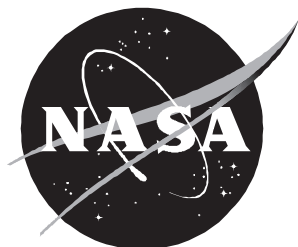


NASA/TM-2004-213510



# NASA Langley Scientific and Technical Information Output—2003

*Susan H. Stewart, Compiler*  
*Langley Research Center, Hampton, Virginia*

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December 2004

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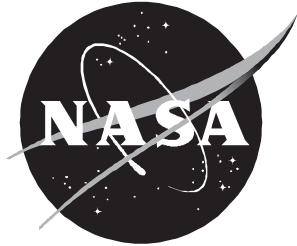
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# NASA Langley Scientific and Technical Information Output—2003

*Susan H. Stewart, Compiler  
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National Aeronautics and  
Space Administration

Langley Research Center  
Hampton, Virginia 23681-2199

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## **Preface**

This report contains a listing of the NASA Langley Research Center's publicly available scientific and technical research output for C.Y. 2003.

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 C.Y. 2003, Langley's contributions to NASA and non-NASA literature included 2 Special Publications, 18 Technical Publications, 7 Conference Publications, 71 Technical Memorandums, 38 Contractor Reports, 153 Journal Articles and Book Publications, 649 Meeting Presentations, 122 Technical Talks, and 15 Patents.



## 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 the areas of aerospace systems, concepts, and analysis, aerodynamics, aerothermodynamics, and acoustics, structures and materials, airborne systems, atmospheric sciences, and systems engineering.

This document contains a bibliography of Langley's publicly available scientific and technical research output for CY 2003, which is processed through the Center's Office of the Chief Information Officer to become an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. This document is intended to be a reference summary for researchers and a current awareness publication for the scientific, research, and academic community. Details of the availability of the research references in this document are found in the section, "Availability," on page vi.

Many Langley reports are available electronically on the Langley Technical Reports Server (LTRS) at <http://techreports.larc.nasa.gov/ltrs/>. The relative Uniform Resource Locators are noted below citations for reports available electronically.

The citations are grouped by the NASA Aeronautics and Space Database subject categories and listed alphabetically by author or innovator. The Langley organization to which the senior author or innovator is assigned is noted below citations and included in the indexes.

Patents listed are those which were issued in CY 2003 and owned by Langley Research Center.

Publication of some journal articles was not known at press time for the 2002 issue of this document. These articles are therefore listed in the 2003 issue.

## **Availability**

<b><u>Category</u></b>	<b><u>Source</u></b>
NASA Reports	NASA Center for AeroSpace Information (CASI) 7121 Standard Drive Hanover, MD 21076-1320 (301) 621-0390  National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161-2171 (703) 605-6000
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Patent Application Specifications	NASA Center for AeroSpace Information (CASI)  National Technical Information Service (NTIS)
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## Scientific and Technical Publications

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- 1 Biess, T. J.; and Lazos, B. S.: Parametric Model Smooth-Contour Morphing Wing. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RB
- 2 Bryant, W. H.: The NASA/DoT Volpe Transportation Center Wake Acoustic Data Collection Campaign at Denver International Airport. Presented at WakeNet2-Europe Workshop, November 11-12, 2003, London, England.  
Organization OH
- 3 Chambers, J. R.: Concept to Reality: Contributions of the Langley Research Center to U.S. Civil Aircraft of the 1990s. NASA/SP-2003-4529, June 2003, 306 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/spec/NASA-2003-sp4529.pdf>  
Organization OD
- 4 Guynn, M. D.; Croom, M. A.; Smith, S. C.; Parks, R. W.; and Gelhausen, P. A.: Evolution of a Mars Airplane Concept for the ARES Mars Scout Mission. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California. AIAA Paper No. 2003-6578.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6578.pdf>  
Organization RA
- 5 Holmes, B. J.: Innovations in 21st Century Air Transportation. Presented at Aviation Insurance Association’s 27th Annual Educational Conference, April 26-29, 2003, Orlando, Florida.  
Organization OH
- 6 Holmes, B. J.: Life After Airlines. Presented at EAA AirVenture 2003, August 3, 2003, Oshkosh, Wisconsin.  
Organization OH
- 7 Holmes, B. J.: Avionics Key to Enabling Aviation Transformation: The Next Twenty-Five Years in Avionics. *Aviation Week & Space Technology*, Volume 159, No. 24, December, p. 74-75.  
Organization OH

- 8** Holmes, B. J.: Air Transportation System Innovation and Modern Network Theory Considerations. Presented at Old Dominion University, Aerospace Engineering Seminar, October 2, 2003, Norfolk, Virginia.  
Organization OH
- 9** Holmes, B. J.: Innovations in Aviation: The Small Aircraft Transportation System Concept. Presented at 2003 Michigan Airport Conference, February 12-13, 2003, Lansing, Michigan.  
Organization OH
- 10** Holmes, B. J.; Durham, M. H.; and Tarry, S.: The Small Aircraft Transportation System Concept and Technologies. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-2510.  
Organization OH
- 11** Melton, L. P.; Yao, C-S.; and Seifert, A.: Active Control of Separation From the Flap of a Supercritical Airfoil. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4005.  
Organization RB
- 12** Morris, A. T.; and Goode, P. W.: The Aeronautical Data Link: Decision Framework for Architecture Analysis. Presented at 3rd Integrated Communications, Navigation, and Surveillance (ICNS) Conference & Workshop, May 19-22, 2003, Annapolis, Maryland.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3icns-atm.pdf>  
Organization RD
- 13** Moses, P. L.: X-43C Plans and Status. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-7084.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-7084.pdf>  
Organization OK
- 14** Moses, P. L.: X-43C Flight Demonstrator Project Overview. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado. Paper No. 2C#3.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-plm.pdf>  
Organization OK
- 15** Moses, P. L.; Rausch, V. L.; Nguyen, T. T.; and Hill, J. R.: NASA Hypersonic Flight Demonstrators - Overview, Status, and Future Plans. Presented at 54th International Astronautical Congress, September 29–October 3, 2003, Bremen, Germany. In Acta Astronautica, Vol.55, 2004, p. 619-630, Paper No. IAC-03-V.6.01.  
Organization OK

- 16** Newsom, J. R.; Robertshaw, H. H.; and Kapania, R. K.: Control Law Design in a Computational Aeroelasticity Environment. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1415.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1415.pdf>  
Organization OH
- 17** Spearman, M. L.: An Inboard-Wing Arrangement for High-Capacity Airlift and Sealift Vehicles. Presented at Applied Vehicle Technology Panel Symposium on Novel and Emerging Vehicle and Vehicle Technology Concepts, April 7-9, 2003, Brussels, Belgium.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-avtps-mls.pdf>  
Organization RA
- 18** Spearman, M. L.: Aerodynamic Characteristics for Airplane Configurations Having Several Body Arrangements. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado.  
Organization RA

## **Category 02 Aerodynamics**

- 19** Abdol-Hamid, K. S.; Pao, S. P.; Massey, S. J.; and Elmiligui, A.: Temperature Corrected Turbulence Model for High Temperature Jet Flow. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4070.  
Organization RB
- 20** Allison, D. O.; and Cavallo, P. A.: Static Aeroelastic Predictions for a Transonic Transport Model Using an Unstructured-Grid Flow Solver Coupled With a Structural Plate Technique. NASA/TP-2003-212156, March 2003, 51 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212156.pdf>  
Organization RB
- 21** Amitay, M.; Washburn, A. E.; Anders, S. G.; Parekh, D. E.; and Glezer, A.: Active Flow Control on the STINGRAY UAV: Transient Behavior. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4001.  
Organization RB
- 22** Atkins, H. L.; Ryan, J.; and Shu, C-W.: Application of an Accuracy Enhancing Post-Processing Method to Aeroacoustic Simulations. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
Organization RB
- 23** Balakumar, P.: Transition in a Supersonic Boundary-Layer Due to Roughness and Acoustic Disturbances. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3589.  
Organization RB

- 24** Bauer, S. X.; and Wood, R. M.: Base Passive Porosity for Vehicle Drag Reduction. U. S. Patent 6,616,218. Issued September 9, 2003.  
Organization RB
- 25** Beeler, S. C.; Moerder, D. D.; and Cox, D. E.: A Flight Dynamics Model for a Small Glider in Ambient Winds. NASA/TM-2003-212665, November 2003, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212665.pdf>  
Organization RD
- 26** Berrier, B. L.; and Morehouse, M. B.: Evaluation of Flush-Mounted, S-Duct Inlets With Large Amounts of Boundary Layer Ingestion. Presented at NATO/RTA Symposium on Vehicle Propulsion Integration, October 6-9, 2003, Warsaw, Poland. Paper No. 38.  
Organization RB
- 27** Bibb, K. L.; and Prabhu, R. K.: Computational Aerodynamic Characteristics of the Space Shuttle Orbiter for a Range of Damage Scenarios. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 28** Bogue, D. R.; Tran, J. T.; Om, O.; Rivers, S. M.; Pendergraft, O. C., Jr.; and Wahls, R. A.: Scale Effect Investigation of the Stability and Control Characteristics of an Advanced Twinjet Configuration. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3401.  
Organization RB
- 29** Brauckmann, G. J.; and Scallion, W. I.: Experimental Hypersonic Aerodynamic Characteristics of the Space Shuttle Orbiter for a Range of Damage Scenarios. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 30** Bushnell, D. M.: Aircraft Drag Reduction—A Review. *Proceedings of the Institution of Mechanical Engineers, Part G—Journal of Aerospace Engineering*, Volume 217, No. G1, February 2003, p. 1-17.  
Organization A
- 31** Campbell, R. L.; and Morehouse, M. B.: PAI Design of a Blended Wing Body With Boundary Layer Ingestion Nacelles. Presented at UEET Technology Forum, October 28-29, 2003, Westlake, Ohio.  
Organization RB

- 32** Capone, F. J.; Hall, R. M.; Owens, D. B.; Lamar, J. E.; and McMillin, S. N.: Recommended Experimental Procedures for Evaluation of Abrupt Wing Stall Characteristics. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0922.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0922.pdf>  
Organization RB
- 33** Capone, F. J.; Owens, D. B.; and Hall, R. M.: Development of a Free-To-Roll Transonic Test Capability. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0749.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0749.pdf>  
Organization RB
- 34** Casper, J. H.; Farassat, F.; Mish, P. F.; and Devenport, W. J.: Broadband Noise Predictions for an Airfoil in a Turbulent Stream. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0366.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0366.pdf>  
Organization RB
- 35** Chambers, J. R.; and Hall, R. M.: Historical Review of Uncommanded Lateral-Directional Motions at Transonic Conditions. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0590.  
Organization RB
- 36** Chang, C-L.: The Langley Stability and Transition Analysis Codes (LASTRAC): LST, Linear & Nonlinear PSE for 2D, Axisymmetric, and Infinite Swept Wing Boundary Layers. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0974.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0974.pdf>  
Organization RB
- 37** Choudhari, M. M.; and Chang, C-L.: A Computational Study of Roughness Based Supersonic Laminar Flow Control. Presented at LMS-Durham Workshop on New Developments and Applications in Rapid Fluid Flows, July 14-18, 2003, Durham, United Kingdom.  
Organization RB
- 38** Choudhari, M. M.; and Khorrami, M. R.: Computational Study of Porous Treatment for Altering Flap Side-Edge Flowfield. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3113.  
Organization RB
- 39** Choudhari, M. M.; and Khorrami, M. R.: Control of Global Instabilities Contributing to Airframe Noise via Porous Surface Treatment. Presented at 2nd Global Flow Instability and Control Symposium, June 11-13, 2003, Crete, Greece.  
Organization RB



- 40** Coen, P. G.: Configuration Shaping for Low Sonic Boom - Retrospective and Future Directions. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida.  
Organization OD
- 41** Cruz, J. R.; Kandis, M.; and Witkowski, A.: Opening Loads Analyses for Various Disk-Gap-Band Parachutes. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2131.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2131.pdf>  
Organization RF
- 42** Cruz, J. R.; Mineck, R. E.; Keller, D. F.; and Bobskill, M. V.: Wind Tunnel Testing of Various Disk-Gap-Band Parachutes. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2129.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2129.pdf>  
Organization RF
- 43** Deere, K. A.: Summary of Fluidic Thrust Vectoring Research Conducted at NASA Langley Research Center. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3800.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3800.pdf>  
Organization RB
- 44** Deere, K. A.; Berrier, B. L.; Flamm, J. D.; and Johnson, S. K.: Computational Study of Fluidic Thrust Vectoring Using Separation Control in a Nozzle. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3803.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3803.pdf>  
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- 45** Engelund, W. C.; Huebner, L. D.; Robinson, J. S.; and Ferlemann, S. M.: Propulsion Airframe Integration Issues for Hypersonic Vehicle Designs. Presented at NATO/RTA Symposium on Vehicle Propulsion Integration, October 6-9, 2003, Warsaw, Poland.  
Organization RA
- 46** Flamm, J. D.; Larkin, M.; Favrow, L.; Cassenti, B.; Karanik, J.; and Staroselsky, A.: Variable Area Fan Nozzle Development/Shape Memory Alloy Actuator Durability Testing and SMA Modeling. Presented at UEET Technology Forum, October 28-29, 2003, Westlake, Ohio.  
Organization RB
- 47** Frink, N. T.; Bonhaus, D. L.; Vatsa, V. N.; Bauer, S. X.; and Tinetti, A. F.: A Boundary Condition for Simulation of Flow Over Porous Surfaces. *Journal of Aircraft*, Volume 40, No. 4, July/August 2003, p. 692-698.  
Organization RB

- 48** Frink, N. T.; and Milholen, W. E., II: Tetrahedral Grid Sensitivity on Drag Prediction for the DLR-F6 Configuration Using TetrUSS. Presented at 22nd AIAA CFD Drag Prediction Workshop, June 21-22, 2003, Orlando, Florida.  
Organization RB
- 49** Frink, N. T.; Parikh, P. C.; Pirzadeh, S. Z.; Hunter, C. A.; Abdol-Hamid, K. S.; and Pandya, M. J.: TetrUSS Capabilities for S&C Applications. Presented at NASA Symposium Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.  
Organization RB
- 50** Gatski, T. B.: Properties of the Residual Stress of the Temporally Filtered Navier-Stokes Equations. Presented at European Aeronautics Defence and Space Company, August 25, 2003, Munich, Germany.  
Organization RB
- 51** Gatski, T. B.: Turbulence Modeling for Aeronautical Flows. Presented at CFD-Based Aircraft Drag Prediction and Reduction, November 3-7, 2003, Hampton, Virginia.  
Organization RB
- 52** Graves, C. A.; Lockwood, M. K.; and Powell, R. W.: Use of Entry Technologies for Planetary Exploration; Past, Present, and Future. Presented at 3rd International Symposium on Atmospheric Reentry Vehicles and Systems, March 24-27, 2003, Arcachon, France.  
Organization RA
- 53** Gumbert, C. R.; Hou, G. J.; and Newman, P. A.: Reliability Assessment of a Robust Design Under Uncertainty for a 3-D Flexible Wing. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4094.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4094.pdf>  
Organization RA
- 54** Hall, R. M.; Fremaux, C. M.; and Chambers, J. R.: Introduction to Computational Methods for Stability and Control (COMSAC). Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.  
Organization RB
- 55** Hall, R. M.; Fremaux, C. M.; and Chambers, J. R.: COMSAC: Visions and Potential Program Content. Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.  
Organization RB
- 56** Hall, R. M.; and Woodson, S. H.: Introduction to the Abrupt Wing Stall (AWS) Program. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0589.  
Organization RB

- 57** Hall, R. M.; Woodson, S. H.; and Chambers, J. R.: Accomplishments of the Abrupt Wing Stall (AWS) Program and Future Requirements. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0927.  
Organization RB
- 58** Helenbrook, B.; Mavriplis, D. J.; and Atkins, H. L.: Analysis of “p” -Multigrid for Continuous and Discontinuous Finite Element Discretizations. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-0398.  
Organization RB
- 59** Hemsch, M. J.: Experiences From the AIAA Drag Prediction Workshop Series: Statistical Methods and Analysis. Presented at Von Karman Institute Series: CFD-Based Aircraft Drag Prediction and Reduction, November 3-7, 2003, Hampton, Virginia.  
Organization RB
- 60** Hemsch, M. J.; Luckring, J. M.; and Morrison, J. H.: Quantitative Prediction of Computational Quality. Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.  
Organization RB
- 61** Hemsch, M. J.; Luckring, J. M.; and Morrison, J. H.: Quantitative Prediction of Computational Quality for the World of Aerospace. Presented at Workshop on Elements of Predictability, November 13-14, 2003, Baltimore, Maryland.  
Organization RB
- 62** Hu, F. Q.; and Atkins, H. L.: A Discrete Analysis of Non-Reflecting Boundary Conditions for Discontinuous Galerkin Method. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3301.  
Organization RB
- 63** Hunter, C. A.; and Thomas, R. H.: Development of a Jet Noise Prediction Method for Install Jet Configurations. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3169.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3169.pdf>  
Organization RB
- 64** Iyer, V.; Kuhl, D. D.; and Walker, E. L.: Improvements to Wall Corrections at the NASA Langley 14x22-FT Subsonic Tunnel. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3950.  
Organization RB

- 65** Jiang, L.; Chang, C-L.; Choudhari, M. M.; and Liu, C.: Cross-Validation of DNS and PSE Results for Instability-Wave Propagation in Compressible Boundary Layers Past Curvilinear Surfaces. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida.  
Organization RB
- 66** Jin, L. H.; So, R. M.; and Gatski, T. B.: Equilibrium States of Turbulent Homogeneous Buoyant Flows. *Journal of Fluid Mechanics*, Volume 482, May 10, 2003, p. 207-233.  
Organization RB
- 67** Jin, L. H.; So, R. M.; and Gatski, T. B.: Analyzing Turbulent Flows With Heat Transfer Using Representation Theory. Presented at 4th International Symposium on Turbulence, Heat and Mass Transfer, October 12-17, 2003, Antalya, Turkey.  
Organization RB
- 68** Jones, G. S.; and Englar, R. J.: Advances in Pneumatic-Controlled High-Lift Systems Through Pulsed Blowing. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3411.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3411.pdf>  
Organization RB
- 69** Kennedy, C. A.; and Carpenter, M. H.: Additive Runge-Kutta Schemes for Convection-Diffusion-Reaction Equations. *Applied Numerical Mathematics*, Volume 44, No. 1-2, January 2003, p. 139-181.  
Organization RB
- 70** Khorrami, M. R.: Understanding Slat Noise Sources. Presented at EUROMECH 449, December 9-12, 2003, Chamonix, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-euromech-mrk.pdf>  
Organization RB
- 71** Khorrami, M. R.; and Choudhari, M. M.: Application of Passive Porous Treatment to Slat Trailing Edge Noise. NASA/TM-2003-212416, May 2003, 15 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212416.pdf>  
Organization RB
- 72** Khorrami, M. R.; Choudhari, M. M.; Singer, B. A.; Lockard, D. P.; and Streett, C. L.: In Search of the Physics: The Interplay of Experiment and Computation in Slat Aeroacoustics. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0980.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0980.pdf>  
Organization RB

- 73** Kilgore, W. A.; Balakrishna, S.; Bobbitt, C. W.; and Underwood, P. J.: Recent Enhancements to the National Transonic Facility. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0754.  
Organization RB
- 74** Kim, S-W.; Murphy, P. C.; and Klein, V.: Evaluation and Analysis of F-16XL Wind Tunnel Data From Dynamic Tests. Presented at AIAA Atmospheric Flight Mechanics Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper 2003-5396.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5396.pdf>  
Organization RD
- 75** Lamar, J. E.: Cranked Arrow Wing Aerodynamics Project (CAWAP). Presented at Kungl Tekniska Hogskolan Royal Institute of Technology Seminar, October 1-4, 2003, Stockholm, Sweden.  
Organization RB
- 76** Lamar, J. E.; Capone, F. J.; and Hall, R. M.: AWS Figure of Merit (FOM) Developed Parameters From Static, Transonic Model Tests. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0745.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0745.pdf>  
Organization RB
- 77** Lede, J-C.; Croom, M. A.; and Parks, R. W.: High Altitude Drop Testing in Mars Relevant Conditions for the ARES Mars Scout Mission. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California.  
Organization RD
- 78** Lee-Rausch, E. M.; Buning, P. G.; Morrison, J. H.; Park, M. A.; Rivers, S. M.; Rumsey, C. L.; and Mavriplis, D. J.: CFD Sensitivity Analysis of a Drag Prediction Workshop Wing/Body Transport Configuration. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3400.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3400.pdf>  
Organization RB
- 79** Lee-Rausch, E. M.; Nielsen, E. J.; and Park, M. A.: Analysis of a Drag Prediction Workshop Wing/Body/Nacelle/Pylon Transport Configuration Using an Unstructured-Grid Navier-Stokes Method. Presented at 2nd AIAA CFD Drag Prediction Workshop, June 21-22, 2003, Orlando, Florida.  
Organization RB
- 80** Lockard, D. P.: A Hybrid Approach to Tandem Cylinder Noise. Presented at 4th Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, October 20-22, 2003, Cleveland, Ohio.  
Organization RB

