP 505-43-43)

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   (Avail: STIF Subject Category 01 RTOP 505-43-43)

Journal Articles and Other Publications

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   (Subject Category 05 RTOP 505-43-43)

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    (Subject Category 05 RTOP 505-43-43)


Technical Talks


106. Driver, Cornelius: Progress in Supersonic Cruise Technology. Presented at the Aerodynamics Institute Seminar on Supersonic Transport Technology, October 14, 1983, Aachen, West Germany. (Subject Category 02 RTOP 505-43-43)


Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.
Formal Reports

   (Avail: NTIS Subject Category 15 RTOP 506-62-23)

   (Avail: NTIS Subject Category 15 RTOP 506-62-23)

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR SCOUT PROJECT OFFICE

Formal Reports
No formal reports.

Quick-Release Technical Memorandums
No quick-release technical memorandums.

Contractor Reports
No contractor reports.

Journal Articles and Other Publications
No journal articles and other publications.

Meeting Presentations
No meeting presentations.

Technical Talks
No technical talks.

Computer Programs
No computer programs.

Tech Briefs


Patents
No patents.
PUBLICATIONS FOR AIRCRAFT ENERGY EFFICIENCY PROJECT OFFICE

Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations


Technical Talks

136. Chapman, Andrew J.; and Bohon, Herman L.: Application of Composites to Transport Aircraft Structures. Presented at the Society of Experimental Stress Analysis 1983 Fall Meeting, November 7-9, 1983, Salt Lake City, Utah. (Subject Category 39 RTOP 534-06-13)


Computer Programs

No computer programs.

Patents

No patents.
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR ELECTRONICS

Formal Reports
No formal reports.

Quick-Release Technical Memorandums
No quick-release technical memorandums.

Contractor Reports
No contractor reports.

Journal Articles and Other Publications
No journal articles and other publications.

Meeting Presentations
No meeting presentations.

Technical Talks
No technical talks.

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
### Formal Reports

(Avail: NTIS Subject Category 61 RTOP 505-31-83)

(Avail: NTIS Subject Category 04 RTOP 534-04-13)

### Quick-Release Technical Memorandums

(Avail: NTIS Subject Category 61 RTOP 992-16-05)

### Contractor Reports

(Avail: STIF Subject Category 59 RTOP 505-31-83)

(Avail: IAC Subject Category 05 RTOP 505-45-23)

### Journal Articles and Other Publications

(Subjct Category 61 RTOP 505-31-83)

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Meeting Presentations


(Subject Category 59 RTOP 505-31-83)

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Technical Talks

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Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR INSTRUMENT RESEARCH DIVISION

Formal Reports


Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 35 RTOP 505-31-53)

(Avail: NTIS Subject Category 35 RTOP 505-31-53)

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Contractor Reports

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(Avail: STIF Subject Category 35 RTOP 323-51-61)

Journal Articles and Other Publications

(Subect Category 23 RTOP 179-80-10)

(Subj ect Category 35 RTOP 665-40-40)

(Subj ect Category 48 RTOP 506-61-73)

(Subj ect Category 48 RTOP 506-61-73)


Meeting Presentations


191. Cantrell, John H., Jr.: Assessment of Burn Depth With Ultrasound: A Promising Methodology in Burn Research. Presented at the Burn Conference "Where are the Frontiers in the Understanding of Burn Injuries?", September 26-28, 1983, Washington, DC. (Subject Category 71 RTOP 505-33-23)


198. Heyman, Joseph S.; and Yoder, L.: An Interferometric Measurement of the Acoustoelastic Constant of Rock Core Samples. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending. (Subject Category 71 RTOP 505-33-23)


204. Li, Peter; Winfree, William P.; Yost, W. T.; and Cantrell, John H., Jr.: Observation of Collinear Beam-Mixing by an Amplitude Modulated Ultrasonic Wave in a Solid. Presented at the IEEE 1983 Ultrasonics Symposium, October 31 - November 2, 1983, Atlanta, Georgia. Proceedings Pending. (Subject Category 71 RTOP 505-33-23)


210. Upchurch, Billy T.; Wood, George M.; Swann, Robert T.; Allen, Gayle J.; Miller, Irvin M.; and Hoyt, Ronald F.: Mass Spectrometric Investigation of Isotope Exchange Reactions of Molecular Oxygen With Several Oxide Surfaces. Presented at the 35th Southeastern Regional Meeting of the American Chemical Society, November 9-11, 1983, Charlotte, North Carolina. (Subject Category 23 RTOP 307-03-02)


Technical Talks


219. Crouch, Roger K.; Debnam, W. J.; and Taylor, Ray: Thermal Diffusivity Measurements in PbTe and PbSnTe from Room Temperature to 1000°C. Presented at the South Dakota School of Mines and Technology, 18th International Thermal Conductivity Conference, October 3-5, 1983, Rapid City, South Dakota. (Subject Category 27 RTOP 179-80-70)


   (Subject Category 71  RTOP 505-53-23)

   (Subject Category 71  RTOP 505-33-23)

   (Subject Category 71  RTOP 505-53-23)

   (Subject Category 35  RTOP 505-31-13)

   (Subject Category 19  RTOP 506-58-13)

   (Subject Category 23  RTOP 506-54-23)

   (Subject Category 71  RTOP 505-33-23)

   (Subject Category 74  RTOP 506-54-13)

Computer Programs

No computer programs.
Tech Briefs


*Army Structures Laboratory, USARTL (AVRADCOM)
247. Singh, Jag J. (Langley Research Center); Khandelwal, G. S. (Old Dominion University); and Mall, Gerald H. (Computer Sciences Corporation): Radionuclide Counting Technique Measures Wind Velocity. NASA Tech Brief LAR-12971.


Patents


252. Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A.: Pyroelectric Detector Arrays. U.S. Patent 4,379,970. Issued April 12, 1983. (Subject Category 33)


PUBLICATIONS FOR FLIGHT DYNAMICS AND CONTROL DIVISION

Formal Reports


Quick-Release Technical Memorandums


(Avail: NTIS Subject Category 08 RTOP 505-34-03)

(Avail: NTIS Subject Category 61 RTOP 505-34-03)

Contractor Reports

(Avail: STIF Subject Category 05 RTOP 505-34-03)

(Avail: NTIS Subject Category 61 RTOP 505-37-23)

(Avail: NTIS Subject Category 39 RTOP 506-57-13)

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   (Subject Category 08 RTOP 506-57-13)

   (Subject Category 18 RTOP 506-57-13)

Technical Talks

   (Subject Category 63 RTOP 506-57-13)

Computer Programs

No computer programs.

Tech Briefs


Patents

PUBLICATIONS FOR FLIGHT ELECTRONICS DIVISION

Formal Reports


Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


Technical Talks


352. Hunter, Monica Y.: Development of the Pushbroom Microwave Radiometer. Presented at the National Technical Association Student Technical Symposium, July 25-30, 1983, Kissimmee, Florida. (Subject Category 33 RTOP 506-54-23)


Computer Programs

No computer programs.

Tech Briefs


360. Crouch, Roger K.; and Debnam, W. J. (Langley Research Center); and Ryan, R. (BOMCO, Inc.): Ampoule With Integral Feedthroughs. NASA Tech Brief LAR-12899.


Patents

No patents.


378. Parrish, Russell V.; McKissick, Burnell T.; and Ashworth, Billy R.: Comparison of Simulator Fidelity Model Predictions With In-Simulator Evaluation Data. NASA TP-2106, February 1983, 37 p. (Avail: NTIS Subject Category 05 RTOP 505-35-33)


Quick-Release Technical Memorandums


*Army Structures Laboratory, USARTL (AVRADCOM)

Contractor Reports


Journal Articles and Other Publications


Meeting Presentations


447. Spady, Amos A., Jr.; Harris, Randall L., Sr.; and Comstock, Raymond: Flight Versus Simulator Scan Behavior. Presented at the Ohio State University Second Symposium on Aviation Psychology, April 26-27, 1983, Columbus, Ohio. (Subject Category 53 RTOP 534-04-13)


Technical Talks


460. Spitzer, Cary R.: Planetary Exploration. Presented at the NASA/ASEE Summer Faculty Research Program Lecture Series, June 14, 1983, Hampton, Virginia. (Subject Category 91 RTOP 505-34-23)


Computer Programs

No computer programs.