- 81** Lockard, D. P.: Application of the Ffowcs Williams-Hawkings Equation to Airframe Noise Problems. Presented at GE Global Research Center, October 3, 2003, Niskayuna, New York.  
Organization RB
- 82** Lockard, D. P.: Complex Geometries. Presented at 4th Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, October 20-22, 2003, Cleveland, Ohio.  
Organization RB
- 83** Lockard, D. P.: Frequency Domain Calculations of Acoustic Propagation. Presented at 4th Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, October 20-22, 2003, Cleveland, Ohio.  
Organization RB
- 84** Lockard, D. P.; and Shieh, C. M.: Sound Propagation Without Instabilities. Presented at 4th Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, October 20-22, 2003, Cleveland, Ohio.  
Organization RB
- 85** Lu, B.; Wu, F.; and Kim, S-W.: LPV Antiwindup Compensation for Enhanced Flight Control Performance. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5495.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5495.pdf>  
Organization RD
- 86** Luckring, J. M.: Transonic Reynolds Number and Leading-Edge Bluntness Effects on a 65° Delta Wing. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0753.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0753.pdf>  
Organization RB
- 87** Luckring, J. M.; Hensch, M. J.; and Morrison, J. H.: Uncertainty in Computational Aerodynamics. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper 2003-0409.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0409.pdf>  
Organization RB
- 88** Massey, S. J.; Thomas, R. H.; Abdol-Hamid, K. S.; and Elmiligui, A.: Computational and Experimental Flowfield Analyses of Separate Flow Chevron Nozzles and Pylon Interaction. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA 2003-3212.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3212.pdf>  
Organization RB

- 89** McMillin, S. N.; Hall, R. M.; and Lamar, J. E.: Transonic Experimental Observations of Abrupt Wing Stall on an F/A-18E Model. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0591.  
Organization RB
- 90** Mendenhall, M. R.; Childs, R. E.; and Morrison, J. H.: Best Practices for Reduction of Uncertainty in CFD Results. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper 2003-0411.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0411.pdf>  
Organization RB
- 91** Morrison, J. H.; Panaras, A. G.; Gatski, T. B.; and Georgantopoulos, G. A.: Analysis of Extensive Cross-Flow Separation Using Higher-Order RANS Closure Models. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3532.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3532.pdf>  
Organization RB
- 92** Mukherjee, R.; Gopalarathnam, A.; and Kim, S-W.: An Iterative Decambering Approach for Post-Stall Prediction of Wing Characteristics Using Known Section Data. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-1097.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1097.pdf>  
Organization RD
- 93** Murphy, K. J.; Buning, P. G.; Pamadi, B. N.; Scallion, W. I.; and Jones, K. M.: Experimental and Computational Stage Separation Tool Development for the Next Generation Launch Technologies. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 94** Murphy, P. C.; and Klein, V.: Validation of Methodology for Estimating Aircraft Unsteady Aerodynamic Parameters From Dynamic Wind Tunnel Tests. Presented at AIAA Atmospheric Flight Mechanics Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5397.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5397.pdf>  
Organization RD
- 95** Nielsen, E. J.: Aerodynamic Design Optimization Using the Navier-Stokes Equations. Presented at 18th International Symposium on Mathematical Programming, August 18-22, 2003, Copenhagen, Denmark.  
Organization RB

- 96** Nielsen, E. J.; Lu, J.; Park, M. A.; and Darmofal, D. L.: An Exact Dual Adjoint Solution Method for Turbulent Flows on Unstructured Grids. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0272.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0272.pdf>  
Organization RB
- 97** Parikh, P. C.; and Chung, J. J.: A Computational Study of the Abrupt Wing Stall (AWS) Characteristics for Various Fighter Jets: Part I, F/A-18E and F-16C. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0746.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0746.pdf>  
Organization RB
- 98** Park, M. A.: Three-Dimensional Turbulent RANS Adjoint-Based Error Correction. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3849.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3849.pdf>  
Organization RB
- 99** Pirozzoli, S.; Grasso, F.; and Gatski, T. B.: Some Results on the Dynamics of Developing Supersonic Turbulent Boundary Layer at  $M = 2.25$  Using DNS. Presented at Direct and Large-Eddy Simulation-5 Workshop, August 25-29, 2003, Garching, Germany.  
Organization RB
- 100** Pruett, C. D.; Gatski, T. B.; Grosch, C. E.; and Thacker, W. D.: Properties of the Residual Stress of the Temporally Filtered Navier-Stokes Equations. Presented at 3rd International Symposium on Turbulence and Shear Flow Phenomena—2003, June 25-27, 2003, Sendai, Japan.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3istsfp-cdp.pdf>  
Organization RB
- 101** Pruett, C. D.; Gatski, T. B.; Grosch, C. E.; and Thacker, W. D.: The Temporally Filtered Navier-Stokes Equations: Properties of the Residual Stress. *Physics of Fluids*, Volume 15, No. 8, August 2003, p. 2127-2140.  
Organization RB
- 102** Raney, D. L.; and Slominski, E. C.: Mechanization and Control Concepts for Biologically Inspired Micro Aerial Vehicles. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA 2003-5345.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5345.pdf>  
Organization RD



- 103** Reubush, D. E.; Nguyen, L. T.; and Rausch, V. L.: Review of X-43A Return to Flight Activities and Current Status. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-7085.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-7085.pdf>  
Organization OC
- 104** Rivers, S. M.; and Wahls, R. A.: Turbulence Model Comparisons for Supersonic Transports at Transonic and Supersonic Conditions. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3418.  
Organization RB
- 105** Rubinstein, R.: Time-Dependent Isotropic Turbulence. Presented at 3rd Annual A&M Turbulence Workshop, October 12-15, 2003, College Station, Texas.  
Organization RB
- 106** Rubinstein, R.: Time-Dependent Isotropic Turbulence and the Dissipation Rate Transport Equation. Presented at University of Nagoya, June 28–July 3, 2003, Nagoya, Japan.  
Organization RB
- 107** Rubinstein, R.; Clark, T. T.; and Luo, L-S.: Time-Dependent Isotropic Turbulence. Presented at 3rd International Symposium on Turbulence and Shear Flow Phenomena—2003, June 25-27, 2003, Sendai, Japan.  
Organization RB
- 108** Rumsey, C. L.: Effect of Turbulence Models on Two Massively-Separated Benchmark Flow Cases. NASA/TM-2003-212412, May 2003, 52 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212412.pdf>  
Organization RB
- 109** Rumsey, C. L.; and Gatski, T. B.: Summary of EASM Turbulence Models in CFL3D With Validation Test Cases. NASA/TM-2003-212431, June 2003, 48 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212431.pdf>  
Organization RB
- 110** Rumsey, C. L.; Lee-Rausch, E. M.; and Watson, R. D.: Three-Dimensional Effects in Multi-Element High Lift Computations. *Computers and Fluids*, Volume 32, No. 5, June 2003, p. 631-657.  
Organization RB
- 111** Rumsey, C. L.; Morrison, J. H.; and Biedron, R. T.: CFD Variability for a Civil Transport Aircraft Near Buffet-Onset Conditions. NASA/TM-2003-212149, February 2003, 25 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212149.pdf>  
Organization RB

- 112** Rumsey, C. L.; Rivers, S. M.; and Morrison, J. H.: Investigation of Navier-Stokes Flow Solvers for Prediction of Subsonic Transport Cruise Performance. Presented at CFD Drag Prediction Workshop II, June 21-22, 2003, Orlando, Florida.  
Organization RB
- 113** Schmit, R. F.; Glauser, M. N.; and Gorton, S. A.: Low Dimensional Tools for Flow-Structure Interaction Problems: Application to Micro Air Vehicles. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0626.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0626.pdf>  
Organization RB
- 114** Sellers, W. L., III; Singer, B. A.; and Leavitt, L. D.: Aerodynamics for Revolutionary Air Vehicles. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3785.  
Organization RB
- 115** Taylor, A. C., III; Green, L. L.; Newman, P. A.; and Putko, M. M.: Some Advanced Concepts in Discrete Aerodynamic Sensitivity Analysis. *AIAA Journal*, Volume 41, No. 7, July 2003, p. 1224-1229.  
Organization RA
- 116** Thomas, J. L.; Diskin, B.; and Brandt, A.: Textbook Multigrid Efficiency for Fluid Simulations. In *Annual Reviews of Fluid Mechanics*, Volume 35, Annual Reviews, January 2003, p. 317-340.  
Organization RB
- 117** Tomek, W. G.; Wahls, R. A.; Owens, L. R., Jr.; Burner, A. W.; Graves, S. S.; and Luckring, J. M.: Investigation of Aerodynamic Scale Effects for a Generic Fighter Configuration in the National Transonic Facility. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0751.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0751.pdf>  
Organization RB
- 118** Tucker, P. G.; Rumsey, C. L.; Bartels, R. E.; and Biedron, R. T.: Transport Equation Based Wall Distance Computations Aimed at Flows With Time-Dependent Geometry. NASA/TM-2003-212680, December 2003, 67 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212680.pdf>  
Organization RB
- 119** Turkel, E.; and Vatsa, V. N.: Choice of Variables and Preconditioning for Time Dependent Problems. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3692.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3692.pdf>  
Organization RB

- 120** Underwood, P. J.; Owens, L. R., Jr.; Wahls, R. A.; and Williams, S.: X-29 High Alpha Test in the National Transonic Facility. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0752.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0752.pdf>  
Organization RB
- 121** Vatsa, V. N.; and Singer, B. A.: Evaluation of a Second-Order Accurate Navier-Stokes Code for Detached Eddy Simulation Past a Circular Cylinder. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4085.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4085.pdf>  
Organization RB
- 122** Viken, S. A.; Vatsa, V. N.; Rumsey, C. L.; and Carpenter, M. H.: Flow Control Analysis on the Hump Model With RANS Tools. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0218.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0218.pdf>  
Organization RB
- 123** Waithe, K. A.: Source Term Model for an Array of Vortex Generator Vanes. (L-70750D Analytical Services & Materials, Inc.) NASA/CR-2003-212157, March 2003, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212157.pdf>  
Organization RB
- 124** Waithe, K. A.: Design Tool Development: Source Term Modeling. Presented at UEET Technology Forum, October 28-29, 2003, Westlake, Ohio.  
Organization RB
- 125** Waithe, K. A.; and Deere, K. A.: Experimental and Computational Investigation of Multiple Injection Ports in a Convergent-Divergent Nozzle for Fluidic Thrust Vectoring. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3802.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3802.pdf>  
Organization RB
- 126** Wood, R. M.: The Contributions of Vincent Justus Burnelli. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0292.  
Organization RB
- 127** Wood, R. M.: Aerodynamic Drag and Drag Reduction: Energy and Energy Savings. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0209.  
Organization RB

- 128** Wood, R. M.; Wilcox, F. J., Jr.; Bauer, S. X.; and Allen, J. M.: Vortex Flows at Supersonic Speeds. NASA/TP-2003-211950, March 2003, 100 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp211950.pdf>  
Organization RB
- 129** Wu, X.; and Choudhari, M. M.: Linear and Nonlinear Instabilities of Blasius Boundary Layer Perturbed Streamwise Vortices, Part II: Intermittent Instability Induced by Long-Wavelength Klebanoff Modes. *Journal of Fluid Mechanics*, Volume 483, May 25, 2005, p. 249-286.  
Organization RB
- 130** Yamaleev, N. K.; and Carpenter, M. H.: A Reduced-Order Model for Efficient Simulation of Synthetic Jet Actuators. NASA/TM-2003-212664, December 2003, 32 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212664.pdf>  
Organization RB
- 131** Zhou, Y.; Rubinstein, R.; Eliason, D.; and Cabot, W.: Computing Turbulent Flows Driven by Raleigh-Taylor and Richtmyer-Meshkrov Instabilities. *Astronomy and Astrophysics*, Volume 405, No. 2, July 2003, p. 379-386.  
Organization RB

### **Category 03 Air Transportation and Safety**

- 132** Adams, C. A.: Organizational Culture and Safety. Presented at 12th International Symposium on Aviation Psychology, April 14-17, 2003, Dayton, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-12isap-caa.pdf>  
Organization RD
- 133** Arthur, J. J.; Prinzel, L. J., III; Kramer, L. J.; Bailey, R. E.; and Parrish, R. V.: CFIT Prevention Using Synthetic Vision. Presented at AeroSense 2003—Aerospace/Defense Sensing, Simulation, and Controls, April 21-25, 2003, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-aerosense-jja.pdf>  
Organization RD
- 134** Ballin, M. G.: NASA Langley Research of Distributed Air/Ground Traffic Management. Presented at 2nd ASAS Thematic Network Workshop, October 6-8, 2003, Malmo, Sweden.  
Organization RD
- 135** Barhydt, R.; Eischeid, T.; Palmer, M. T.; and Wing, D. J.: Use of a Prototype Airborne Separation Assurance System for Resolving Near-Term Conflicts During Autonomous Aircraft Operations. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5401.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5401.pdf>  
Organization RD

- 136** Barhydt, R.; Eischeid, T.; Palmer, M. T.; and Wing, D. J.: Regaining Lost Separation in a Piloted Simulation of Autonomous Aircraft Operations. Presented at 5th USA / Europe ATM R&D Seminar, June 23-27, 2003, Budapest, Hungary. Paper No. 14.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5ues-rb.pdf>  
Organization RD
- 137** Barhydt, R.; and Warren, A. W.: Development of an Information Structure for Reliable Communication of Airborne Intent and Aircraft Trajectory Prediction. *Air Traffic Control Quarterly*, Volume 11, No. 3, 2003, p. 251-274.  
Organization RD
- 138** Barmore, B. E.; Johnson, E. J.; Wing, D. J.; and Barhydt, R.: Airborne Conflict Management Within Confined Airspace in a Piloted Simulation of DAG-TM Autonomous Aircraft Operations. Presented at 5th USA / Europe ATM R&D Seminar, June 23-27, 2003, Budapest, Hungary. Paper No. 17.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5ues-beb.pdf>  
Organization RD
- 139** Boyd, D. D., Jr.: Challenges in Rotorcraft Acoustic Flight Prediction and Validation. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0709.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0709.pdf>  
Organization RB
- 140** Campbell, J.; Uijt de Haag, M.; Vadlamani, A.; and Young, S. D.: The Application of Lidar to Synthetic Vision System Integrity. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-22dasc-sdy.pdf>  
Organization RD
- 141** Campbell, J.; Uijt de Haag, M.; van Graas, F.; and Young, S. D.: Light Detection and Ranging-Based Terrain Navigation - A Concept Exploration. Presented at ION GPS/GNSS 2003 Conference, September 9-12, 2003, Portland, Oregon.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-iongps-sdy.pdf>  
Organization RD
- 142** Carreno, V. A.: Concept for Multiple Operations at Non-Radar Airports During Instrument Meteorological Conditions. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
Organization RD
- 143** Chamberlain, J. P.; Burt, J. L.; Jones, K. M.; and Coyne, J. T.: Effects of Conventional and Data-Linked Weather Information Acquisition Tasks on General Aviation Pilot Performance in High-Workload Flight Simulations. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
Organization RD

- 144** Delisi, D. P.; Greene, G. C.; Robins, R. E.; Vicroy, D. D.; and Wang, F. Y.: Aircraft Wake Vortex Core Size Measurements and Physics. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida.  
Organization RD
- 145** Dorneich, M. C.; Olofinboba, O.; Pratt, S.; Osborne, D.; Feyereisen, T.; and Latorella, K. A.: Evaluation of a Dispatcher's Route Optimization Decision Aid to Avoid Aviation Weather Hazards. NASA/TM-2003-212172, April 2003, 121 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212172.pdf>  
Organization RD
- 146** Flemisch, F. O.; Adams, C. A.; Conway, S. R.; Goodrich, K. H.; Palmer, M. T.; and Schutte, P. C.: The H-Metaphor as a Guideline for Vehicle Automation and Interaction. NASA/TM-2003-212672, December 2003, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212672.pdf>  
Organization RD
- 147** Glaab, L. J.; and Hughes, M. F.: Terrain Portrayal for Head-Down Displays Flight Test. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-22dasc-ljg.pdf>  
Organization RD
- 148** Glaab, L. J.; Kramer, L. J.; Arthur, J. J.; Parrish, R. V.; and Barry, J. S.: Flight Test Comparison of Synthetic Vision Display Concepts at Dallas/Fort Worth International Airport. NASA/TP-2003-212177, May 2003, 143 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212177.pdf>  
Organization RD
- 149** Green, W. S.; Tsoucalas, G.; and Tanger, T.: Concept of Operations for the NASA Weather Accident Prevention (WxAP) Project—Version 2.0. NASA/TM-2003-212424, September 2003, 29 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212424.pdf>  
Organization RD
- 150** Hamilton, D. W.: TPAWS Tool Set Demonstration. Presented at NASA-FAA-Industry ATDS Workshop #6, December 2-3, 2003, Hampton, Virginia.  
Organization RD
- 151** Hamilton, D. W.; and Proctor, F. H.: An Aircraft Encounter With Turbulence in the Vicinity of a Thunderstorm. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4075.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4075.pdf>  
Organization RD

- 152** Hayhurst, K. J.; and Holloway, C. M.: Second Workshop on the Investigation and Reporting of Incidents and Accidents. NASA/CP-2003-212642, September 2003, 254 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003-cp212642.pdf>  
Organization RD
- 153** Howell, C. T., III; Shelton, K. J.; and Fisher, B. D.: The NASA Langley Research Center's General Aviation Baseline Research System. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
Organization RD
- 154** Hughes, M. F.: Terrain Portrayal for Head Down Displays (TP-HDD - Simulation). Presented at EAA Airventure 2003 NASA Forum, July 29–August 4, 2003, Oshkosh, Wisconsin.  
Organization RD
- 155** Hughes, M. F.; and Glaab, L. J.: Terrain Portrayal for Head-Down Displays Simulation Results. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana. In Proceeding, Paper No. 9E1.  
Organization RD
- 156** Johnson, C. W.; and Holloway, C. M.: The Strengths and Weaknesses of Logic Formalisms to Support Mishap Analysis. Presented at 21st International System Safety Conference, August 4-8, 2003, Ottawa, Ontario, Canada. In Proceedings, p. 1133-1142.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-21issc-cwj.pdf>  
Organization RD
- 157** Jones, D. R.: Runway Incursion Prevention System Research. Presented at Runway Incursion Workshop, August 18-19, 2003, Chicago, Illinois.  
Organization RD
- 158** Jones, K. M.; Williams, D. M.; Consiglio, M. C.; Adams, C. A.; and Abbott, T. S.: IFR Operations at Non-Towered/Non-Radar Airports: Can We Do Better Than One-At-A-Time? Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-2874.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2874.pdf>  
Organization RD
- 159** Kaplan, M. L.; Huffman, A. W.; Lux, K. M.; Cetola, J. D.; Charney, J. J.; Riordan, A. J.; Lin, Y-L.; and Waight, K. T., III: Characterizing the Severe Turbulence Environments Associated With Commercial Aviation Accidents—Part II: Hydrostatic Mesobeta Scale Numerical Simulations of Supergradient Wind Flow and Streamwise Ageostrophic Frontogenesis. (NAS1-99074 North Carolina State University.) NASA/CR-2003-212138, February 2003, 45 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212138.pdf>  
Organization RD