Tech Briefs


Patents

PUBLICATIONS FOR OFFICE OF DIRECTOR FOR STRUCTURES

Formal Reports
No formal reports.

Quick-Release Technical Memorandums
No quick-release technical memorandums.

Contractor Reports
No contractor reports.

Journal Articles and Other Publications
No journal articles and other publications.

Meeting Presentations
No meeting presentations.

Technical Talks
(Subject Category 24      RTOP 505-33-33)

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
PUBLICATIONS FOR MATERIALS DIVISION

Formal Reports

(Avail: NTIS Subject Category 24 RTOP 506-53-23)

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(Avail: NTIS Subject Category 26 RTOP 505-43-43)

Quick-Release Technical Memorandums

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(Avail: NTIS Subject Category 27 RTOP 505-33-33)

(Avail: STIF Subject Category 24 RTOP 505-42-23)

(Avail: NTIS Subject Category 24 RTOP 505-42-23)

*Army Structures Laboratory, USARTL (AVRADCOM)


*Army Structures Laboratory, USARTL (AVRADCOM)
(Avail: NTIS Subject Category 24 RTOP 505-33-23) 

Contractor Reports 

(Avail: NTIS Subject Category 39 RTOP 505-33-33) 

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(Subject Category 27 RTOP 505-33-33)

(Subject Category 27 RTOP 505-33-33)

(Subject Category 39 RTOP 505-33-23)

(Subject Category 23 RTOP 307-01-02)

*Army Structures Laboratory, USARL (AVRADCOM)


530. Wakelyn, N. T.; Levy, Gerald F.; and Salop, John: Comment on "The Application of Forest Classification From Landsat Data as a Basis for Natural Hydrocarbon Emission Estimation and Photochemical Oxidant Model Simulations in Southeastern Virginia." Journal of the Air Pollution Control Association, Volume 33, June 1983, p. 606-607. (Subject Category 45  RTOP 505-33-33)


Meeting Presentations


*Army Structures Laboratory, USARTL (AVRDCOM)
(Subject Category 24 RTOP 505-33-33)

(Subject Category 26 RTOP 505-33-13)

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(Subject Category 24 RTOP 506-53-23)

*Army Structures Laboratory, USARTL (AVRADCOM)
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(Subject Category 39 RTOP 505-33-33)

(Subject Category 24 RTOP 532-06-13)

(Subject Category 27 RTOP 505-33-33)

(Subject Category 27 RTOP 505-33-33)

(Subject Category 27 RTOP 505-33-33)

(Subject Category 27 RTOP 505-33-33)

(Subject Category 27 RTOP 505-33-33)

*Army Structures Laboratory, USARL (AVRADCOM)


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Computer Programs

No computer programs.

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Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
PUBLICATIONS FOR LOW-SPEED AERODYNAMICS DIVISION

Formal Reports

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Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.
Formal Reports

(Avail: IAC Subject Category 02 RTOP 505-31-23)

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1068. Ray, E. J.; and Ladson, C. L.: Review of the Advanced Technology Airfoil Test (ATAT) Program in the 0.3-M TCT. Presented at the NASA Wind-Tunnel Wall-Interference Assessment/Correction Workshop, January 25-26, 1983, Hampton, Virginia. NASA CP Pending. (Subject Category 09 RTOP 505-31-53)


1075. Streett, Craig L.; Zang, Thomas A.; and Hussaini, M. Yousuff: Spectral Multigrid Methods With Applications to Transonic Potential Flow. Presented at the Colorado State University, AFOSR/NASA International Multigrid Conference, April 6-8, 1983, Copper Mountain, Colorado. (Subject Category 64 RTOP 505-31-03)


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Computer Programs


Tech Briefs


Patents

No patents.
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Formal Reports
No formal reports.

Quick-Release Technical Memorandums
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Contractor Reports
No contractor reports.

Journal Articles and Other Publications
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Meeting Presentations

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Technical Talks

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
Formal Reports

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(Avail: NTIS Subject Category 48 RTOP 146-40-15)

(Avail: NTIS Subject Category 45 RTOP 925-81-01)

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<td>Journal of the Atmospheric Sciences</td>
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1289. Minnis, Patrick; Gibson, Gary G.; and Denn, Frederick M.: Diurnal Cloud Variations Over South America and the Southeastern Pacific. Presented at the AMS/INPE/BMS First International Conference on Southern Hemisphere Meteorology, July 31 - August 6, 1983, Sao Jose dos Campos, Brazil. In Proceedings. (Subject Category 47 RTOP 672-22-04)


1301. Stuhlmann, Rolf; Minnis, Patrick; and Smith, G. Louis: A Comparison of Experimental and Theoretical Bidirectional Reflectance Functions. Presented at the AMS Fifth Conference on Atmospheric Radiation, October 31 - November 3, 1983, Baltimore, Maryland. In Proceedings. (Subject Category 47 RTOP 672-40-06)


Technical Talks


1316. Grose, W. L.; and Boville, B.: The Role of Radiative-Dynamical Processes in the Maintenance of the Zonal Mean Circulation in the Lower Stratosphere. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany. (Subject Category 47 RTOP 147-32-07)


1318. Grose, William L.; Remsberg, Ellis E.; Russell, James M., III; and Gapcynski, John P.: Derived Dynamical Quantities From Nimbus 7 LIMS Measurements and Application to the Study of a Sudden Stratospheric Warming. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany. (Subject Category 47 RTOP 147-32-07)

1319. Harrison, Edwin F.; and Minnis, Patrick: Diurnal Cloud Variations for Several Seasons. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany. (Subject Category 47 RTOP 672-22-04)


1326. McCormick, M. P.: Stratospheric Aerosol Climatology in the Polar Regions as Observed by SAM II. Presented at the XVIII General Assembly of the IUGG, August 15-27, 1983, Hamburg, Germany. (Subject Category 46 RTOP 665-10-40)


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1337. Shipley, S. T.; Browell, E. V.; Orndorff, B. L.; and McDougal, D. S.: Airborne Lidar Observations of Long-Range Transport in the Free Troposphere. Presented at the American Meteorological Society Sixth Symposium on Turbulence and Diffusion, March 22-25, 1983, Boston, Massachusetts. (Subject Category 47 RTOP 146-20-10)


Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
Formal Reports


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Quick-Release Technical Memorandums

(Avail: NTIS Subject Category 12 RTOP 506-63-32)

1363. Bradley, Pamela F.; Siemers, Paul M., III; Flanagan, Paul F.; and Henry, Martin W.: Pressure Distributions Obtained on a 0.04-Scale and 0.02-Scale Model of the Space Shuttle Orbiter's Forward Fuselage in the Langley 20-Inch Mach 6 Air Tunnel. NASA TM-84629, March 1983, 43 p.  
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(Avail: NTIS Subject Category 34 RTOP 506-51-13)


Contractor Reports


(Avail: NTIS Subject Category 61 RTOP 506-51-13)

(Avail: NTIS Subject Category 61 RTOP 506-51-13)

(Avail: NTIS Subject Category 18 RTOP 506-62-23)

(Avail: NTIS Subject Category 16 RTOP 506-51-13)

(Avail: NTIS Subject Category 18 RTOP 506-62-23)

(Avail: NTIS Subject Category 07 RTOP 505-43-53)

(Avail: NTIS Subject Category 15 RTOP 506-51-13)