- 160** Knox, C. E.: NASA Transport Research Facilities. Presented at SAE S-7 Committee Meeting, March 3-6, 2003, Denver, Colorado.  
Organization RD
- 161** Kramer, L. J.; Prinzel, L. J., III; Bailey, R. E.; and Arthur, J. J.: Synthetic Vision Enhances Situation Awareness and RNP Capabilities for Terrain-Challenged Approaches. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6814.pdf>  
Organization RD
- 162** Krishnamurthy, K.; Wing, D. J.; Barmore, B. E.; Barhydt, R.; Palmer, M. T.; Johnson, E. J.; Ballin, M. G.; and Eischeid, T.: Autonomous Aircraft Operations Using RTCA Guidelines for Airborne Conflict Management. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana. In Proceedings, Volume 1, P. 5.C.2-1 - 5.C.2-13.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-22dasc-kk.pdf>  
Organization RD
- 163** Lewis, E. T.: Low Noise Flight Procedures. Presented at Quiet Aircraft Technology Technical Working Group Meeting, April 28-May 2, 2003, Seattle, Washington.  
Organization RD
- 164** Lockard, D. P.; Khorrami, M. R.; and Li, F.: Aeroacoustic Analysis of a Simplified Landing Gear. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3111.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3111.pdf>  
Organization RB
- 165** Lohr, G. W.; Oseguera-Lohr, R. M.; Abbott, T. S.; and Capron, W. R.: Flight Evaluation of a Time-Based Airborne Inter-Arrival Spacing Tool. Presented at 5th USA / Europe ATM R&D Seminar, June 23-27, 2003, Budapest, Hungary.  
Organization RD
- 166** Millsaps, G. D.: Small Aircraft Transportation System Simulation Analysis of the HVO and ERO Concepts. (NAS1-00135 Swales Aerospace.) NASA/CR-2003-212170, March 2003, 29 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212170.pdf>  
Organization RA
- 167** Mondoloni, S.; Ballin, M. G.; and Palmer, M. T.: Airborne Conflict Resolution for Flow-Restricted Transition Airspace. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado.  
Organization RD



- 168** Oseguera-Lohr, R. M.; and Williams, D. H.: Evaluation of Trajectory Errors in an Automated Terminal-Area Environment. NASA/TM-2003-212174, April 2003, 31 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212174.pdf>  
Organization RD
- 169** Palmer, M. T.; and Ballin, M. G.: A High-Performance Simulated On-Board Avionics Architecture to Support Traffic Operations Research. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas.  
Organization RD
- 170** Patton, J. M.; and Stough, H. P., III: Upwinding the Spin. Presented at EAA Airventure 2003 NASA Forum, July 29–August 4, 2003, Oshkosh, Wisconsin.  
Organization RD
- 171** Powell, C. A.: Relationship Between Aircraft Noise Contour Area and Noise Levels at Certification Points. NASA/TM-2003-212649, September 2003, 38 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212649.pdf>  
Organization RB
- 172** Powell, C. A.: Relationship Between Aircraft Noise Levels and Noise Contour Area. Presented at Fall 2003 Quiet Aircraft Technology Technical Working Group, December 10-13, 2003, Hampton, Virginia.  
Organization RB
- 173** Powell, C. A.: Review of NASA Helicopter Noise Assessment Research. Presented at AHS International 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona.  
Organization RB
- 174** Powell, C. A.; and Shepherd, K. P.: QAT Project Success Metric Contour Selection. Presented at Fall 2003 Quiet Aircraft Technology Technical Working Group, December 10-13, 2003, Hampton, Virginia.  
Organization RB
- 175** Proctor, F. H.; Hamilton, D. W.; Bowles, R. L.; and Switzer, G. F.: Hazard Analysis Tool Test. Presented at NASA-FAA-Industry ATDS Workshop #6, December 2-3, 2003, Hampton, Virginia.  
Organization RD
- 176** Rizzi, S. A.; Sullivan, B. M.; and Sandridge, C. A.: A Three-Dimensional Virtual Simulator for Aircraft Flyover Presentation. Presented at ICAD 2003—9th International Conference on Auditory Display, July 6-9, 2003, Boston, Massachusetts. Paper No. 87-90.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-9icad-sar.pdf>  
Organization RB

- 177** Rutishauser, D. K.: Progress Towards the Investigation of Technical Issues Relevant to the Design of an Aircraft Wake Vortex Avoidance System (WakeVAS). Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3808.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3808.pdf>  
Organization RD
- 178** Rutishauser, D. K.: Wake Vortex Advisory System (WakeVAS) Concept of Operations—Version 1.0. Presented at FAA/NASA WakeNet USA Meeting, March 18-19, 2003, St. Louis, Missouri.  
Organization RD
- 179** Rutishauser, D. K.: Wake Vortex Avoidance System (WakeVAS) Concept of Operations. Presented at VAMS Technical Interchange Meeting, January 15, 2003, Moffett Field, California.  
Organization RD
- 180** Rutishauser, D. K.: Recent Analysis and Status of DFW and MEM Wake Vortex Data Bases - Implications for Wake Modeling and AVOSS Predictor Algorithm Refinements. Presented at WakeNet2-Europe, November 11-12, 2003, London, England.  
Organization RD
- 181** Rutishauser, D. K.; Donohue, G. L.; and Haynie, R. C.: Measurements of Aircraft Wake Vortex Separation at High Arrival Rates and a Proposed New Wake Vortex Separation Philosophy. Presented at 5th USA / Europe ATM R&D Seminar, June 23-27, 2003, Budapest, Hungary. Paper No. 87.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5ues-dkr.pdf>  
Organization RD
- 182** Rutishauser, D. K.; Lohr, G. W.; Hamilton, D. W.; Powers, R. B.; McKissick, B. T.; Adams, C. A.; and Norris, E. L.: Wake Vortex Advisory System (WakeVAS) Concept of Operations. NASA/TM-2003-212176, April 2003, 27 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212176.pdf>  
Organization RD
- 183** Stewart, E. C.: Description of a Normal-Force-In-Situ Turbulence Algorithm for Airplanes. NASA/TM-2003-212666, December 2003, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212666.pdf>  
Organization RD
- 184** Stough, H. P., III; and Patton, J. M.: Spins - Design Considerations and Pilot Observations. Presented at AirVenture, July 29-August 3, 2003, Oshkosh, Wisconsin.  
Organization RD

- 185** Trujillo, A. C.: A Centralized Display for Mission Monitoring. Presented at People in Control 2003—International Conference on Engineering Human Factors Solutions, November 4-6, 2003, Amsterdam, The Netherlands.  
Organization RD
- 186** Vicroy, D. D.: NASA Wake Encounter Flight Test Database. Presented at 1st Workshop on WakeNet2-Europe, November 11-12, 2003, London, England.  
Organization RD
- 187** Wing, D. J.; Krishnamurthy, K.; Barhydt, R.; and Barmore, B. E.: Pilot Interactions in an Over-Constrained Conflict Scenario as Studied in a Piloted Simulation of Autonomous Aircraft Operations. Presented at 5th USA / Europe ATM R&D Seminar, June 23-27, 2003, Budapest, Hungary.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5ues-djw.pdf>  
Organization RD
- 188** Wong, D. T.; and Takallu, M. A.: Symbology Development for Terrain Portrayal Head-Down Display. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
Organization RD
- 189** Young, S. D.: Runway Incursions: A Technology Solution. Presented at North American Aviation Safety Conference, February 4-6, 2003, Atlanta, Georgia.  
Organization RD
- 190** Young, S. D.; Uijt de Haag, M.; and Sayre, J.: Using X-Band Weather Radar Measurements to Monitor the Integrity of Digital Elevation Models for Synthetic Vision Systems. Presented at AeroSense 2003—Aerospace/Defense Sensing, Simulation, and Controls, April 21-25, 2003, Orlando, Florida. 2003/mtg/NASA-2003-aerosense-sdy.pdf.  
Organization RD
- 191** Zak, J. A.: Atmospheric Boundary Layer Sensors for Application in a Wake Vortex Advisory System. (NAS1-00135 ViGYAN, Inc.) NASA/CR-2003-212175, April 2003, 37 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212175.pdf>  
Organization RD

## **Category 05 Aircraft Design, Testing and Performance**

- 192** Bartels, R. E.: A Time Integration Algorithm Based on the State Transition Matrix for Structures with Time Varying and Nonlinear Properties. *Computers and Structures*, Volume 81, No. 6, March 2003, p. 349-357.  
Organization RC

- 193** Cole, S. R.; Johnson, R. K.; Piatak, D. J.; Florance, J. P.; and Rivera, J. A., Jr.: Recent Facility Improvements and Test Activities in the Langley Transonic Dynamic Tunnel. Presented at 99th Semi-Annual Meeting of Supersonic Tunnel Association International, April 6-8, 2003, St. Louis, Missouri.  
Organization RC
- 194** Cole, S. R.; Noll, T. E.; and Perry, B., III: The Transonic Dynamics Tunnel: Aeroelastic Testing in Support of Aircraft Development. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio.  
Organization RC
- 195** Daggett, D. L.; Kawai, R. T.; and Friedman, D.: Blended Wing Body Systems Studies: Boundary Layer Ingestion Inlets With Active Flow Control. (NAS3-01140 The Boeing Commercial Airplane Group.) NASA/CR-2003-212670, December 2003, 39 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212670.pdf>  
Organization RA
- 196** Daugherty, R. H.: A Study of the Mechanical Properties of Modern Radial Aircraft Tires. NASA/TM-2003-212415, May 2003, 106 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212415.pdf>  
Organization RC
- 197** De Baets, P. W.; Mavris, D. N.; and Sobieszczanski-Sobieski, J.: Bi-Level Integrated System Synthesis: A Proposed Application to Aeroelastic Constraint Analysis in a Conceptual Design Environment. Presented at ACE 2003 - Aerospace Congress & Exhibition, September 8-12, 2003, Montreal, Canada. Paper No. 2003-01-3030.  
Organization RC
- 198** Edwards, J. W.; and Wieseman, C. D.: Flutter and Divergence Analysis Using the Generalized Aeroelastic Method. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-jwe.pdf>  
Organization RC
- 199** Edwards, J. W.; and Wieseman, C. D.: Flutter and Divergence Analysis Using the Generalized Aeroelastic Analysis Method. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 200** Fasanella, E. L.; and Jackson, K. E.: Water and Soft-Soil Impact Testing and Simulation. Presented at 7th US National Congress on Computational Mechanics, July 27-31, 2003, Albuquerque, New Mexico.  
Organization RC

- 201** Fasanella, E. L.; Jackson, K. E.; Sparks, C.; and Sareen, A. K.: Water Impact Test and Simulation of a Composite Energy Absorbing Fuselage Section. Presented at AHS 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona.  
Organization RC
- 202** Florance, J. P.; Burner, A. W.; Fleming, G. A.; Hunter, C. A.; Graves, S. S.; and Martin, C. A.: Contributions of the NASA Langley Research Center to the DARPA/AFRL/NASA/Northrop Grumman Smart Wing Program. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1961.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1961.pdf>  
Organization RC
- 203** Galea, S. C.; Ryall, T. G.; Henderson, D. A.; Moses, R. W.; White, E. V; and Zimcik, D.: Next Generation Active Buffet Suppression System. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-2905.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2905.pdf>  
Organization RC
- 204** Garza, F. R.; and Morelli, E. A.: A Collection of Nonlinear Aircraft Simulations in MATLAB. NASA/TM-2003-212145, January 2003, 92 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212145.pdf>  
Organization RD
- 205** Hajj, M. R.; and Silva, W. A.: Nonlinear Flutter Aspects of the Flexible HSCT Semispan Model. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1515.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1515.pdf>  
Organization RC
- 206** Hardy, R. C.; Boitnott, R. L.; and Stockwell, A. E.: Validation Methods for Impact Dynamic Models. Presented at 7th U.S. National Congress on Computation Mechanics, July 28-30, 2003, Albuquerque, New Mexico.  
Organization RC
- 207** Harper, J. C.; and Spearman, M. L.: A Survey of Airplane Design Types. Presented at 81st Annual Meeting of the Virginia Academy of Science, May 28-30, 2003, Charlottesville, Virginia.  
Organization RA
- 208** Hong, M. S.; Bhatia, K. G.; SenGupta, G.; Kim, T.; Kuruvila, G.; Silva, W. A.; Bartels, R. E.; and Biedron, R. T.: Simulations of a Twin-Engine Transport Flutter Model in the Transonic Dynamics Tunnel. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. Paper No. IFASD 2003-US-44.  
Organization RC

- 209** Horta, L. G.; Lyle, K. H.; and Lessard, W. B.: Evaluation of a Singular Value Decomposition Approach for Impact Dynamic Data Correlation. NASA/TM-2003-212657, October 2003, 26 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212657.pdf>  
Organization RC
- 210** Huebner, L. D.; Witte, D. W.; and Andrews, E. H.: Exhaust Simulation Testing of a Hypersonic Aerobreathing Model at Transonic Speeds. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-7001.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-7001.pdf>  
Organization RB
- 211** Ivanco, T. G; Heeg, J.; and Rivera, J. A., Jr.: An Investigation of Leading Edge Control Surface Divergence and Its Experimental Prediction. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 212** Jackson, K. E.: Comparisons of the Impact Responses of a 1/5-Scale Model and a Full-Scale Crashworthy Composite Fuselage Section. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 213** Jackson, K. E.; and Fasanella, E. L.: Validation of a Crash Simulation of a Vertical Drop Test of a B737 Fuselage Section. Presented at 7th US National Congress on Computational Mechanics, July 27-31, 2003, Albuquerque, New Mexico.  
Organization RC
- 214** Jackson, K. E.; and Fasanella, E. L.: A Survey of Research Performed at NASA Langley Research Center's Impact Dynamics Research Facility. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1896.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1896.pdf>  
Organization RC
- 215** Jackson, K. E.; Fasanella, E. L.; Boitnott, R. L.; and Lyle, K. H.: Full-Scale Crash Test and Finite Element Simulation of a Composite Prototype Helicopter. NASA/TP-2003-212641, ARL-TR-2824, August 2003, 121 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212641.pdf>  
Organization RC
- 216** Jackson, K. E.; Fasanella, E. L.; and Lyle, K. H.: Comparisons of the Impact Responses of a 1/5-Scale Model and a Full-Scale Crashworthy Composite Fuselage Section. Presented at AHS 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-59ahs-kej.pdf>  
Organization RC

- 217** Leifer, J.; and Belvin, W. K.: Prediction of Wrinkle Amplitudes in Thin Film Membranes Using Finite Element Modeling. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 218** Leifer, J.; Black, J. T.; Belvin, W. K.; and Behun, V. D.: Evaluation of Shear Compliant Borders for Wrinkle Reduction in Thin Film Membrane Structures. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 219** Lucia, D. J.; Beran, P. S.; and Silva, W. A.: Aeroelastic System Development Using Proper Orthogonal Decomposition and Volterra Theory. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1922.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1922.pdf>  
Organization RC
- 220** Lyle, K. H.; Padula, S. L.; and Stockwell, A. E.: Application on Non-Deterministic Methods to Assess Crash Test Variations. Presented at AHS 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona.  
Organization RC
- 221** Lyle, K. H.; Padula, S. L.; and Stockwell, A. E.: Application of Probabilistic Analysis to Aircraft Impact Dynamics. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1482.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1482.pdf>  
Organization RC
- 222** Lyle, K. H.; and Stockwell, A. E.: Application of Non-Deterministic Methods to Assess Aircraft Impact Experimental and Simulation Uncertainties. Presented at 7th US National Congress on Computational Mechanics, July 27-31, 2003, Albuquerque, New Mexico.  
Organization RC
- 223** Lyle, K. H.; and Stockwell, A. E.: Application of Probability Methods to Assess Crash Modeling Uncertainty. Presented at 7th U.S. National Congress on Computational Mechanics, July 28-30, 2003, Albuquerque, New Mexico.  
Organization RC
- 224** Lyle, K. H.; Stockwell, A. E.; and Hardy, R. C.: Application of Probability Methods to Assess Crash Modeling Uncertainty. Presented at AHS 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-59ahs-khl.pdf>  
Organization RC

- 225** Mack, R. J.: An Analysis of Measured Sonic-Boom Pressure Signatures From a Langley Wind-Tunnel Model of a Supersonic-Cruise Business Jet Concept. NASA/TM-2003-212447, October 2003, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212447.pdf>  
 Organization RA
- 226** Mack, R. J.: An Analysis of Measured Pressure Signatures From Two Theory-Validation Low-Boom Models. NASA/TM-2003-212423, October 2003, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212423.pdf>  
 Organization RA
- 227** Mack, R. J.: A Supersonic Business-Jet Concept Designed for Low Sonic Boom. NASA/TM-2003-212435, October 2003, 39 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212435.pdf>  
 Organization RA
- 228** Mack, R. J.: A Quick Method for Evaluating the Merits of a Proposed Low Sonic Boom Concept. NASA/TM-2003-212653, November 2003, 38 p.  
 Organization RA
- 229** Marzocca, P.; Librescu, L.; and Silva, W. A.: Nonlinear Time Delayed Feedback Control of Aeroelastic Systems: A Functional Approach. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1867.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1867.pdf>  
 Organization RC
- 230** Masarati, P.; Singleton, J. D.; Piatak, D. J.; and Mantegazza, P.: An Investigation of Soft-Inplane Tiltrotor Aeromechanics Using Two Multibody Analyses. Presented at Tenth International Workshop on Aeroelasticity of Rotorcraft Systems, November 3-5, 2003, Atlanta, Georgia.  
 Organization RC
- 231** Mukhopadhyay, V.: An Interactive Software for Conceptual Wing Flutter Analysis and Parametric Study. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. In Proceedings, Paper No. IFASD US-27.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-vm.pdf>  
 Organization RA
- 232** Nixon, M. W.; Langston, C. W.; Singleton, J. D.; Piatak, D. J.; Kvaternik, R. G.; Corso, L. M.; and Brown, R.: Aeroelastic Stability of a Four-Bladed Semi-Articulated Soft-Inplane Tiltrotor Model. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-mwn.pdf>  
 Organization RC



- 233** Nixon, M. W.; Langston, C. W.; Singleton, J. D.; Piatak, D. J.; Kvaternik, R. G.; Corso, L. M.; and Brown, R.: Aeroelastic Stability of a Four-Bladed Semi-Articulated Soft-Inplane Tiltrotor Model. Presented at AHS 59th Annual Forum and Technology Display, May 6-8, 2003, Phoenix, Arizona. In American Helicopter Society 59th Annual Forum Proceedings. <http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-59ahs-mwn.pdf>  
Organization RC
- 234** Nixon, M. W.; Langston, C. W.; Singleton, J. D.; Piatak, D. J.; Kvaternik, R. G.; Corso, L. M.; and Brown, R.: Hover Test of a Soft-Inplane Gimballed Tiltrotor Model. *Journal of the American Helicopter Society*, Volume 48, No. 1, January 2003, p. 63-66.  
Organization RC
- 235** Ozoroski, T. A.; Mas, K. G.; and Hahn, A. S.: A PC-Based Design and Analysis System for Lighter-Than-Air Unmanned Vehicles. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California.  
Organization RA
- 236** Parrish, R. V.: Avionic Pictorial Tunnel-/Pathway-/Highway-In-The-Sky Workshops. NASA/CP-2003-212164, March 2003, 114 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003-cp212164.pdf>  
Organization RD
- 237** Parrish, R. V.; Busquets, A. M.; Williams, S. P.; and Nold, D. E.: Evaluation of Alternative Concepts for Synthetic Vision Flight Displays With Weather-Penetrating Sensor Image Inserts During Simulated Landing Approaches. NASA/TP-2003-212643, October 2003, 32 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212643.pdf>  
Organization RD
- 238** Piatak, D. J.: Survey of Primary Flow Measurement Parameters at the NASA Langley Transonic Dynamics Tunnel. NASA/TM-2003-212413, June 2003, 81 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212413.pdf>  
Organization RC
- 239** Piatak, D. J.; and Cleckner, C. S.: A Sidewall Forced Oscillation System for the Measurement of Unsteady Aerodynamic Phenomena at the Transonic Dynamics Tunnel. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. Paper No. IFASD 2003-US-43.  
Organization RC
- 240** Piatak, D. J.; and Cleckner, C. S.: Oscillating Turntable for the Measurement of Unsteady Aerodynamic Phenomena. *Journal of Aircraft*, Volume 40, No. 1, January–February 2003, p. 181-188.  
Organization RC