(Avail: NTIS Subject Category 61 RTOP 506-51-13)

(Avail: NTIS Subject Category 44 RTOP 506-55-13)

(Avail: NTIS Subject Category 01 RTOP 505-34-13)
Journal Articles and Other Publications


   (Subject Category 05 RTOP 505-43-53)

   (Subject Category 45 RTOP 540-01-13)

   (Subject Category 34 RTOP 506-51-13)

   (Subject Category 18 RTOP 506-62-43)

   (Subject Category 15 RTOP 540-03-13)

   (Subject Category 26 RTOP 506-55-43)

   (Subject Category 26 RTOP 506-55-43)

   (Subject Category 18 RTOP 506-51-33)

   (Subject Category 19 RTOP 506-63-32)

   (Subject Category 34 RTOP 506-51-13)

   (Subject Category 34 RTOP 506-51-33)
(Subject Category 34 RTOP 506-51-33)

(Subject Category 73 RTOP 199-20-76)

(Subject Category 18 RTOP 199-20-76)

(Subject Category 73 RTOP 199-20-76)

(Subject Category 16 RTOP 540-03-13)

(Subject Category 36 RTOP 506-55-13)

(Subject Category 34 RTOP 506-51-33)

(Subject Category 34 RTOP 506-51-13)

Meeting Presentations

(Subject Category 15 RTOP 506-63-23)

(Subject Category 73 RTOP 199-20-76)


1462. Townsend, L. W.; Bidasaria, H. B.; and Wilson, J. W.: Complex WKB Solutions for $^{12}$C+$^{12}$C Scattering. Presented at the Lawrence Berkeley Laboratory Sixth High Energy Ion Study and Second Workshop on Anomalons, June 28 - July 1, 1983, Berkeley, California. (Subject Category 73 RTOP 199-20-76)

1463. Townsend, Lawrence W.; and Wilson, John W.: Space Radiation Protection Methods. Presented at the NASA Space Radiation Effects Workshop, November 16-18, 1983, Houston, Texas. NASA CP Pending. (Subject Category 93 RTOP 199-20-76)


1471. Wilson, John W.; and Stock, L. V.: Equivalent Electron Fluence for Solar Proton Damage in GaAs Shallow Junction Cells. Presented at the NASA Lewis Research Center Sixth Space Photovoltaic Research and Technology Meeting, October 18-20, 1983, Cleveland, Ohio. Proceedings Pending. (Subject Category 73 RTOP 506-55-43)

1472. Witcofski, Robert D.: Space-Station Crew-Safety Requirements. Presented at the NSIA/AIA/USAF/NASA 1983 Conference and Workshops on Mission Assurance, June 7-9, 1983, Los Angeles, California. (Subject Category 15 RTOP 906-54-20)


Technical Talks

(Subject Category 16 RTOP 506-63-23)

(Subject Category 54 RTOP 906-54-20)

(Subject Category 18 RTOP 506-51-13)

(Subject Category 73 RTOP 199-20-76)

(Subject Category 93 RTOP 199-20-76)

(Subject Category 16 RTOP 506-51-13)

(Subject Category 34 RTOP 506-51-13)

(Subject Category 73 RTOP 199-20-76)

(Subject Category 05 RTOP 505-43-43)
Computer Programs


Tech Briefs


1492. Hohl, Frank (Langley Research Center); and Zang, Thomas A. (College of William and Mary): Two and Three-Dimensional Galaxy Simulations. NASA Tech Brief LAR-12907.


(Subject Category 44)
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR SYSTEMS ENGINEERING AND OPERATIONS

Formal Reports
No formal reports.

Quick-Release Technical Memorandums
No quick-release technical memorandums.

Contractor Reports
No contractor reports.

Journal Articles and Other Publications
No journal articles and other publications.

Meeting Presentations

Technical Talks
No technical talks.

Computer Programs
No computer programs.

Tech Briefs
No tech briefs.

Patents
No patents.
PUBLICATIONS FOR FABRICATION DIVISION

Formal Reports

(Avail: STIF Subject Category 24 RTOP 505-31-53)

Quick-Release Technical Memorandums

(Avail: NTIS Subject Category 38 RTOP 505-31-53)

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

(Subject Category 36 RTOP 506-62-63)

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs


Patents

PUBLICATIONS FOR SYSTEMS ENGINEERING DIVISION

Formal Reports

(Avail: NTIS Subject Category 37 RTOP 141-20-10)

(Avail: NTIS Subject Category 05 RTOP 505-42-39)

(Avail: NTIS Subject Category 18 RTOP 986-15-10)

(Avail: NTIS Subject Category 09 RTOP 505-31-53)

Quick-Release Technical Memorandums

(Avail: NTIS Subject Category 39 RTOP 542-04-13)

Contractor Reports

(Avail: STIF Subject Category 05 RTOP 513-52-01)

(Avail: NTIS Subject Category 26 RTOP 505-31-53)

Journal Articles and Other Publications

(Subject Category 37 RTOP 141-20-10)


Meeting Presentations


*Army Structures Laboratory, USARTL (AVRADCOM)


Technical Talks


1533. Young, C. P., Jr.: Cryogenic Technology Model Development. Presented at the NASA/ASEE Summer Faculty Research Program Lecture Series, June 23, 1983, Hampton, Virginia. (Subject Category 09 RTOP 505-31-53)

Computer Programs

No computer programs.

Tech Briefs


Patents


PUBLICATIONS FOR FACILITIES ENGINEERING DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums


Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations


Technical Talks

No technical talks.

Computer Programs

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Tech Briefs

No tech briefs.
PUBLICATIONS FOR OPERATIONS SUPPORT DIVISION

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

No contractor reports.

Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs


*Army Structures Laboratory, USARTL (AVRADCOM)


Patents

No patents.

*Army Structures Laboratory, USARTL (AVRADCOM)
PUBLICATIONS FOR OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

Formal Reports

No formal reports.

Quick-Release Technical Memorandums


Contractor Reports


Journal Articles and Other Publications

No journal articles and other publications.

Meeting Presentations


Technical Talks


Computer Programs

No computer programs.

Tech Briefs


Patents

No patents.
PUBLICATIONS FOR ARMY STRUCTURES LABORATORY, USARTL (AVRADCOM)

Formal Reports

No formal reports.

Quick-Release Technical Memorandums

No quick-release technical memorandums.

Contractor Reports

(Avail: NTIS Subject Category 39 RTOP 505-10-39)

Journal Articles and Other Publications

(Subj ect Category 39 RTOP 505-42-39)

Meeting Presentations

No meeting presentations.

Technical Talks

No technical talks.

Computer Programs

No computer programs.

Tech Briefs

No tech briefs.

Patents

No patents.
APPENDIX

INDUSTRIAL APPLICATIONS CENTERS

Aerospace Research Applications Center
Indianapolis Center for Advanced Research
1201 East 38th Street
P. O. Box 647
Indianapolis, IN 46223
(317) 264-4644

Kerr Industrial Applications Center
Southeastern Oklahoma State University
Station A, Box 2584
Durant, OK 74701
(405) 924-6822

NASA Industrial Applications Center
710 LIS Building
University of Pittsburgh
Pittsburgh, PA 15260
(412) 624-5211

NASA Industrial Applications Center
University of Southern California
Research Annex, Room 200
3716 South Hope Street
Los Angeles, CA 90007
(213) 743-6132

New England Research Applications Center
Mansfield Professional Park
Storrs, CT 06268
(203) 486-4533

North Carolina Science and Technology Research Center
Post Office Box 12235
Research Triangle Park, NC 27709
(919) 549-0671

Technology Applications Center
University of New Mexico
Albuquerque, NM 87131
(505) 277-3622

NASA/Florida State Technology Applications Center
State University System of Florida
500 Weil Hall
Gainesville, FL 32611
(904) 392-6626
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