- 241** Pototzky, A. S.: Scaling Procedure to Obtain Aeroservoelastic Equations for a Wind Tunnel Model. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands.  
Organization RC
- 242** Pototzky, A. S.; and Moses, R. W.: An Analysis Method to Predict Tail Buffet Loads of Fighter Aircraft. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 243** Schuster, D. M.; and Byrd, J. E.: Transonic Unsteady Aerodynamics of the F/A-18E at Conditions Promoting Abrupt Wing Stall. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper 2003-0593.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0593.pdf>  
Organization RC
- 244** Schuster, D. M.; and Byrd, J. E.: Transonic Unsteady Aerodynamics of the F/A-18E at Conditions Promoting Abrupt Wing Stall. Presented at Naval Air System Command Air Vehicle Engineering Conference, May 13-15, 2003, Jacksonville, Florida.  
Organization RC
- 245** Schuster, D. M.; and Edwards, J. W.: Application of Computational Stability and Control Techniques Including Unsteady Aerodynamics and Aeroelastic Effects. Presented at NASA Symposium on Computational Methods for Stability and Control (COMSAC), September 23-25, 2003, Hampton, Virginia.  
Organization RC
- 246** Schuster, D. M.; Liu, D. D.; and Huttzell, L. J.: Computational Aeroelasticity: Success, Progress, Challenge. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1725.  
Organization RC
- 247** Schuster, D. M.; Liu, D. D.; and Huttzell, L. J.: Computational Aeroelasticity: Success, Progress, Challenge. *Journal of Aircraft*, Volume 40, No. 5, September-October 2003, p. 843-856.  
Organization RC
- 248** Scott, R. C.; and Silva, W. A.: Pitch Oscillation Data and Analysis for a Large HSCT Semispan Wing. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. Paper No. IFASD US-38.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-rs.pdf>  
Organization RC

- 249** Sheta, E. F.; Moses, R. W.; Huttzell, L. J.; and Harrand, V. J.: Active Control of F/A-18 Vertical Tail Buffeting Using Piezoelectric Actuators. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1887.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1887.pdf>  
Organization RC
- 250** Sheta, E. F.; Moses, R. W.; Huttzell, L. J.; and Harrand, V. J.: An Active Smart Material Control System for F/A-18 Buffet Alleviation. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-rwm.pdf>  
Organization RC
- 251** Silva, W. A.; Hong, M. S.; Bartels, R. E.; Piatak, D. J.; and Scott, R. C.: Identification of Computational and Experimental Reduced-Order Models. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. Paper No. IFASD 2003-US-39.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-was.pdf>  
Organization RC
- 252** Silva, W. A.; Piatak, D. J.; and Scott, R. C.: Identification of Experimental Unsteady Aerodynamic Impulse Responses. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1959.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1959.pdf>  
Organization RC
- 253** Slade, K. N.; Belvin, W. K.; Tetlow, T. K.; and Behun, V. D.: Dynamic Characterization of a Subscale Solar Sail Using Non-Contacting Excitation and Sensing. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 254** Smart, M. K.; and Trexler, C. A.: Mach 4 Performance of a Fixed-Geometry Hypersonic Inlet With Rectangular-to-Elliptical Shape Transition. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0012.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0012.pdf>  
Organization RB
- 255** Sobieszczanski-Sobieski, J.; and Venter, G.: Imparting Desired Attributes by Optimization in Structural Design. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1546.  
Organization RC

- 256** Spearman, M. L.: A New Look at the Airship. Presented at 81st Annual Meeting of the Virginia Academy of Science, May 28-30, 2003, Charlottesville, Virginia.  
Organization RA
- 257** Spearman, M. L.; and Klein, K. A.: A Conceptual Design of Large Aircraft. Presented at 81st Annual Meeting of the Virginia Academy of Science, May 28-30, 2003, Charlottesville, Virginia.  
Organization RA
- 258** Tartabini, P. V.; Bose, D. M.; McMinn, J. D.; Martin, J. G.; and Strovers, B. K.: Hyper-X Stage Separation Trajectory Validation Studies. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5819.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5819.pdf>  
Organization RA
- 259** Witte, D. W.; and Andrews, E. H.: Powered Transonic Testing of a Hypersonic Airbreathing Configuration With an Exhaust Simulation Wind Tunnel Model. Presented at NATO/RTA Symposium on Vehicle Propulsion Integration, October 6-9, 2003, Warsaw, Poland.  
Organization RB
- 260** Witte, D. W.; Huebner, L. D.; Trexler, C. A.; Cabell, K. F.; and Andrews, E. H.: Propulsion Airframe Integration Test Techniques for Hypersonic Airbreathing Configurations at NASA Langley Research Center. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4406.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4406.pdf>  
Organization RB
- 261** Woodard, S. E.; Coffey, N. C.; Gonzalez, G.; Taylor, B. D.; Brett, R.; Woodman, K. L.; Weathered, B. W.; and Rollins, C. H.: Development and Flight Testing of an Autonomous Landing Gear Health-Monitoring System. Presented at IFASD 2003—International Forum on Aeroelasticity and Structural Dynamics, June 4-6, 2003, Amsterdam, The Netherlands. In Proceedings, Paper No. IFASD 2003-US-42.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ifasd-sew.pdf>  
Organization RC
- 262** Woodard, S. E.; Coffey, N. C.; Gonzalez, G.; Woodman, K. L.; Weathered, B. W.; Rollins, C. H.; Taylor, B. D.; and Brett, R.: Development and Flight Testing of an Adaptable Vehicle Health-Monitoring Architecture. NASA/TM-2003-212139, January 2003, 34 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212139.pdf>  
Organization RC

- 263** Woodard, S. E.; Taylor, B. D.; Shams, Q. A.; and Fox, R. L.: L-C Measurement Acquisition for Aerospace Systems. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado. AIAA Paper No. 2003-6842.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6842.pdf>  
 Organization RC
- 264** Yager, T. J.: Ground Vehicle Runway Friction Survey Procedures. Presented at FAA In-Flight Icing/Ground De-Icing International Conference, June 16-20, 2003, Chicago, Illinois.  
 Organization RC
- 265** Yeager, W. T., Jr.; Wilbur, M. L.; and Nixon, M. W.: A Review of Recent Rotorcraft Experimental Investigations in the Langley Transonic Dynamics Tunnel. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1963.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1963.pdf>  
 Organization RC

#### **Category 06 Aircraft Instrumentation**

- 266** Kronfeld, K. M.: Enhanced Weather Radar (EWxR) System. (NCC1-355 Rockwell Collins.) NASA/CR-2003-212406, June 2003, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212406.pdf>  
 Organization RD

#### **Category 07 Aircraft Propulsion and Power**

- 267** Cabell, K. F.; and Rock, K. E.: A Finite Rate Chemical Analysis of Nitric Oxide Flow Contamination Effects on Scramjet Performance. NASA/TP-2003-212159, May 2003, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212159.pdf>  
 Organization RB
- 268** Rogers, R. C.; Shih, A. T.; and Gaffney, R. L., Jr.: Goals and Realities of Hypervelocity Scramjet Propulsion Ground Testing. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
 Organization RB
- 269** Smith, W. L.; Harrison, F. W.; Larar, A. M.; Miller, J. B.; Murray, J. J.; Zhou, D. K.; Revercomb, H.; Huang, H. L.; Knuteson, R.; Tobin, D. C.; Velden, C.; Bingham, G. E.; Huppi, R.; Peterson, R.; *et al.*: GIFT—A Geostationary Satellite Enhancement of the Earth Observing System. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
 Organization RE

**270** White, J. A.: Diagnostic Measurements Needed for Modeling Turbulent Combustion in Scramjets Operating in the Dual-Mode Regime. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.

Organization RB

**271** White, J. A.; and Fry, R. S.: Recommendations of the 2002 JANNAF/APS/CS/PSHS/MSS Joint Meeting Turbulence and Kinetics Models for Scramjet Simulation Workshop. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.

Organization RB

### **Category 08 Aircraft Stability and Control**

**272** Davidson, J. B., Jr.; Chwalowski, P.; and Lazos, B. S.: Flight Dynamic Simulation Assessment of a Morphable Hyper-Elliptic Cambered Span Winged Configuration. Presented at AIAA Atmospheric Flight Mechanics Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5301.

Organization RD

**273** Fremaux, C. M.: Stability & Control Challenges for COMSAC: A NASA Langley Perspective. Presented at NASA Symposium on Computational Methods for Stability and Control, September 23-25, 2003, Hampton, Virginia.

Organization RD

**274** Jackson, E. B.: Development of a Proposed Flight Model Exchange Format: DAVE-ML. Presented at PC-Based Simulation Working Group/Architecture Sub Group Meeting, March 18-29, 2003, Patuxent, Maryland.

Organization RD

**275** Lim, K. B.; Shin, J-Y.; Cooper, E. G.; Moerder, D. D.; Khong, T. H.; and Smith, M. F.: An Overview of the NASA Flying Test Platform Research. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas. In Proceedings, AIAA Paper No. 2003-5775.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5775.pdf>

Organization RD

**276** Meirovitch, L.; and Tuzcu, I.: Integrated Approach to the Dynamics and Control of Maneuvering Flexible Aircraft. (NCC1-346 Virginia Polytechnic Institute and State University.) NASA/CR-2003-211748, June 2003, 76 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr211748.pdf>

Organization RD

- 277** Morelli, E. A.: Multiple Input Design for Real-Time Parameter Estimation in the Frequency Domain. Presented at 13th IFAC Symposium on System Identification—SYSID 2003, August 27-29, 2003, Rotterdam, The Netherlands. Paper No. REG-360.  
Organization RD
- 278** Motter, M. A.: Autonomous Flight Tests of a Small Unmanned Aerial Vehicle. Presented at Society of Flight Test Engineers 24th Annual Symposium, September 15-19, 2003, Portsmouth, Virginia.  
Organization RD
- 279** Owens, D. B.; Brandon, J. M.; Hall, R. M.; and Capone, F. J.: Free-to-Roll Analysis of Abrupt Wing Stall on Military Aircraft at Transonic Speeds. Presented at 2003 NAVAIR Air Vehicle Engineering Conference, May 13-15, 2003, Jacksonville, Florida.  
Organization RD
- 280** Owens, D. B.; Capone, F. J.; Hall, R. M.; Brandon, J. M.; Cunningham, K.; and Chambers, J. R.: Free-to-Roll Analysis of Abrupt Wing Stall on Military Aircraft at Transonic Speeds. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0750.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0750.pdf>  
Organization RD
- 281** Raney, D. L.; and Waszak, M. R.: Biologically Inspired Micro-Flight Research. Presented at ACE 2003 - Aerospace Congress & Exhibition, September 8-12, 2003, Montreal, Canada. Paper No. SAE 2003-01-3042.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ace-dlr.pdf>  
Organization RD

### **Category 09 Research and Support Facilities (Air)**

- 282** Amer, T. R.; Obara, C. J.; and Liu, T.: Quantifying the Effects of Pressure Sensitive Paint on Aerodynamic Data. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3951.  
Organization RB
- 283** Buck, G. M.: Langley 20-Inch Hypersonic CF<sub>4</sub> Tunnel: Low Density Calibrations for Viscous-Interaction Studies. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida.  
Organization RB
- 284** Chue, R. S.; Tsai, C-Y.; Bakos, R. J.; Erdos, J. I.; and Rogers, R. C.: NASA's HYPULSE Facility at GASL—A Dual Mode, Dual Driver Reflected- Shock/Expansion Tunnel, Chapter 3. In *Progress in Astronautics and Aeronautics*, Frank K. Lu and Dan E. Marren, eds., AIAA, 2002, p. 29-69.  
Organization RB

- 285** Corliss, J. M.; Pant, S.; Hui, K.; Duddy, L.; and Veno, J.: Reduction of High-Amplitude Cogging Torque Response in a 12,000 Horsepower Synchronous Drive Motor. Presented at 2003 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, September 2-6, 2003, Chicago, Illinois. Paper No. DET2003/VIB-48464.  
Organization RF
- 286** Hodge, J. S.; and Harvin, S. F.: The NASA Langley Research Center 8-Foot High Temperature Tunnel. In *Progress in Astronautics and Aeronautics*, Vol. 198, Advanced Hypersonic Test Facilities, Frank K. Lu and Dan E. Marren, eds., 2002.  
Organization RB
- 287** Morelli, E. A.; and DeLoach, R.: Wind Tunnel Database Development Using Modern Experiment Design and Multivariate Orthogonal Functions. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA 2003-0653.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0653.pdf>  
Organization RD
- 288** Obara, C. J.; Burkett, C. G., Jr.; Umberger, S. A.; Pritchard, D. W.; and Carmine, M. T.: Development of an Automated Calibration System for Pressure and Temperature Sensitive Paints. Presented at 49th International Instrumentation Symposium, May 4-8, 2003, Orlando, Florida.  
Organization RB
- 289** Watson, R. D.; Jenkins, L. N.; Yao, C-S.; McGinley, C. B.; Paschal, K. B.; and Neuhart, D. H.: PIV Measurements in the 14 x 22 Low Speed Tunnel: Recommendations for Future Testing. NASA/TM-2003-212434, August 2003, 23 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212434.pdf>  
Organization RB

## **Astronautics**

### **Category 12 Astronautics (General)**

- 290** Dwyer-Cianciolo, A. M.; Tolson, R. H.; Munk, M. M.; and Tartabini, P. V.: Development of a Monte Carlo Mars-Gram Model for 2001 Mars Odyssey Aerobraking Simulations. *Journal of the Astronautical Sciences*, Volume 50, No. 2, April-June 2002, p. 191-211.  
Organization RA

### **Category 13 Astrodynamics**

- 291** Hrinda, G. A.: Structural Design of the Titan Aerocapture Mission. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4955.  
Organization RA



**292** Park, S-Y.; and Mazanek, D. D.: Mission Functionality for Deflecting Earth-Crossing Asteroids/Comets. *Journal of Guidance, Control, and Dynamics*, Volume 26, No. 5, September/October, p. 734-744.  
Organization RA

**293** Raiszadeh, B.: Multibody Parachute Flight Simulations for Planetary Entry Trajectories Using “Equilibrium Points. Presented at 13th AAS/AIAA Space Flight Mechanics Meeting, February 9-12, 2003, Ponce, Puerto Rico. Paper No. AAS 03-163.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-13sfmm-br.pdf>  
Organization RA

#### **Category 14 Ground Support Systems and Facilities (Space)**

**294** Amer, T. R.; Goad, W. K.; Obara, C. J.; and Massey, E. A.: Data Acquisition Software for Multiple Scientific Grade CCD Camera Systems. Presented at 49th International Instrumentation Symposium, May 4-8, 2003, Orlando, Florida.  
Organization RB

#### **Category 15 Launch Vehicles and Space Vehicles**

**295** Amundsen, R. M.; Dec, J. A.; and George, B. E.: Aeroheating Thermal Analysis Methods for Aerobraking Mars Missions. Presented at 14th Annual Thermal & Fluid Analysis Workshop (TFAWS 03), August 18-22, 2003, Hampton, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-14tfaws-rma.pdf>  
Organization RF

**296** Amundsen, R. M.; Dec, J. A.; and George, B. E.: Aeroheating Thermal Model Correlation for Mars Global Surveyor (MGS) Solar Array. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3765.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3765.pdf>  
Organization RF

**297** Bowles, D. E.; and Barnes, R. S.: Next Generation Launch Technology, Vehicle Systems Research and Technology Project Framing Future Space Transportation Systems. Presented at 54th International Astronautical Congress, September 29–October 3, 2003, Bremen, Germany.  
Organization OC

**298** Cockrell, C. E., Jr.: Aerosciences, Aero-Propulsion and Flight Mechanics Technology Development for NASA’s Next Generation Launch Technology Program. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-6948.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6948.pdf>  
Organization OC

- 299** Desai, P. N.; Blanchard, R. C.; and Powell, R. W.: Entry Trajectory and Atmosphere Reconstruction Methodologies for the Mars Exploration Rover Mission. Presented at International Workshop on Planetary Probe Atmospheric Entry and Descent Trajectory Analysis and Science, October 6-9, 2003, Lisbon, Portugal.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-iwppae-pnd.pdf>  
Organization RA
- 300** Desai, P. N.; and Lee, W.: Entry Descent, and Landing Scenario for the Mars Exploration Rover Mission. Presented at International Workshop on Planetary Probe Atmospheric Entry and Descent Trajectory Analysis and Science, October 6-9, 2003, Lisbon, Portugal.  
Organization RA
- 301** Desai, P. N.; Schoenenberger, M.; and Cheatwood, F. M.: Mars Exploration Rover Six-Degree-of-Freedom Entry Trajectory Analysis. Presented at 2003 AAS/AIAA Astrodynamics Specialist Conference, August 3-7, 2003, Big Sky, Montana. Paper No. AAS 03-642.  
Organization RA
- 302** Glass, D. E.: TPS: Past and Present. Presented at University of Rio de Janeiro Mechanical Engineering Department Short Course, March 13, 2003, Rio de Janeiro, Brazil.  
Organization OC
- 303** Glass, D. E.: Advanced TPS. Presented at University of Rio de Janeiro Mechanical Engineering Department Short Course, March 14, 2003, Rio de Janeiro, Brazil.  
Organization OC
- 304** Glass, D. E.; and Belvin, H. L.: Airframe Structures and Materials for Hypersonic Airbreathing Access to Space. Presented at 2003 ASME International Mechanical Engineering Congress and RD&D Expo, November 15-22, 2003, Washington, DC.  
Organization OC
- 305** Karr, K. L.; Poteet, C. C.; and Blosser, M. L.: Hypervelocity Impact Test Results for a Metallic Thermal Protection System. NASA/TM-2003-212440, August 2003, 79 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212440.pdf>  
Organization RC
- 306** Rowell, L. F.; and Korte, J. J.: Launch Vehicle Design and Optimization Methods and Priority for the Advanced Engineering Environment. NASA/TM-2003-212654, October 2003, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212654.pdf>  
Organization RA
- 307** Steltzner, A.; Desai, P. N.; Lee, W.; and Bruno, R.: The Mars Exploration Rovers Entry Descent and Landing Phase and the Use of Aerodynamic Decelerators. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2125.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2125.pdf>  
Organization RA

## Category 16 Space Transportation

- 308** Weinstein, L. M.: Space Colonization Using Space-Elevators From Phobos. Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-staif-lmw.pdf>  
Organization RB

## Category 18 Spacecraft Design, Testing and Performance

- 309** Antol, J.; Calhoun, P. C.; Flick, J. J.; Hajos, G. A.; Kolacinski, R.; Minton, D.; Owens, R.; and Parker, J. R.: Low Cost Mars Surface Exploration: The Mars Tumbleweed. NASA/TM-2003-212411, August 2003, 43 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212411.pdf>  
Organization RA
- 310** Calhoun, P. C.; and Hampton, R. D.: Frequency Weighted H<sub>2</sub> Control Design for the Glovebox Integrated Microgravity Isolation Technology (G-LIMIT). Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas.  
Organization RA
- 311** Desai, P. N.; Schofield, T.; and Lisano, M.: Flight Reconstruction of the Mars Pathfinder Disk-Gap-Band Parachute Drag Coefficient. Presented at 17th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, May 19-22, 2003, Monterey, California. AIAA Paper No. 2003-2126.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2126.pdf>  
Organization RA
- 312** Granda, J. J.; and Montgomery, R. C.: Automated Modeling and Simulation Using the Bond Graph Method for the Aerospace Industry. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5527.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5527.pdf>  
Organization RD
- 313** Lewis, J.; Miller, K. L.; Trochman, B.; Stein, J.; Lyons, D. T.; and Wilmoth, R. G.: Trailing Ballute Aerocapture: Concept and Feasibility Assessments. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama.  
Organization RB
- 314** Lim, K. B.: Structured Uncertainty Bound Determination From Data for Control and Performance Validation. NASA/TM-2003-212441, August 2003, 136 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212441.pdf>  
Organization RD

- 315** Lockwood, M. K.: Titan Aerocapture Systems Analysis. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4799.  
Organization RA
- 316** Montgomery, R. C.; and Granda, J. J.: Using Bond Graphs for Articulated, Flexible Multi-Bodies, Sensors, Actuators, and Controllers With Application to the International Space Station. Presented at 2003 Western MultiConference on Computer Simulation (WMC 2003), January 19-23, 2003, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-wmcs-rcm.pdf>  
Organization RD
- 317** Roithmayr, C. M.; Karlgaard, C. D.; Kumar, R. R.; and Bose, D. M.: Integrated Power and Attitude Control for a Spacecraft With Flywheels and Control Moment Gyroscopes. Presented at 13th AAS/AIAA Space Flight Mechanics Meeting, February 9-12, 2003, Ponce, Puerto Rico. Paper No. AAS 03-124.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-13sfmm-cmr.pdf>  
Organization RA
- 318** Roithmayr, C. M.; Karlgaard, C. D.; Kumar, R. R.; Seywald, H.; and Bose, D. M.: Dynamics and Control of Attitude, Power, and Momentum for a Spacecraft Using Flywheels and Control Moment Gyroscopes. NASA/TP-2003-212178, April 2003, 87 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212178.pdf>  
Organization RA
- 319** Seywald, H.; Roithmayr, C. M.; Mazanek, D. D.; Stillwagen, F. H.; Troutman, P. A.; and Park, S-Y.: Planar High-Thrust and Low-Thrust Orbital Transfers From Earth to Europa. Presented at 13th AAS/AIAA Space Flight Mechanics Meeting, February 9-12, 2003, Ponce, Puerto Rico.  
Organization RA
- 320** Seywald, H.; Roithmayr, C. M.; and Troutman, P. A.: Fuel-Optimal Orbital Transfers for Variable Specific Impulse Powered Spacecraft. Presented at 13th AAS/AIAA Space Flight Mechanics Meeting, February 9-12, 2003, Ponce, Puerto Rico. Paper No. AAS 03-122.  
Organization RA
- 321** Way, D. W.; Powell, R. W.; Edquist, K. T.; Masciarelli, J.; and Starr, B. R.: Aerocapture Simulation and Performance for the Titan Explorer Mission. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4951.  
Organization RA
- 322** Williams, L.; Dorsey, J. T.; and Foust, J.: GEO Communications Transponder Park: A New Concept for Direct Broadcast Services. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6316.  
Organization RC

## Category 20 Spacecraft Propulsion and Power

- 323** Troutman, P. A.; Bethke, K.; Stillwagen, F. H.; Caldwell, D. L.; Manvi, R.; Strickland, C.; and Krizan, S. A.: Revolutionary Concepts for Human Outer Planet Exploration (HOPE). Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico.  
Organization RA

## Chemistry and Materials

### Category 23 Chemistry and Materials (General)

- 324** Cramer, K. E.; Yost, W. T.; and Perey, D. F.: Effluent Based Characterization of Aerospace Wiring. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
Organization RC
- 325** Prior, E. J.; Jacobs, J. A.; and Chung, W. R.: National Educators' Workshop: Update 2002—Standard Experiments in Engineering, Materials Science, and Technology. NASA/CP-2003-212403, May 2003, 600 p.  
Organization SH
- 326** Vay, S. A.; Anderson, B. E.; Thornhill, K. L.; and Hudgins, C. H.: An Assessment of Aircraft-Generated Contamination on In-Situ Trace Gas Measurements: Determinations From Empirical Data Acquired Aloft. *Journal of Atmospheric and Oceanic Technology*, Volume 20, No. 11, November 2003, p. 1478-1487.  
Organization RE
- 327** Vay, S. A.; Woo, J-H.; Anderson, B. E.; Blake, D. R.; Westberg, D. J.; Avery, M. A.; Sachse, G. W.; and Streets, D. G.: The Impact of Asian Emissions on Tropospheric CO<sub>2</sub> Distributions at Regional Scale Level. Presented at Atmospheric Sciences and Applications to Air Quality, March 11-13, 2003, Tsukuba Science City, Japan.  
Organization RE
- 328** Vay, S. A.; Woo, J-H.; Anderson, B. E.; Thornhill, K. L.; Blake, D. R.; Westberg, D. J.; Kiley, C. M.; Avery, M. A.; Sachse, G. W.; Streets, D. G.; Tsutsumi, Y.; and Nolf, S. R.: The Influence of Regional-Scale Anthropogenic Emissions on CO<sub>2</sub> Distributions Over the Western North Pacific. *Journal of Geophysical Research*, Volume 108, No. D20, September 2003, p. GTE 22-1 - 22-14.  
Organization RE
- 329** Williams, P.; Wincheski, R. A.; Smits, J. M.; Adebimpe, D.; and Zgol, M.: Dispersion and Alignment of Individual Single-Walled Carbon Nanotubes for NDE Sensors. Presented at International Symposium on Clusters and Nano-Assemblies: Physical and Biological Systems, November 10-13, 2003, Richmond, Virginia.  
Organization RC

**330** Williams, P.; Wincheski, R. A.; Smits, J. M.; Adebimpe, D.; and Zgol, M.: Dispersion and Deposition of Individual Single-Walled Carbon Nanotubes for Device Applications. Presented at 2003 Materials Research Society Fall Meeting, December 1-5, 2003, Boston, Massachusetts.

Organization RC

**331** Wincheski, R. A.; Namkung, M.; Williams, P.; and Smits, J. M.: Spin Coherent Transport in Four Terminal Carbon Nanotube Sensor Elements. Presented at International Symposium on Clusters and Nano-Assemblies: Physical and Biological Systems, November 10-13, 2003, Richmond, Virginia.

Organization RC

### **Category 24 Composite Materials**

**332** Ambur, D. R.; Harik, V. M.; Ounaies, Z.; and Librescu, L.: Modeling the Structural Response of Multifunctional Materials: In-Field Vibration of a Thin Plates. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.

Organization RC

**333** Ambur, D. R.; Jaunky, N.; Hilburger, M. W.; and Rose, C. A.: Progressive Failure and Residual Strength Studies for Plates With Large Deformations. Presented at Twelfth International Conference on Composite Structures (ICCS/12), November 17-19, 2003, Melbourne, Australia.

Organization RC

**334** Bogert, P. B.; Haugse, E.; and Gehrki, R. E.: Structural Shape Identification From Experimental Strains Using a Modal Transformation Technique. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.

Organization RC

**335** Collins, J.; Lawson, S.; and Smeltzer, S. S., III: Embedded Sensor Forceps for Assisting Childbirth. Presented at NASA Advanced Medical Technology Symposium, February 11-13, 2003, Pasadena, California.

Organization RC

**336** Forth, S. C.; Herman, D. J.; and James, M. A.: Fatigue Crack Growth Rate and Stress-Intensity Factor Corrections for Out-of-Plane Crack Growth. Presented at Second International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics, November 19-21, 2003, Tampa, Florida.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-2astm-scf.pdf>

Organization RC

- 337** Frankland, S. J.; Bandorawalla, T.; and Gates, T. S.: Calculation of Non-Bonded Forces Due to Sliding of Bundled Carbon Nanotubes. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1536.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1536.pdf>  
Organization RC
- 338** Frankland, S. J.; Herzog, M. N.; Odegard, G. M.; Gates, T. S.; and Fay, C. C.: Modeling and Characterization of Elastic Constants of Functionalized Nanotube Materials. Presented at 2003 Materials Research Society Fall Meeting, December 1-5, 2003, Boston, Massachusetts.  
Organization RC
- 339** Gates, T. S.: 100th Anniversary Special Session on Structures: Nanotechnology. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 340** Gates, T. S.: On the Use of Accelerated Test Methods for Characterization of Advanced Composite Materials. NASA/TP-2003-212407, May 2003, 55 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212407.pdf>  
Organization RC
- 341** Gates, T. S.; Glaessgen, E. H.; Odegard, G. M.; Smith, S. A.; and Herring, H. M.: Facesheet Delamination of Composite Sandwich Materials at Cryogenic Temperatures. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida.  
Organization RC
- 342** Gates, T. S.; and Hinkley, J. A.: Computational Materials: Modeling and Simulation of Nanostructured Materials and Systems. NASA/TM-2003-212163, March 2003, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212163.pdf>  
Organization RC
- 343** Gates, T. S.; and Hinkley, J. A.: Computational Materials: Modeling and Simulation of Nanostructured Materials and Systems. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1534.  
Organization RC
- 344** Gates, T. S.; Whitley, K. S.; Grenoble, R. W.; and Bandorawalla, T.: Thermal/Mechanical Durability of Polymer Matrix Composites in Cryogenic Environments. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1600.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1600.pdf>  
Organization RC

- 345** Glaessgen, E. H.; Raju, I. S.; and Poe, C. C., Jr.: An Efficient Analysis for the Debonding of Stitched Skin-Stiffened Structures. *Journal of Composites Technology and Research*, Volume 25, No. 1, January 2003, p. 69-81.  
Organization RC
- 346** Harris, C. E.; Shuart, M. J.; and Starnes, J. H., Jr.: Advanced Durability and Damage Tolerance Design and Analysis Methods for Composite Structures—Lessons Learned from NASA Technology Development Programs. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Material Con, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 347** Harris, C. E.; Starnes, J. H., Jr.; and Shuart, M. J.: Advanced Durability and Damage Tolerance Design and Analysis Methods for Composite Structures—Lessons Learned From NASA Technology Development Programs. NASA/TM-2003-212420, June 2003, 36 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212420.pdf>  
Organization AK
- 348** Harris, C. E.; Starnes, J. H., Jr.; and Shuart, M. J.: Advanced Durability and Damage Tolerance Design and Analysis Methods for Composite Structure. Presented at ICAF 2003—International Committee on Aeronautical Fatigue, May 5-9, 2003, Lucerne, Switzerland.  
Organization RC
- 349** Herring, H. M.: Characterization of Thin Film Polymers Through Dynamic Mechanical Analysis and Permeation. (NAS1-00135 Lockheed Martin Engineering & Sciences.) NASA/CR-2003-212422, June 2003, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212422.pdf>  
Organization RC
- 350** Herring, H. M.: Dynamic Mechanical Characterization of Thin Film Polymer Nanocomposites. (NAS1-00135 Lockheed Martin Engineering & Sciences.) NASA/CR-2003-212147, January 2003, 15 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212147.pdf>  
Organization RC
- 351** Jackson, W. C.; Ambur, D. R.; Chunchu, P. B.; and Sankaran, S. N.: Influence of Material Forms on the Air Leakage Resistance of Low-Speed Impacted Composite Plates. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RC
- 352** Krueger, R.; Minguet, P. J.; and O'Brien, T. K.: Implementation of Interlaminar Fracture Mechanics in Design: An Overview. Presented at 14th International Conference on Composite Materials (ICCM-14), July 14-18, 2003, San Diego, California. In Proceedings, Paper No. 1456.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-14iccm-rk.pdf>  
Organization RC



- 353** McGowan, D. M.; Ambur, D. R.; and McNeill, S. R.: Full-Field Structure Response of Composite Structures: Analysis and Experiment. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 354** McGowan, D. M.; Turner, T. L.; Cano, R. J.; and Satyanarayana, A.: Deflection Control of Composite Plates by Embedded SMA Actuation. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 355** Murri, G. B.; Schaff, J. R.; and Dobyns, A.: Fatigue Life Analysis of Hybrid Composite Tapered Flexbeams. Presented at 14th International Conference on Composite Materials (ICCM-14), July 14-18, 2003, San Diego, California. In Proceedings, Paper No. 1455.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-14iccm-gbm.pdf>  
Organization RC
- 356** Nemeth, M. P.: Buckling of Long Compression-Loaded Anisotropic Plates Restrained Against Inplane Lateral and Shear Deformations. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1789.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1789.pdf>  
Organization RC
- 357** O'Brien, T. K.: Application of Interlaminar Fracture Testing for Delamination Failure Criteria in Composite Structures. Presented at Prospects in Fracture, July 8-9-2003, London, United Kingdom.  
Organization RC
- 358** O'Brien, T. K.; Chawan, A. D.; DeMarco, K.; and Paris, I. L.: Influence of Specimen Configuration and Size on Composite Transverse Tensile Strength and Scatter. *Journal of Composites Technology and Research*, Volume 25, No. 1, January 2003, p. 3-21.  
Organization RC
- 359** O'Brien, T. K.; and Krueger, R.: Analysis of Flexure Tests for Transverse Tensile Strength Characterization of Unidirectional Composites. *Journal of Composites Technology and Research*, Volume 25, No. 1, January 2003, p. 50-68.  
Organization RC
- 360** Odegard, G. M.; Clancy, T. C.; and Gates, T. S.: Constitutive Modeling of Nanoparticle-Reinforced Polyimides. Presented at 2003 International Mechanical Engineering Congress and Exposition, November 15-21, 2003, Washington, DC.  
Organization RC

- 361** Odegard, G. M.; Frankland, S. J.; and Gates, T. S.: The Effect of Chemical Functionalization on Mechanical Properties of Nanotube/Polymer Composites. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1701.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1701.pdf>  
Organization RC
- 362** Odegard, G. M.; Gates, T. S.; Wise, K.; Park, C.; and Siochi, E. J.: Constitutive Modeling of Nanotube-Reinforced Polymer Composites. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1671-1687.  
Organization RC
- 363** Pipes, R. B.; Frankland, S. J.; Hubert, P.; and Saether, E.: Self-Consistent Properties of Carbon Nanotubes and Hexagonal Arrays as Composite Reinforcements. *Composites Science and Technology*, Volume 63, No. 10, August 2003, p. 1349-1358.  
Organization RC
- 364** Ratcliffe, J. G.; and O'Brien, T. K.: Out-of-Plane Stiffness Prediction Techniques for X-Cor® Truss Sandwich. Presented at 6th International Conference on Sandwich Structures, March 31–April 2, 2003, Fort Lauderdale, Florida.  
Organization RC
- 365** Reeder, J. R.: Refinements to the Mixed-Mode Bending Test for Delamination Toughness. *Journal of Composites Technology and Research*, Volume 25, No. 4, October 2003, p. 191-195.  
Organization RC
- 366** Reeder, J. R.; Allen, D. H.; and Bradley, W. L.: Effect of Elevated Temperature and Loading Rate on Delamination Fracture Toughness. Presented at 14th International Conference on Composite Materials (ICCM-14), July 14-18, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-14iccm-jrr.pdf>  
Organization RC
- 367** Whitley, K. S.; and Gates, T. S.: Thermal/Mechanical Response of a Polymer Matrix Composite at Cryogenic Temperatures. NASA/TM-2003-212171, March 2003, 34 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212171.pdf>  
Organization RC
- 368** Wincheski, R. A.; Namkung, M.; Smits, J. M.; Williams, P.; and Harvey, R.: Effect of Alignment on Transport Properties of Carbon Nanotube/Metallic Junctions. Presented at 2003 Materials Research Society Spring Meeting, April 21-25, 2003, San Francisco, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-mrsm-bw.pdf>  
Organization RC

## Category 25 Inorganic and Physical Chemistry

- 369** Ohlhorst, C. W.; Vaughn, W. L.; Lewis, R. K.; and Milhoan, J. D.: Arc Jet Results on Candidate High Temperature Coatings for NASA's NGLT Refractory Composite Leading Edge Task. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RC
- 370** Ohlhorst, C. W.; Vaughn, W. L.; Lewis, R. K.; and Milhoan, J. D.: Arc Jet Results on Candidate High Temperature Coating of NASA's Hypersonic Refractory Composite Leading Edge Task. Presented at 27th Annual Conference on Composites, Materials and Structures, January 27-31, 2003, Cocoa Beach, Florida.  
Organization RC
- 371** Pellett, G. L.; Reid, B.; McNamara, C.; Johnson, R.; Kabaria, A.; Panigrahi, B.; and Wilson, L. G.: Acoustic Weakening of Methane-, Ethylene-, and Hydrogen-Air Counterflow Diffusion Flames, and Implications for Scramjet Flameholding. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4634.  
Organization RB

## Category 26 Metallic Materials

- 372** Forth, S. C.; Favrow, L.; Keat, W. D.; and Newman, J. A.: Three-Dimensional Mixed-Mode Fatigue Crack Growth in a Functionally Graded Titanium Alloy. *Engineering Fracture Mechanics*, Volume 70, No. 15, October 2003, p. 2175-2185.  
Organization RC
- 373** Forth, S. C.; Newman, J. C., Jr.; and Forman, R. G.: On Generating Fatigue Crack Growth Thresholds. *International Journal of Fatigue*, Volume 25, No. 1, January 2003, p. 9-15.  
Organization RC
- 374** Glaessgen, E. H.; Phillips, D. R.; Iesulauro, E.; Saether, E.; and Piascik, R. S.: Multiscale Modeling of Particle-Substrate Interactions in Metallic Materials. Presented at International Conference on Computational & Experimental Engineering and Sciences (ICCES '03), July 25-29, 2003, Corfu, Greece.  
Organization RC
- 375** Glaessgen, E. H.; Phillips, D. R.; Iesulauro, E.; Saether, E.; Piascik, R. S.; and Raju, I. S.: A Multiscale Approach to Modeling Fracture in Metallic Materials Containing Nonmetallic Inclusions. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC

- 376** Hales, S. J.: Production of  $\gamma$ -TiAl Foil via Plasma Spray Deposition. Presented at 14th AeroMat Conference, June 9-12, 2003, Dayton, Ohio.  
Organization RC
- 377** Hales, S. J.; Saqib, M.; and Alexa, J. A.: An Innovative Method for Manufacturing  $\gamma$ -TiAl Foil. Presented at 3rd International Symposium on Gamma Titanium Aluminides, March 2-6, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3isgta-sjh2.pdf>  
Organization RC
- 378** Hales, S. J.; and Vasquez, P.: Synthesis of Nano-Crystalline  $\gamma$ -TiAl Materials. Presented at 3rd International Symposium on Gamma Titanium Aluminides, March 2-6, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3isgta-sjh.pdf>  
Organization RC
- 379** James, M. A.; Forth, S. C.; and Newman, J. A.: Load History Effects Resulting From Compression Precracking. Presented at Second International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics, November 19-21, 2003, Tampa, Florida.  
Organization RC
- 380** Lach, C. L.; and Domack, M. S.: Characterization of Al-Cu-Mg-Ag Alloy RX226-T8 Plate. NASA/TM-2003-212639, August 2003, 45 p.  
Organization RC
- 381** Namkung, M.; Namkung, J. S.; Wincheski, R. A.; Seo, J. T.; and Park, C.: Spectroscopy-Based Characterization of Single Wall Carbon Nanotubes. Presented at International Symposium on Clusters and Nano-Assemblies: Physical and Biological Systems, November 10-13, 2003, Richmond, Virginia. 2003/mtg/NASA-2003-iscna-mn.pdf.  
Organization RC
- 382** Namkung, M.; Paik, S.; and Wincheski, R. A.: Molecular Dynamics Simulations on Nanocomposites Formed by Intermetallic Dispersoids of  $B_2$  Structure and Aluminum Matrices. Presented at 3rd International Conference on Computational Nanoscience and Nanotechnology—ICCN 2003, February 23-27, 2003, San Francisco, California.  
Organization RC
- 383** Nemeth, M. P.: Buckling Behavior of Long Anisotropic Plates Subjected to Fully Restrained Thermal Expansion. NASA/TP-2003-212131, February 2003, 92 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212131.pdf>  
Organization RC
- 384** Newman, J. A.; and Piascik, R. S.: Near-Threshold Fatigue Crack Growth Behavior of Fine-Grain Nickel-Based Alloys. NASA/TM-2003-212443, ARL-TR-3021, August 2003, 13 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212443.pdf>  
Organization RC

- 385** Newman, J. A.; Riddell, W. T.; and Piascik, R. S.: Modeling the Interactions Between Multiple Crack Closure Mechanisms at Threshold. NASA/TM-2003-212402, ARL-TR-2959, May 2003, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212402.pdf>  
Organization RC
- 386** Newman, J. A.; Riddell, W. T.; and Piascik, R. S.: Analytical and Experimental Study of Near-Threshold Interactions Between Crack Closure Mechanisms. NASA/TM-2003-211755, ARL-TR-2774, May 2003, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-211755.pdf>  
Organization RC
- 387** Newman, J. A.; Riddell, W. T.; and Piascik, R. S.: A Threshold Fatigue Crack Closure Model Part I—Model Development. *Fatigue and Fracture of Engineering Materials and Structures*, Volume 26, No. 7, July 2003, p. 615-625.  
Organization RC
- 388** Newman, J. A.; Riddell, W. T.; and Piascik, R. S.: A Threshold Fatigue Crack Closure Model Part II—Experimental Verification. *Fatigue and Fracture of Engineering Materials and Structures*, Volume 26, No. 7, July 2003, p. 603-314.  
Organization RC
- 389** Piascik, R. S.; Newman, J. A.; Smith, S. W.; and Willard, S. A.: The Effect of Compression/Tension Loading on Fatigue Crack Nucleation From Upper Wing Skin Corrosion. Presented at 7th Joint DoD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans, Louisiana.  
Organization RC
- 390** Piascik, R. S.; Smith, S. W.; Kelly, R. G.; and Ferrer, K. S.: The Effects of Crevice Corrosion on Airframe Structural Fatigue. Presented at ICAF 2003—International Committee on Aeronautical Fatigue, May 5-9, 2003, Lucerne, Switzerland.  
Organization RC
- 391** Piascik, R. S.; Smith, S. W.; Newman, J. A.; and Willard, S. A.: Characterization of Cracking and Crack Growth Properties of the C5A Aircraft Tie-Box Forging. NASA/TM-2003-212439, ARL-TR-3046, August 2003, 36 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212439.pdf>  
Organization RC
- 392** Raju, I. S.; Glaessgen, E. H.; and Iselauro, E.: Multiscale Approaches to Modeling of Fracture in Nanocrystalline Metals. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC

- 393** Saether, E.: Transverse Mechanical Properties Carbon Nanotube Crystals—Part II: Sensitivity to Lattice Distortion. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1551-1559.  
Organization RC
- 394** Saether, E.; Frankland, S. J.; and Pipes, R. B.: Transverse Mechanical Properties of Single-Walled Carbon Nanotube Crystals. Part I—Determination of Elastic Moduli. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1543-1550.  
Organization RC
- 395** Smith, S. W.; Newman, J. A.; and Piascik, R. S.: Simulation of Fatigue Crack Initiation at Corrosion Pits With EDM Notches. NASA/TM-2003-212166, ARL-TR-2927, March 2003, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212166.pdf>  
Organization RC
- 396** Smith, S. W.; Newman, J. A.; Piascik, R. S.; and Willard, S. A.: Characterization of Environmentally Assisted Cracking of a Horizontal Stabilizer Forging. Presented at 7th Joint DoD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans, Louisiana.  
Organization RC
- 397** Smits, J. M.; Wincheski, R. A.; Namkung, M.; Crooks, R. E.; and Louie, R.: Response of Fe Powder, Purified and As-Produced HiPco Single-Walled Carbon Nanotubes to Flash Exposure. *Materials Science & Engineering A—Structural Materials: Properties, Microstructure and Processing*, Volume 358, No. 1-2, October 15, 2003, p. 384-389.  
Organization RC
- 398** Taminger, K. M.; and Hafley, R. A.: Electron Beam Freeform Fabrication: A Rapid Metal Deposition Process. Presented at 3rd Annual Automotive Composites Conference, September 9-10, 2003, Troy, Michigan. In Proceedings of the 3rd Annual Automotive Composites Conference.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3aacc-kmt.pdf>  
Organization RC
- 399** Taminger, K. M.; Hafley, R. A.; Fahringer, D. T.; and Martin, R. E.: Effect of Surface Treatments on Electron Beam Freeform Fabricated Aluminum. Presented at AeroMat 2003, Dayton, OH, June 9-12, 2003.  
Organization RC
- 400** Wallace, T. A.; Bird, R. K.; and Sankaran, S. N.: Development of Oxidation Protection Coatings for Gamma Titanium Aluminide Alloys. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-taw.pdf>  
Organization RC

**401** Will, J. D.; and Cotton, J. D.: Superplastic Forming/Adhesive Bonding of Aluminum (SPF/AB) Multi-Sheet Structures. (NAS1-99070 The Boeing Company.) NASA/CR-2003-212400, May 2003, 17 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212400.pdf>  
Organization RC

**402** Wincheski, R. A.: Nanosensor and Device Materials for Nondestructive Evaluation. Presented at ODU Graduate Seminar, February 21, 2003, Norfolk, Virginia.  
Organization RC

### **Category 27 Nonmetallic Materials**

**403** Belvin, H. L.; and Cano, R. J.: Dry Process for Manufacturing Hybridized Boron Fiber/Carbon Fiber Thermoplastic Composite Materials From a Solution Coated Precursor. U. S. Patent 6,514,370. Issued February 4, 2003.  
Organization RC

**404** Bottomley, L. A.; Poggi, M. A.; and Lillehei, P. T.: Chemical Force Microscopy of Single Walled Carbon Nanotubes. Presented at 225th American Chemical Society National Meeting, March 23-27, 2003, New Orleans, Louisiana.  
Organization RC

**405** Bryant, R. G.: Radial Field Diaphragm Piezoelectric Pump for Medical Instruments. Presented at NASA Medical Technology Summit, February 12-14, 2003, Pasadena, California.  
Organization RC

**406** Bryant, R. G.; and Pietruzka, L. M.: Radial Field Diaphragm Piezoelectric Pumps. Presented at 105th Annual Meeting & Exposition of the American Ceramic Society, April 27-30, 2003, Nashville, Tennessee.  
Organization RC

**407** Bryant, R. G.; Thomas, R. A.; Chattin, D. L.; and Fox, M. L.: Comparison of Radial Field Diaphragm Pumps Using Passive Valves. Presented at XII International Materials Research Congress 2003, August 16-22, 2003, Cancun, Mexico.  
Organization RC

**408** Chasiotis, I.; Chen, Q.; Odegard, G. M.; and Gates, T. S.: Structure-Property Relationships of Nanoplatelet-Reinforced Polymer Composites. Presented at 40th Annual Technical Meeting Society of Engineering Science, October 12-15, 2003, Ann Arbor, Michigan.  
Organization RC

**409** Choi, S. H.: Microwave-Driven Smart Membrane Actuators. Presented at Inha University Lecture Series, December 2-3, 2003, Incheon, South Korea.  
Organization RC

- 410** Connell, J. W.: Development of Transparent, Flexible, Low Color, Anti-Static Polyimides for Advanced Spacecraft. Presented at University of Akron Seminar Series, March 21, 2003, Akron, Ohio.  
Organization RC
- 411** Connell, J. W.; Smith, J. G., Jr.; Hergenrother, P. M.; and Criss, J. M.: High Temperature Transfer Molding Resins: Status of PETI-298 and PETI-330. Presented at 35th International SAMPE Technical Conference, September 28–October 2, 2003, Dayton, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-35sampe-jwc.pdf>  
Organization RC
- 412** Connell, J. W.; Smith, J. G., Jr.; Hergenrother, P. M.; and Criss, J. M.: High Temperature Transfer Molding Resins: Laminate Properties of PETI-298 and PETI-330. *High Performance Polymers*, Volume 15, No. 4, December 2003, p. 375-394.  
Organization RC
- 413** Connell, J. W.; Smith, J. G., Jr.; Hergenrother, P. M.; and Criss, J. M.: High Temperature Transfer Molding Resins: Composite Properties of PETI-330. Presented at SAMPE 2003, May 11-15, 2003, Long Beach, California. In Science of Advanced Materials Engineering Series, v. 47, p. 1076-1086.  
Organization RC
- 414** Delozier, D. M.; Connell, J. W.; Smith, J. G., Jr.; and Watson, K. A.: Preparation and Characterization of Space Durable Polymer Nanocomposite Films From Functionalized Carbon Nanotubes. Presented at Nanocomposites 2003, November 10-12, 2003, San Francisco, California. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-nano-dmd.pdf>  
Organization RC
- 415** Delozier, D. M.; Orwoll, R. A.; Cahoon, J. F.; Ladislaw, J. S.; Smith, J. G., Jr.; and Connell, J. W.: Polyimide Nanocomposites Prepared With a Novel Aromatic Surfactant. *High Performance Polymers*, Volume 15, No. 3, November 2003, p. 329-346.  
Organization RC
- 416** Delozier, D. M.; Orwoll, R. A.; Cahoon, J. F.; Ladislaw, J. S.; Smith, J. G., Jr.; and Connell, J. W.: Polyimide Nanocomposites Prepared From High-Temperature, Reduced Charge Organoclays. *Polymer*, Volume 44, No. 8, April 2003, p. 2231-2241.  
Organization RC
- 417** Fitch, J. W.; Bucio, E.; Martinez, L.; Macossay, J.; Venumbaka, S. R.; Dean, N.; Stoakley, D. M.; and Cassidy, P. E.: Synthesis and Characterization of New Fluorine-Containing Polyethers. *Polymer*, Volume 44, October 2003, p. 6431-6434.  
Organization RC



- 418** Frankland, S. J.; Harik, V. M.; Odegard, G. M.; Brenner, D. W.; and Gates, T. S.: The Stress-Strain Behavior of Polymer-Nanotube Composites From Molecular Dynamics Simulation. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1655-1661.  
Organization RC
- 419** Frankland, S. J.; Odegard, G. M.; and Gates, T. S.: The Effects of Functionalization on Double-Walled Nanotubes Materials. Presented at International Symposium on Clusters and Nano-Assemblies: Physical and Biological Systems, November 10-13, 2003, Richmond, Virginia.  
Organization RC
- 420** Gaddy, G. A.; Locke, E. P.; Stoakley, D. M.; Moore, R.; and Schultz, J.: Optical and Mechanical Properties of Photo Assisted, Self Assembled Nano Particle Films. Presented at 2003 Materials Research Society Fall Meeting, December 1-5, 2003, Boston, Massachusetts.  
Organization RC
- 421** Gates, T. S.; Odegard, G. M.; and Hinkley, J. A.: Local Viscoelastic Behavior of Nanostructured Materials Through Indentation Testing. Presented at 4th International Conference on Mechanics of Time Dependent Materials, October 7-10, 2003, Lake Placid, New York.  
Organization RC
- 422** Grimsley, B. W.; Cano, R. J.; Jensen, B. J.; Song, X.; and Loos, A. C.: Modeling of the Vacuum Assisted Resin Transfer Molding Process: Permeability and Compaction Characterization. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida.  
Organization RC
- 423** Grimsley, B. W.; Cano, R. J.; Song, X.; Loos, A. C.; and Hubert, P.: Preform Characterization for Modeling of the Vacuum Assisted Resin Transfer Molding Process. Presented at SAMPE 2003, May 11-15, 2003, Long Beach, California.  
Organization RC
- 424** Hergenrother, P. M.: The Use, Design, Synthesis, and Properties of High Performance/High Temperature Polymers—An Overview. *High Performance Polymers*, Volume 15, No. 1, March 2003, p. 3-45.  
Organization RC
- 425** Hinkley, J. A.; and Gehrke, S. H.: Tensile Properties of a Cellulose Ether Hydrogel. NASA/TM-2003-212417, June 2003, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212417.pdf>  
Organization RC

- 426** Hou, T-H.; and Costen, R. C.: Behavior of Volatile Depletion for LaRC™-PETI-5 Amide Acid/N-Methylpyrrolidinone Solution. *Journal of Applied Polymer Science*, Volume 90, No. 7, September 17, 2003, p. 1906-1916.  
Organization RC
- 427** Hubert, P.; Song, X.; Loos, A. C.; Grimsley, B. W.; and Cano, R. J.: Modeling the Effect of Process Variations During VARTM. Presented at 4th Canadian International Composites Conference (CANCOM 2003), August 19-22, 2003, Ottawa, Canada.  
Organization RC
- 428** Hudson, D. L.; Hinkley, J. A.; Clancy, T. C.; and Reeves, M. S.: Molecular Modeling of Helium Diffusion in Isomeric Polyimides. Presented at 12th Conference on Current Trends in Computational Chemistry, October 31–November 1, 2003, Jackson, Mississippi.  
Organization RC
- 429** Johnson, T. F.; and Gates, T. S.: High Temperature Polyimide Materials in Extreme Temperature Environments: High Temperature Results. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida.  
Organization RC
- 430** Johnson, T. F.; Weiser, E. S.; Grimsley, B. W.; and Jensen, B. J.: Cryopumping in Cryogenic Insulation for a Reusable Launch Vehicle. Presented at SAMPE 2003, May 11-15, 2003, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-sampe-tfj.pdf>  
Organization RC
- 431** Jordan, T. L.; and Ounaies, Z.: Characterization of Piezoelectric Ceramic Materials. In *Encyclopedia of Smart Materials*, Volume 1, Mel Schwartz, ed., John Wiley & Sons, 2002, p. 162-173.  
Organization RB
- 432** Lillehei, P. T.; and Siochi, E. J.: Design and Characterization of Carbon Nanotube Nanocomposites. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RC
- 433** Odegard, G. M.; Bandorawalla, T.; Herring, H. M.; and Gates, T. S.: Characterization of Viscoelastic Properties of Polymeric Materials Through Nanoindentation. Presented at 2003 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, June 2-4, 2003, Charlotte, North Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-sem-gmo.pdf>  
Organization RC

- 434** Ounaies, Z.; Park, C.; Wise, K.; Siochi, E. J.; and Harrison, J. S.: Electrical Properties of Single Wall Carbon Nanotube Reinforced Polyimide Composites. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1637-1646.  
Organization RC
- 435** Park, C.; Crooks, R.; Siochi, E. J.; Harrison, J. S.; Evans, N.; and Kenik, E.: Adhesion of Polyimide to Single Wall Carbon Nanotube Bundles by Energy Filtered Transmission Electron Microscopy. *Nanotechnology*, Volume 14, No. 9, September 2003, p. L11-L14.  
Organization RC
- 436** Park, C.; Lowther, S. E.; and St. Clair, T. L.: Surface Treatment. U. S. Patent 6,521,052. Issued February 18, 2003.  
Organization RC
- 437** Park, C.; Wise, K.; Ounaies, Z.; Lowther, S. E.; and Siochi, E. J.: Electrical and Dielectric Properties of Single Wall Carbon Nanotube Polymer Nanocomposites. Presented at American Physical Society Meeting, March 3-7, 2003, Austin, Texas.  
Organization RC
- 438** Park, Y.; King, G. C.; Chu, S. H.; and Choi, S. H.: Low Temperature Magnetron Growth of the GaN With Sc. Presented at 8th Wide-Bandgap III-Nitride Workshop, September 29–October 1, 2003, Richmond, Virginia.  
Organization RC
- 439** Pawlowski, K. J.; Belvin, H. L.; Raney, D. L.; Su, J.; Harrison, J. S.; and Siochi, E. J.: Electrospinning a Micro-Air Vehicle Wing Skin. *Polymer*, Volume 44, No. 4, February 2003, p. 1309-1314.  
Organization RC
- 440** Pawlowski, K. J.; St. Clair, T. L.; McReynolds, A. C.; Park, C.; Ounaies, Z.; Siochi, E. J.; and Harrison, J. S.: Electrospun Electroactive Polymers for Aerospace Applications. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1768.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1768.pdf>  
Organization RC
- 441** Pipes, R. B.; Cano, C.; and Weiser, E. S.: High Temperature Polymeric Microspheres and Foams: Liquid and Solid Phase Models. Presented at ANTEC 2003 Annual Technical Conference, May 4-8, 2003, Nashville, Tennessee.  
Organization RC
- 442** Poggi, M. A.; Bottomley, L. A.; and Lillehei, P. T.: Investigating the Carbon Nanotube/Polymer Interface Via Force Spectroscopy. Presented at SERMACS 2003—55th Southeast Regional Meeting of the American Chemical Society, November 16-19, 2003, Atlanta, Georgia.  
Organization RC

- 443** Rouse, J. H.; and Lillehei, P. T.: Electrostatic Assembly of Polymer/Single Walled Carbon Nanotube Multilayer Films. *Nano Letters*, Volume 3, No. 1, January 2003, p. 59-62.  
Organization RC
- 444** Siochi, E. J.; Lillehei, P. T.; Wise, K.; Park, C.; and Rouse, J. H.: Design and Characterization of Carbon Nanotube Nanocomposites. Presented at 4th International Symposium on MEMS and Nanotechnology, June 2-4, 2003, Charlotte, North Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-4ismn-ejs.pdf>  
Organization RC
- 445** Smith, J. G., Jr.; Connell, J. W.; Hergenrother, P. M.; Ford, L. A.; and Criss, J. M.: Transfer Molding Imide Resins Based on 2,3,3',4'-Biphenyltetracarboxylic Dianhydride. *Macromolecular Symposia*, Volume 199, 2003, p. 401-418.  
Organization RC
- 446** Smith, J. G., Jr.; Watson, K. A.; Delozier, D. M.; and Connell, J. W.: Carbon Nanotube/Conductive Additive/Space Durable Polymer Nanocomposite Films for Electrostatic Charge Dissipation. Presented at 35th International SAMPE Technical Conference, September 28–October 2, 2003, Dayton, Ohio. In Proceedings, Volume 35.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-35sampe-jgs.pdf>  
Organization RC
- 447** Smits, J. M.; Wincheski, R. A.; Ingram, J. L.; Watkins, A. N.; Williams, P.; and Jordan, J. D.: In-Plane Deformation of Single Walled Carbon Nanotubes and Its Effect on Electron Transport. Presented at 2003 Materials Research Society Fall Meeting, December 1-5, 2003, Boston, Massachusetts.  
Organization RC
- 448** Song, X.; Loos, A. C.; Grimsley, B. W.; Cano, R. J.; and Hubert, P.: Modeling Resin Infusion of Complex Shape Textile Preforms During the VARTM Process. Presented at 14th International Conference on Composite Materials (ICCM-14), July 14-18, 2003, San Diego, California.  
Organization RC
- 449** Su, J.: Electrostrictive Polymers and Applications in Aerospace Technologies. Presented at University of Pittsburgh, Department of Mechanical Engineering Graduate Seminar, March 27-28, 2003, Pittsburgh, Pennsylvania.  
Organization RC
- 450** Su, J.; Hales, K.; and Xu, T-B.: Composition and Annealing Effects on the Response of Electrostrictive Graft Elastomers. Presented at SPIE's Smart Structures and Materials, March 2-6, 2003, San Diego, California.  
Organization RC

- 451** Su, J.; Hales, K.; Xu, T-B.; and Harrison, J. S.: Molecular Morphological Control of Electromechanical Properties of Electrostrictive Graft Elastomers. Presented at SPIE's Smart Structures and Materials, March 2-6, 2003, San Diego, California.  
Organization RC
- 452** Su, J.; Harrison, J. S.; and St. Clair, T. L.: Polymer-Polymer Bilayer Actuator. U. S. Patent 6,545,391. Issued April 8, 2003.  
Organization RC
- 453** Su, J.; Harrison, J. S.; and St. Clair, T. L.: Electrostrictive Graft Elastomers. U. S. Patent 6,515,077. Issued February 4, 2003.  
Organization RC
- 454** Thompson, C. M.; Herring, H. M.; Gates, T. S.; and Connell, J. W.: Preparation and Characterization of Metal Oxide Durable Polyimide Nanocomposites. *Composites Science and Technology*, Volume 63, No. 11, August 2003, p. 1591-1598.  
Organization RC
- 455** Thompson, C. M.; Smith, J. G., Jr.; and Connell, J. W.: Polyimides Prepared From 4,4'-(2-Diphenylphosphinyl-1,4-Phenylenedioxy)Diphthalic Anhydride for Potential Space Applications. *High Performance Polymers*, Volume 15, No. 2, June 2003, p. 181-195.  
Organization RC
- 456** Wang, Y.; Sun, X.; Sun, C.; and Su, J.: Two-Dimensional Computational Model for Electrostrictive Graft Elastomer. Presented at SPIE's Smart Structures and Materials, March 2-6, 2003, San Diego, California.  
Organization RC
- 457** Watson, K. A.; Smith, J. G., Jr.; and Connell, J. W.: Space Durable Polyimide/Carbon Nanotube Composite Films for Electrostatic Charge Mitigation. Presented at SAMPE 2003, May 11-15, 2003, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-sampe-kaw.pdf>  
Organization RC
- 458** Watson, K. A.; Smith, J. G., Jr.; and Connell, J. W.: Space Durable Polyimide/Carbon Nanotube Composite Films for Electrostatic Charge Mitigation. Presented at 8th Spacecraft Charging Technology Conference, October 20-24, 2003, Huntsville, Alabama.  
Organization RC
- 459** Wise, K.; Park, C.; Lillehei, P. T.; and Siochi, E. J.: Insight Into Carbon Nanotube-Polymer Nanocomposite Stabilization From Simplified Models. Presented at American Physical Society Meeting, March 3-7, 2003, Austin, Texas.  
Organization RC

- 460** Xu, T-B.; Su, J.; and Zhang, Q.: Electroactive Polymer-Based MEMS for Aerospace and Medical Applications. Presented at SPIE's Smart Structures and Materials, March 2-6, 2003, San Diego, California.  
Organization RC

## Engineering

### Category 31 Engineering (General)

- 461** Ghoshal, A.; Prosser, W. H.; Kirikera, G.; Schulz, M. J.; Hughes, D. J.; and Orisamolu, W.: Concepts and Development of Bio-Inspired Distributed Embedded Wired/Wireless Sensor Array Architectures for Acoustic Wave Sensing in Integrated Aerospace Vehicles. Presented at 4th International Workshop on Structural Health Monitoring, September 15-17, 2003, Stanford, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-4iwshm-ag.pdf>  
Organization RC
- 462** Prosser, W. H.: Development of Structural Health Management Technology for Aerospace Vehicles. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-whp.pdf>  
Organization RC
- 463** Prosser, W. H.; Wu, M-C.; Allison, S. G.; DeHaven, S. L.; and Ghoshal, A.: Structural Health Monitoring Sensor Development at NASA Langley Research Center. Presented at International Conference on Computational & Experimental Engineering and Sciences (ICCES '03), July 25-29, 2003, Corfu, Greece. In Proceedings, Paper No. 149.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-icces-whp.pdf>  
Organization RC

### Category 32 Communications and Radar

- 464** Farmer, B. W.; and Hannan, R. C.: Investigations of Relatively Easy to Construct Antennas With Efficiency in Receiving Schumann Resonances—Preparation for a Miniaturized Reconfigurable ELF Receiver. NASA/TM-2003-212647, October 2003, 11 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212647.pdf>  
Organization RB
- 465** Raju, I. S.; and Phillips, D. R.: A Local Coordinate Approach in the Meshless Local Petrov-Galerkin Method for Beam Problems. *AIAA Journal*, Volume 41, No. 5, May 2003, p. 975-978.  
Organization RC

### Category 33 Electronics and Electrical Engineering

- 466** Abedin, M. N.; Refaat, T. F.; and Singh, U. N.: Noise Measurement of III-V Compound Detectors for 2 $\mu$ m LIDAR/DIAL Remote Sensing Applications. *International Journal of High Speed Electronics & Systems*, Volume 12, No. 2, June 2002, p. 531-540.  
Organization RF
- 467** Daniels, T. S.; and Tsoucalas, G.: Tropospheric Airborne Meteorological Data Reporting (TAMDAR) Project. Presented at AirVenture 2003 Forum, July 29–August 4, 2003, Oshkosk, Wisconsin.  
Organization RD
- 468** Deshpande, M. D.: Electromagnetic Scattering Due to Polygonal Shaped Thin Metallic Plates Using Hybrid Elements. Presented at 2003 IEEE International Symposium on Antennas and Propagation, June 22-27, 2003, Columbus, Ohio.  
Organization RD
- 469** Deshpande, M. D.: Radiation Characteristic of Conformal Antennas Mounted on Material Body of Arbitrary Shapes Using Hybrid Elements. Presented at 2003 Electromagnetic Code Consortium Annual Meeting, May 20-22, 2003, Hampton, Virginia.  
Organization RD
- 470** Ely, J. J.; Nguyen, T. X.; Koppen, S. V.; Beggs, J. H.; and Salud, M. T.: Wireless Phone Threat Assessment and New Wireless Technology Concerns for Aircraft Navigation Radios. NASA/TP-2003-212446, July 2003, 198 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212446.pdf>  
Organization RD
- 471** Fralick, D. T.; Cravey, R. L.; Hopkins, G. D.; Lichodziejewski, D.; and Bailey, M. C.: Performance Evaluation of a Membrane Waveguide Array Antenna. Presented at 2003 IEEE Aerospace Conference, March 8-15, 2003, Big Sky, Montana. IEEEAC Paper No. 1148.  
Organization RD
- 472** Ganoë, G. G.: Remote Sensing Opportunities Utilizing the Reflected Signal From the GPS. Presented at 30th International Symposium of Remote Sensing of Environment, November 10-14, 2003, Honolulu, Hawaii.  
Organization RD
- 473** Harrison, S. V.; Kramer, L. J.; Bailey, R. E.; Jones, D. R.; Young, S. D.; Harrah, S. D.; Arthur, J. J.; and Parrish, R. V.: Initial SVS Integrated Technology Evaluation Flight Test Requirements and Hardware Architecture. NASA/TM-2003-212644, September 2003, 123 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212644.pdf>  
Organization RD

- 474** Jafri, M. J.; Ely, J. J.; and Vahala, L.: Graphical and Statistical Analysis of Airplane Passenger Cabin RF Coupling Paths to Avionics. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-22dasc-mj.pdf>  
Organization RD
- 475** Jafri, M. J.; Ely, J. J.; and Vahala, L.: Graphical Representation of the Effects of Antenna Locations on Path Loss Data. Presented at 2003 IEEE International Symposium on Antennas and Propagation, June 22-27, 2003, Columbus, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-isap-mj.pdf>  
Organization RD
- 476** Lichodziejewski, D.; and Cravey, R. L.: Inflatably Deployed Membrane Waveguide Array Antenna for Space. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1649.  
Organization RD
- 477** Mackenzie, A. I.; Cravey, R. L.; Dudley, K. L.; Fralick, D. T.; Miner, G. A.; and Stoakley, D. M.: Fabrication and Electromagnetic Characterization of Novel Self Metallized Thin Films. Presented at 2003 IEEE Aerospace Conference, March 8-15, 2003, Big Sky, Montana. In Proceedings, IEEE AC Paper No. 1278.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ieeeac-aim.pdf>  
Organization RD
- 478** Nguyen, T. X.: GPS-Band RF Spurious Radiated Emissions From Samsung SPH-N300 Wireless Handset - Data Report. Presented at RTCA SC202 Working Group Meeting, October 28-30, 2003, Washington, DC.  
Organization RD
- 479** Nguyen, T. X.; Koppen, S. V.; Ely, J. J.; Williams, R. A.; Smith, L. J.; and Salud, M. T.: Portable Wireless LAN Device and Two-Way Radio Threat Assessment for Aircraft Navigation Radios. NASA/TP-2003-212438, July 2003, 227 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212438.pdf>  
Organization RD
- 480** Refaat, T. F.; Abedin, M. N.; Koch, G. J.; and Singh, U. N.: InGaAsSb Detectors' Characterization for 2- $\mu\text{m}$  CO<sub>2</sub> Lidar/DIAL Applications. NASA/TP-2003-212140, February 2003, 32 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212140.pdf>  
Organization RF
- 481** Refaat, T. F.; Abedin, M. N.; and Singh, U. N.: Spectral Response Measurements of Short Wave Infrared Detectors (SWIR). *International Journal of High Speed Electronics & Systems*, Volume 12, No. 2, June 2002, p. 541-551.  
Organization RF



- 482** Wilkie, W. K.; Bryant, R. G.; Fox, R. L.; Hellbaum, R. F.; High, J. W.; Jalink, A., Jr.; Little, B. D.; and Mirick, P. H.: Method of Fabricating a Piezoelectric Composite Apparatus. U. S. Patent 6.629,341. Issued October 7, 2003.  
Organization RC
- 483** Wilkins, G. M.; Deshpande, M. D.; and Hall, J. M.: The Application of a Mixed-Element Formulation for the Determination of Cutoff Wavenumbers in Waveguides of Arbitrary Cross-Sectional Area. Presented at 2003 Electromagnetic Code Consortium Annual Meeting, May 20-22, 2003, Hampton, Virginia.  
Organization RD
- 484** Wilson, W. C.: System Model for MEMS Based Laser Ultrasonic Receiver. Presented at 6th International Conference on Modeling and Simulation of Microsystems, February 23-27, 2003, San Francisco, California. In Proceedings, Nanotech 2003; Volume 2.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-6icmsm-wcw.pdf>  
Organization RC
- 485** Wilson, W. C.; and Atkinson, G. M.: Concept for a Micro Autonomous Ultrasonic Instrument (MAUI). Presented at 11th NASA Symposium on VLSI Design, May 28-29, 2003, Coeur d'Alene, Idaho. In Proceedings 11th Annual NASA Symposium on VLSI Design 2003, Paper TP2.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-11vlsi-wcw.pdf>  
Organization RC
- 486** Woods, R.; Ely, J. J.; and Vahala, L.: Detecting the Use of Intentionally Transmitting Personal Electronic Devices Onboard Commercial Aircraft. Presented at 2003 IEEE Symposium on Electromagnetic Compatibility (EMC), August 18-22, 2003, Boston, Massachusetts. In Proceedings, Paper No. TU-PM-4-2.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-isemc-rw.pdf>  
Organization RD

### **Category 34 Fluid Mechanics and Heat Transfer**

- 487** Alter, S. J.: Efficient Development of High Fidelity Structured Volume Grids for Hypersonic Flow Simulations. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0952.  
Organization RB
- 488** Alter, S. J.; Reuther, J. J.; and McDaniel, R. D.: Development of a Flexible Framework of Common Hypersonic Navier-Stokes Meshes for the Space Shuttle Orbiter. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-sja.pdf>  
Organization RB

- 489** Berry, S. A.; and Nowak, R. J.: A Comparison of Active and Passive Methods for Control of Hypersonic Boundary Layers on Airbreathing Configurations. Presented at JANNAF 39th CS/ 27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-sab.pdf>  
Organization RB
- 490** Casper, J. H.; Lin, J. C.; and Yao, C-S.: Effect of Sub-Boundary Layer Vortex Generators on Incident Turbulence. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4162.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4162.pdf>  
Organization RB
- 491** Choudhari, M. M.; and Chang, C-L.: Integrated Transition Prediction for Supersonic Swept Wing Boundary Layers. Presented at 2nd Global Flow Instability and Control Symposium, June 11-13, 2003, Crete, Greece.  
Organization RB
- 492** Danehy, P. M.; O'Byrne, S.; Houwing, A. F.; Fox, J. S.; and Smith, D. R.: Flow-Tagging Velocimetry for Hypersonic Flows Using Fluorescence of Nitric Oxide. *AIAA Journal*, Volume 41, No. 2, February 2003, p. 261-271.  
Organization RB
- 493** Daryabeigi, K.: Heat Transfer in High-Temperature Fibrous Insulation. *Journal of Thermophysics and Heat Transfer*, Volume 17, No. 1, January–March 2003, p. 10-20.  
Organization RC
- 494** Daryabeigi, K.; Berry, S. A.; Horvath, T. J.; and Nowak, R. J.: Finite Volume Numerical Methods for Aeroheating Rate Calculations From Infrared Thermographic Data. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3634.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3634.pdf>  
Organization RC
- 495** Dec, J. A.; and Amundsen, R. M.: A Thermal Analysis Approach for the Mars Odyssey Spacecraft's Solar Array. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3764.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3764.pdf>  
Organization RF
- 496** Deshpande, M. D.: Electromagnetic Scattering From a Polygonal Thin Metallic Plate Using Quadrilateral Meshing. NASA/TM-2003-212165, May 2003, 41 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212165.pdf>  
Organization RD

- 497** Deshpande, M. D.; and Dudley, K. L.: Estimation of Complex Permittivity of Composite Multilayer Material at Microwave Frequency Using Waveguide Measurements. NASA/TM-2003-212398, May 2003, 80 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212398.pdf>  
Organization RD
- 498** Everhart, J. L.; Bey, K. S.; Wood, W. A.; and Pulsonetti, M. V.: Experimental and Computational Investigation of Cavity Flows Simulating Debris Damage to Thermal Protection System Tiles. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 499** Gasbarre, J. F.; and Dillman, R. A.: Preliminary Design and Analysis of the ARES Atmospheric Flight Vehicle Thermal Control System. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada. Paper No. SAE-2003-01-2686.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-33ices-jfg.pdf>  
Organization RF
- 500** Glass, C. E.: Non-Continuum Hypersonic Shock Interactions on a Simulated Airbreathing Engine Cowl. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3772.  
Organization RB
- 501** Glass, C. E.; Bey, K. S.; and McDaniels, D.: Supersonic Wall Jet Aerothermodynamics. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 502** Gnoffo, P. A.: Effects of Wing Leading Edge Penetration With Venting and Exhaust Flow From Wheel Well at Mach 24 in Flight. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-pag.pdf>  
Organization RB
- 503** Gnoffo, P. A.: Computational Fluid Dynamics Technology for Hypersonic Applications. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-3259.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3259.pdf>  
Organization RB
- 504** Gnoffo, P. A.: Computational Aerothermodynamics in Aeroassist Applications. *Journal of Spacecraft and Rockets*, Volume 40, No. 3, May-June 2003, p. 305-312.  
Organization RB

- 505** Hollis, B. R.: Response to “Comments on X-33 Aeroheating Predictions and Comparisons With Experimental Data. *Journal of Spacecraft and Rockets*, Volume 40, No. 4, July/August 2003, p. 602-603.  
Organization RB
- 506** Hollis, B. R.; Horvath, T. J.; and Berry, S. A.: X-33 Rev-F Turbulent Aeroheating Results From Test 6817 in NASA Langley 20-Inch Mach 6 Air Tunnel and Comparisons With Computations. NASA/TM-2003-211962, June 2003, 74 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm211962.pdf>  
Organization RB
- 507** Hollis, B. R.; Thompson, R. A.; Berry, S. A.; Horvath, T. J.; Murphy, K. J.; Nowak, R. J.; and Alter, S. J.: X-33 Computational Aeroheating/Aerodynamic Predictions and Comparisons With Experimental Data. NASA/TP-2003-212160, May 2003, 88 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212160.pdf>  
Organization RB
- 508** Horvath, T. J.: Experimental Aerothermodynamic Characteristics of the Shuttle Orbiter for a Range of Damage Scenarios. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 509** Horvath, T. J.; and Miller, C. G.: Overview of Aerothermodynamic Methodologies Applied and Lessons Learned. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 510** Liechty, D. S.; Berry, S. A.; Hollis, B. R.; and Horvath, T. J.: Comparison of Methods for Determining Boundary Layer Edge Conditions for Transition Correlations. Presented at 33rd AIAA Fluid Dynamics Conference & Exhibit, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3590.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3590.pdf>  
Organization RB
- 511** Odegard, G. M.: Constitutive Modeling of Piezoelectric Polymer Composites. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212681, NIA Report No. 2003-10, December 2003, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212681.pdf>  
Organization RC
- 512** Palma, P. C.; Danehy, P. M.; and Houwing, A. F.: Fluorescence Imaging of Rotational and Vibrational Temperature in a Shock Tunnel Nozzle Flow. *AIAA Journal*, Volume 41, No. 9, September 2003, p. 1722-1732.  
Organization RB

- 513** Pulsonetti, M. V.; Thompson, R. A.; and Alter, S. J.: Prediction of STS-107 Hypervelocity Flow Fields About the Shuttle Orbiter With Various Wing Leading Edge Damage. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-mvp.pdf>  
Organization RB
- 514** Rodriguez, C. G.; and Cutler, A. D.: Numerical Analysis of the SCHOLAR Supersonic Combustor. (NAS1-97110 Allied Aerospace, GASL Division.) NASA/CR-2003-212689, December 2003, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212689.pdf>  
Organization OC
- 515** Rubinstein, R.; and Zhou, Y.: Turbulence Modeling for the Axially Rotating Pipe From the Viewpoint of Analytical Closures. Presented at 4th ASME/JSME Joint Fluids Engineering Conference, July 6-10, 2003, Honolulu, Hawaii. Paper No. FEDSM2003-45328.  
Organization RB
- 516** Schaeffler, N. W.: The Interaction of a Synthetic Jet and a Turbulent Boundary Layer. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0643.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0643.pdf>  
Organization RB
- 517** Streett, C. L.: Designing a Hybrid Laminar-Flow Control Experiment—The CFD-Experiment Connection. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0977.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0977.pdf>  
Organization RB
- 518** Streett, C. L.; Lockard, D. P.; Singer, B. A.; Khorrami, M. R.; and Choudhari, M. M.: In Search of the Physics: The Interplay of Experiment and Computation in Airframe Noise Research; Flap-Edge Noise. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0979.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0979.pdf>  
Organization RB
- 519** Wilkinson, S. P.: Investigation of an Oscillating Surface Plasma for Turbulent Drag Reduction. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-1023.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1023.pdf>  
Organization RB

## Category 35 Instrumentation and Photography

- 520** Abedin, M. N.; Refaat, T. F.; Joshi, R. P.; Sulima, O. V.; Mauk, M.; and Singh, U. N.: Characterization and Analysis of InGaAsSb Detectors. Presented at AeroSense 2003—Aerospace/Defense Sensing, Simulation, and Controls, April 21-25, 2003, Orlando, Florida. <http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-aerosense-mna.pdf>  
Organization RF
- 521** Abedin, M. N.; Refaat, T. F.; Zawodny, J. M.; Sandford, S. P.; Singh, U. N.; Bandra, S.; Gunapala, S. D.; and Bhat, I. B.: Multicolor Focal Plane Array Detector Technology: A Review. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RF
- 522** Alderfer, D. W.; Herring, G. C.; Danehy, P. M.; Mizukaki, T.; and Takayama, K.: Sub-Microsecond Temperature Measurement in Liquid Water Using Laser-Induced Thermal Acoustics. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RB
- 523** Balla, R. J.: Specialist Session on Flow Field Diagnostics. Presented at Joint Army-Navy-NASA-Air Force (JANNAF) 39th Combustion Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 524** Barnes, N. P.: Lanthanide Series Spectroscopy Under Extreme Conditions. Presented at NATO Advanced Study Institute, International School of Atomic and Molecular Spectroscopy 20th Course: Frontiers of Optical Spectroscopy, May 16–June 1, 2003, Erice, Italy.  
Organization RF
- 525** Barnes, N. P.; Axenson, T. J.; Reichle, D. J., Jr.; and Walsh, B. M.: Diode-Pumped Laser Amplifiers: Application to 0.946  $\mu\text{m}$  Nd:YAG. *Journal of Physics B: Atomic, Molecular and Optical Physics*, Volume 36, No. 5, March 14, 2003, p. 879-891.  
Organization RF
- 526** Black, J. T.; and Pappa, R. S.: Videogrammetry Using Projected Circular Targets: Proof-of-Concept Test. Presented at 21st International Modal Analysis Conference—IMAC, February 3-6, 2003, Kissimmee, Florida. In Proceedings, 2003 IMAC Conference CD-ROM, Paper No. 40.  
Organization RC

- 527** Burner, A. W.; Lokos, W. A.; and Barrows, D. A.: In-Flight Aeroelastic Measurement Technique Development. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California. Paper No. SPIE 5191-31.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-48spie-awb.pdf>  
Organization RB
- 528** Cutler, A. D.; Danehy, P. M.; Springer, R. R.; O'Byrne, S.; Capriotti, D. P.; and DeLoach, R.: Coherent Anti-Stokes Raman Spectroscopic Thermometry in a Supersonic Combustor. *AIAA Journal*, Volume 41, No. 12, December 2003, p. 2451-2459.  
Organization RB
- 529** Danehy, P. M.; Dorrington, A.; Cutler, A. D.; and DeLoach, R.: Response Surface Methods for Spatially-Resolve Optical Measurement Techniques. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0648.  
Organization RB
- 530** Danehy, P. M.; O'Byrne, S.; Cutler, A. D.; and Rodriguez, C. G.: Coherent Anti-Stokes Raman Scattering (CARS) as a Probe for Supersonic Hydrogen-Fuel/Air Mixing. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-pmd.pdf>  
Organization RB
- 531** DeLoach, R.: Modern Experiment Design for Productivity Improvement in Defense-Related Research and Technology Development. Presented at 10th Annual Spring Research Conference on Statistics in Industry and Technology, June 4-6, 2003, Dayton, Ohio.  
Organization RB
- 532** DeLoach, R.: Putting Ten Pounds in a Five-Pound Sack: Configuration Testing With MDOE. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida.  
Organization RB
- 533** Dorrington, A.; Jones, T. W.; and Danehy, P. M.: Laser-Induced Fluorescence Photogrammetry for Profiling Gossamer Space Structures. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RB

- 534** Dorrington, A.; Jones, T. W.; Danehy, P. M.; and Pappa, R. S.: Laser-Induced Fluorescence Photogrammetry for Dynamic Characterization of Transparent and Aluminized Membrane Structures. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4798.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4798.pdf>  
Organization RB
- 535** Exton, R. J.; Balla, R. J.; Herring, G. C.; Popovic, S.; and Vuskovic, L.: Volumetric Near-Field Microwave Plasma Generation. Presented at 34th AIAA Plasmadynamics & Lasers Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4181.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4181.pdf>  
Organization RB
- 536** Fleming, G. A.: Surface Deformation Measurements, Chapter 13. In *Optical Metrology for Fluids, Combustion, and Solids*, Carolyn Mercer, ed., Kluwer Academic Publishing, 2003.  
Organization RB
- 537** Froggatt, M. E.: Edge Triggered Apparatus and Method for Measuring Strain in Bragg Gratings. U. S. Patent 6,566,648. Issued May 20, 2003.  
Organization RC
- 538** Froggatt, M. E.; and Moore, J. P.: Apparatus and Method for Measuring Strain in Optical Fibers Using Rayleigh Scatter. U. S. Patent 6,545,760. Issued April 8, 2003.  
Organization RC
- 539** Garza, F. R.; Zuckerwar, A. J.; Shams, Q. A.; and Hopson, P., Jr.: Wide-Temperature Electronically Scanned Pressure Measurement Module. *AIAA Journal*, Volume 41, No. 6, June 2003, p. 1097-1104.  
Organization RB
- 540** Gojani, A. B.; Danehy, P. M.; Alderfer, D. W.; Saito, T.; and Takayama, K.: Development of Laser-Induced Grating Spectroscopy for Underwater Temperature Measurement in Shock Wave Focusing Regions. Presented at SPIE International Symposium on Optical Systems Design, September 29–October 3, 2003, St. Etienne, France.  
Organization RB
- 541** Graves, S. S.; Burner, A. W.; Edwards, J. W.; and Schuster, D. M.: Dynamic Deformation Measurements of an Aeroelastic Semispan Model. *Journal of Aircraft*, Volume 40, No. 5, September-October 2003, p. 977-984.  
Organization RB
- 542** Huck, F. O.; and Fales, C. L., Jr.: Characterization of Image Systems. In *The Encyclopedia of Imaging Science and Technology*, Volume 1, Joseph P. Hornak, ed., John Wiley & Sons, Inc., 2002, p. 48-86.  
Organization RD



- 543** Hudy, L. M.; Naguib, A. M.; and Humphreys, W. M., Jr.: Wall-Pressure-Array Measurements Beneath a Separating/Reattaching Flow Region. *Physics of Fluids*, Volume 15, No. 3, March 2003, p. 717-706.  
Organization RB
- 544** Humphreys, W. M., Jr.; Gerhold, C. H.; Zuckerwar, A. J.; Herring, G. C.; and Bartram, S. M.: Performance Analysis of a Cost-Effective Electret Condenser Microphone Directional Array. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3195.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3195.pdf>  
Organization RB
- 545** Jenkins, L. N.; Hart, R. C.; Balla, R. J.; Herring, G. C.; Khorrami, M. R.; and Choudhari, M. M.: Application of Laser-Induced Thermal Acoustics to a High-Lift Configuration. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California. Paper No. SPIE 5191-24.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-48spie-lnj.pdf>  
Organization RB
- 546** Jobson, D. J.; Rahman, Z.; and Woodell, G. A.: Feature Visibility Limits in the Non-Linear Enhancement of Turbid Images. Presented at AeroSense 2003—Aerospace/Defense Sensing, Simulation, and Controls, April 21-25, 2003, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-aerosense-djj.pdf>  
Organization RD
- 547** Jones, T. W.; Dorrington, A.; Danehy, P. M.; and Brittan, P. L.: Laser Induced Fluorescence for Photogrammetric Measurement of Transparent or Reflective Aerospace Structures. Presented at 49th International Instrumentation Symposium, May 4-8, 2003, Orlando, Florida.  
Organization RB
- 548** Jordan, J. D.: Pressure Sensitive Paint Development—A Chemistry Perspective. Presented at Workshop on Molecular Sensors for Aero-Thermodynamic Research, November 9-13, 2003, Tokyo, Japan.  
Organization RB
- 549** Jordan, J. D.; Watkins, A. N.; Fleming, G. A.; Leighty, B. D.; Schwartz, R. J.; Ingram, J. L.; Grinstead, K. D., Jr.; and Oglesby, D. M.: Rapid Technology Assessment Via Unified Deployment of Global Optical and Virtual Diagnostics. Presented at 20th International Congress on Instrumentation in Aerospace Simulation Facilities, August 25-29, 2003, Gottingen, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-20iciasf-jdj.pdf>  
Organization RB

- 550** Jordan, J. D.; Watkins, A. N.; Fleming, G. A.; South, B. W.; Leighty, B. D.; Schwartz, R. J.; Oglesby, D. M.; Ingram, J. L.; and Tominack, B. J.: Development of Rapid Technology Assessment Tools a New Paradigm in Aerodynamic Design. Presented at 49th International Instrumentation Symposium, May 4-8, 2003, Orlando, Florida.  
Organization RB
- 551** Liu, T.: Pressure-Correction Method for Low-Speed Pressure-Sensitive Paint Measurements. *AIAA Journal*, Volume 41, No. 5, May 2003, p. 906-911.  
Organization RB
- 552** Liu, T.; and Sullivan, J. P.: In-Situ Calibration Uncertainty of Pressure-Sensitive Paint. *AIAA Journal*, Volume 41, No. 11, November 2003, p. 2300-2302.  
Organization RB
- 553** Lucht, R. P.; Natarajan, V. V.; Carter, C. D.; Grinstead, K. D., Jr.; Gord, J. R.; Danehy, P. M.; Fiechtner, G. J.; and Farrow, R. L.: Dual-Pump Coherent Anti-Stokes Scattering Temperature and CO<sub>2</sub> Concentration Measurements. *AIAA Journal*, Volume 41, No. 4, April 2003, p. 679-686.  
Organization RB
- 554** Lunsford, C. B.; and Graves, S. S.: Characterization of the Test Section Walls at the 14- by 22-Foot Subsonic Tunnel. NASA/TM-2003-212444, October 2003, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212444.pdf>  
Organization RB
- 555** Newman, B. A.; and Yu, S-B.: Development of a High Accuracy Angular Measurement System for Langley Research Center Hypersonic Wind Tunnel Facilities. (L-14635 Old Dominion University.) NASA/CR-2003-212401, August 2003, 114 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212401.pdf>  
Organization RB
- 556** O'Byrne, S.; Danehy, P. M.; and Cutler, A. D.: Dual-Pump CARS Thermometry and Species Mole Fraction Measurements in a Supersonic Combustor. Presented at 12th Gordon Research Conference on Laser Diagnostics for Combustion Research, August 17-22, 2003, Oxford, United Kingdom.  
Organization RB
- 557** O'Byrne, S.; Danehy, P. M.; and Cutler, A. D.: N<sub>2</sub>/O<sub>2</sub>/H<sub>2</sub> Dual-Pump CARS: Validation Experiments. Presented at 20th International Congress on Instrumentation in Aerospace Simulation Facilities, August 25-29, 2003, Gottingen, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-20iciasf-so.pdf>  
Organization RB

- 558** O'Byrne, S.; Danehy, P. M.; and Houwing, A. F.: PLIF Temperature and Velocity Distributions in Laminar Hypersonic Flat-Plate Flow. Presented at 12th Gordon Research Conference on Laser Diagnostics for Combustion Research, August 17-22, 2003, Oxford, United Kingdom.  
Organization RB
- 559** O'Byrne, S.; Danehy, P. M.; and Houwing, A. F.: Temperature and Velocity Distributions in Laminar Hypersonic Flat-Plate Flow. Presented at 20th International Congress on Instrumentation in Aerospace Simulation Facilities, August 25-29, 2003, Gottingen, Germany.  
Organization RB
- 560** Pappa, R. S.; Black, J. T.; Blandino, J. R.; Jones, T. W.; Danehy, P. M.; and Dorrington, A.: Dot-Projection Photogrammetry and Videogrammetry of Gossamer Space Structures. Presented at 21st International Modal Analysis Conference—IMAC, February 3-6, 2003, Kissimmee, Florida. In Proceedings, 2003 IMAC-21 Conference CD-ROM, Paper No. 36.  
Organization RC
- 561** Parker, P. A.: Single Vector Calibration System for Multi-Axis Load Cells and Methods for Calibrating A Multi-Axis Load Cell. U. S. Patent 6,629,446. Issued October 7, 2003.  
Organization RB
- 562** Refaat, T. F.; Abedin, M. N.; Koch, G. J.; Ismail, S.; and Singh, U. N.: Infrared Detectors Characterization of CO<sub>2</sub> DIAL Measurement. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RF
- 563** Refaat, T. F.; Abedin, M. N.; Koch, G. J.; Ismail, S.; and Singh, U. N.: 2 $\mu$ m Detectors for Atmospheric CO<sub>2</sub> DIAL Measurements. Presented at Optical Remote Sensing of the Atmosphere, February 3-6, 2003, Quebec City, Canada.  
Organization RF
- 564** Refaat, T. F.; Abedin, M. N.; Singh, U. N.; and Barnes, B. W.: InGaSb Ternary Material for 2 $\mu$ m Detectors. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF
- 565** Roberts, W. L.; Brown, M. S.; Gord, J. R.; Hart, M.; Balla, R. J.; Herring, G. C.; and Jenkins, L. N.: Transient Grating Spectroscopy: A Report on the Current State of the Art. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB

- 566** Sachse, G. W.: Method for Balancing Detector Output to a Desired Level of Balance at a Frequency. U. S. Patent 6,574,031. Issued June 3, 2003.  
Organization RF
- 567** Scheick, L.; and Novak, F. J.: Hot Pixel Generation in Active Pixel Sensors: Dosimetric and Microdosimetric Response. Presented at 7th European Conference: Radiation and Its Effects on Components and Systems (RADECS 2003), September 15-19, 2003, Noordwijk, The Netherlands.  
Organization RF
- 568** Watkins, A. N.; Jordan, J. D.; Leighty, B. D.; Ingram, J. L.; and Oglesby, D. M.: Development of Next Generation Lifetime PSP Imaging Systems. Presented at 20th International Congress on Instrumentation in Aerospace Simulation Facilities, August 25-29, 2003, Gottingen, Germany. Paper No. 13.4.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-20iciasf-anw.pdf>  
Organization RB
- 569** Weinstein, L. M.; and Settles, G. S.: Schlieren, Chapter 1. In *Optical Metrology for Fluids, Combustion, and Solids*, Carolyn Mercer, ed., ISBN 1402074077, Kluwer Academic Publishing, 2003, p. 1-36.  
Organization RB
- 570** Wilkes, J.; Alderfer, D. W.; Beck, T.; and Danehy, P. M.: Portable Fluorescence Imaging System for Hypersonic Flows. Presented at 12th Gordon Research Conference on Laser Diagnostics in Combustion, August 17-22, 2003, Oxford, United Kingdom.  
Organization RB
- 571** Wilkes, J.; Alderfer, D. W.; Jones, S. B.; and Danehy, P. M.: Portable Fluorescence Imaging System for Hypersonic Flows Facilities. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RB
- 572** Yost, W. T.; and Cantrell, J. H., Jr.: Improved Non-Destructive Evaluation Method Employing Dielectric Electrostatic Ultrasonic Transducers. U. S. Patent 6,584,848. Issued July 1, 2003.  
Organization RC
- 573** Zalameda, J. N.; Rajic, N.; and Winfree, W. P.: A Comparison of Image Processing Algorithms for Thermal Nondestructive Evaluation. Presented at Thermosense XXV, April 21-25, 2003, Orlando, Florida.  
Organization RC
- 574** Zuckerwar, A. J.: Fetal Heart Monitoring. Presented at NASA Medical Technology Summit, February 11-13, 2003, Pasadena, California. In Proceedings.  
Organization RB

**575** Zuckerwar, A. J.; Kuhn, T. R., III; and Serbyn, M. R.: Background Noise Piezoresistive, Electret Condenser, and Ceramic Microphones. *Journal of the Acoustical Society of America*, Volume 113, No. 6, June 2003, p. 3179-3187.  
Organization RB

**576** Zuckerwar, A. J.; and Mowrey, D. L.: Passive Fetal Heart Monitoring System. U. S. Patent 6,551,251. Issued April 22, 2003.  
Organization RB

### **Category 36 Lasers and Masers**

**577** Amzajerjian, F.; Kavaya, M. J.; Yu, J.; and Singh, U. N.: 2 Micron Coherent Doppler Lidar for Space-Based Global Wind Field Mapping. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
Organization RF

**578** Amzajerjian, F.; Meadows, B. L.; Kavaya, M. J.; Singh, U. N.; Sudesh, V.; and Baker, N. R.: High Power Laser Diode Arrays for 2-Micron Solid State Coherent Lidars Applications. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-12clrc-fa.pdf>  
Organization RF

**579** Axenson, T. J.; Barnes, N. P.; and Reichle, D. J., Jr.: Q-Switched Diode Pumped Laser Comparison Nd:GYAG Versus Nd:YAG at 0.946 $\mu$ m. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland. In Proceedings, Paper No. CThM37.  
Organization RF

**580** Barnes, N. P.; and Walsh, B. M.: Relaxation Oscillation Suppression in Nd:YAG Lasers Using Intra Resonator Harmonic Generation. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland. In Proceedings, Paper No. CFM5.  
Organization RF

**581** Barnes, N. P.; and Walsh, B. M.: Comparison of Tm-Doped ZBLAN and Silicate Fiber Lasers Operating Near 2.0 Micrometers. Presented at Advanced Solid-State Photonics, February 2-5, 2003, San Antonio, Texas. Paper No. WB-2.  
Organization RF

**582** Barnes, N. P.; and Walsh, B. M.: Dispersive Tuning and Performance of a Pulsed Nd:YAG Laser. Presented at Advanced Solid-State Photonics, February 2-5, 2003, San Antonio, Texas. Paper No. MB-7.  
Organization RF

- 583** Barnes, N. P.; Walsh, B. M.; and Filer, E. D.: Ho:Ho Up Conversion Applications to Ho Lasers. *Journal of the Optical Society of America B—Optical Physics*, Volume 20, No. 6, June 2003, p. 1212-1219.  
Organization RF
- 584** Chen, S.; Yu, J.; Petros, M.; Singh, U. N.; and Bai, Y.: A Double-Pass Diode-Pumped Tm:Ho: YLF Laser Amplifier at 2.05  $\mu\text{m}$ . Presented at Advanced Solid-State Photonics, February 2-5, 2003, San Antonio, Texas.  
Organization RF
- 585** Kavaya, M. J.; Singh, U. N.; Heaps, W. S.; and Cazeau, T.: NASA's New Laser Risk Reduction Program for Future Space Lidar Missions. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-12clrc-mjk.pdf>  
Organization RF
- 586** Petros, M.; Yu, J.; Chen, S.; Walsh, B. M.; Koch, G. J.; Bai, Y.; Singh, U. N.; and Barnes, N. P.: Double Pulsed High Energy Ho: Tm: LuLF Laser. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF
- 587** Singh, U. N.: 2-Micron Laser Development for Space-Based Remote Sensing Applications. Presented at NATO Advanced Study Institute, International School of Atomic and Molecular Spectroscopy 20th Course: Frontiers of Optical Spectroscopy, May 16-June 1, 2003, Erice, Italy.  
Organization RF
- 588** Singh, U. N.; and Heaps, W. S.: Lidar Risk Reduction and Technology Development Strategy for Space-Based Remote Sensing. Presented at 2003 AMOS Technical Conference, September 8-13, 2003, Wailea, Maui, Hawaii.  
Organization RF
- 589** Singh, U. N.; and Heaps, W. S.: Lidar Risk Reduction for Space-Based Remote Sensing. Presented at XI Conference on Laser Optics, June 30–July 4, 2003, St. Petersburg, Russia.  
Organization RF
- 590** Singh, U. N.; and Heaps, W. S.: Laser Technology Maturation and Risk Reduction for Space-Based Remote Sensing. Presented at CLEO/Europe EQEC 2003, June 22-27, 2003, Munich, Germany.  
Organization RF
- 591** Singh, U. N.; and Yu, J.: 2-Micron Laser Development for Space-Based Remote Sensing Applications. Presented at International Conference on Recent Advances in Space Technologies (RAST 2003), November 20-22, 2003, Istanbul, Turkey.  
Organization RF

- 592** Walsh, B. M.; and Barnes, N. P.: The Influence of Energy Transfer on the  $^4F_{3/2}$  Quantum Efficiency in Nd-Doped Materials. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF
- 593** Williams-Byrd, J. A.; Petway, L. B.; and Edwards, W. C.: Room Temperature Laser Performance of Nd:Y<sub>2</sub>O<sub>3</sub> at 914nm. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF
- 594** Yu, J.; Braud, A.; and Petros, M.: 600 mJ, Double-Pulsed 2- $\mu$ m Laser. *Optics Letters*, Volume 27, No. 7, April 1, 2003, p. 540-542.  
Organization RF
- 595** Yu, J.; Petros, M.; Chen, S.; Singh, U. N.; and Kavaya, M. J.: High-Energy 2- $\mu$ m Laser Development. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
Organization RF

### **Category 37 Mechanical Engineering**

- 596** Wojciechowski, B. V.; and Pegg, R. J.: Fast-Acting Valve. U. S. Patent 6,619,322. Issued September 16, 2003.  
Organization RA

### **Category 38 Quality Assurance and Reliability**

- 597** Kuhl, D. D.; Everhart, J. L.; and Hallissy, J. B.: Measurement and Control of Variability of Scanning Pressure Transducer Measurements. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA 2003-3816.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3816.pdf>  
Organization RB
- 598** Madaras, E. I.; Winfree, W. P.; Zimdars, D.; White, J.; and Williamson, S.: Possible Applications of Terahertz Imaging at NASA. Presented at ASNT Fall Conference and Quality Testing Show, October 13-17, 2003, Pittsburgh, Pennsylvania.  
Organization RC
- 599** Noor, A. K. (*Compiler*): Advanced Learning Technologies and Learning Networks and Their Impact on Future Aerospace Workforce. NASA/CP-2003-212437, September 2003, 423 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003-cp212437.pdf>  
Organization RF

- 600** Noor, A. K. (*Compiler*): Emerging and Future Computing Paradigms and Their Impact on the Research, Training and Design Environments of the Aerospace Workforce. NASA/CP-2003-212436, August 2003, 472 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003/cp212436.pdf>  
Organization RF

### **Category 39 Structural Mechanics**

- 601** Adetona, O.; Horta, L. G.; Taleghani, B. K.; Blandino, J. R.; and Woods, K.: Vibration Studies of an Inflatable/Rigidizable Hexapod Structure With Tensioned Membrane. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 602** Anderson, T.; Lemoine, G. I.; and Ambur, D. R.: An Artificial Neural Network Based Damage Detection Scheme for Electrically Conductive Composite Structures. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 603** Apetre, N. A.; Sankar, B. V.; and Ambur, D. R.: Functionally-Graded Sandwich Core With Arbitrary Variation in Properties. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 604** Arbocz, J.; and Hilburger, M. W.: Towards a Probabilistic Preliminary Design Criterion for Buckling Critical Composite Shells. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1842.  
Organization RC
- 605** Baker, D. J.: Response of Damage and Undamaged Tailored Extension-Shear-Coupled Composite Panels. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1461.pdf>  
Organization RC
- 606** Baker, D. J.; Ambur, D. R.; Fudge, J.; and Kassapoglou, C.: Optimal Design and Damage Tolerance Verification of an Isogrid Structure for Helicopter Application. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1502.pdf>  
Organization RC



- 607** Belvin, W. K.: Future Directions for Large Space Structures. Presented at University of Cambridge, Engineering School Seminar Series, April 30–May 4, 2003, Cambridge, United Kingdom.  
Organization RC
- 608** Black, J. T.: Photogrammetry and Videogrammetry Methods Development for Solar Sail Structures. (NCC1-03008 George Washington University.) NASA/CR-2003-212678, December 2003, 102 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212678.pdf>  
Organization RC
- 609** Black, J. T.; and Pappa, R. S.: Videogrammetry Using Projected Circular Targets: Proof-of-Concept Test. NASA/TM-2003-212148, February 2003, 14 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212148.pdf>  
Organization RC
- 610** Breivik, N. L.; Watson, J. J.; and Ambur, D. R.: Buckling of Long, Thin Inflatable Cylinders Loaded in Axial Compression. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 611** Camanho, P. P.; Davila, C. G.; and De Moura, M. F.: Numerical Simulation of Mixed-Mode Progressive Delamination in Composite Materials. *Journal of Composite Materials*, Volume 37, No. 16, August 2003, p. 1415-1438.  
Organization RC
- 612** Chen, T-K.; and Raju, I. S.: A Coupled Finite Element and Meshless Local Petrov-Galerkin Method for Two-Dimensional Potential Problems. *Computer Methods in Applied Mechanics and Engineering*, Volume 192, No. 41-42, 2003, p. 4533-4550.  
Organization RC
- 613** Cole, S. R.; Johnson, R. K.; Piatak, D. J.; Florance, J. P.; and Rivera, J. A., Jr.: Test Activities in the Transonic Dynamics Tunnel and a Summary of Recent Facility Improvements. Presented at AIAA Dynamics Specialists Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1958.  
Organization RC
- 614** Das, M.; Barut, A.; Madenci, E.; and Ambur, D. R.: Nonlinear Analysis of a Bonded Patch Repair of a Skin With a Cutout. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 615** Davila, C. G.; and Camanho, P. P.: Failure Criteria for FRP Laminates in Plane Stress. NASA/TM-2003-212663, November 2003, 28 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212663.pdf>  
Organization RC

- 616** Davila, C. G.; and Camanho, P. P.: Analysis of the Effects of Residual Strains and Defects on Skin/Stiffener Debonding Using Decohesion Elements. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1465.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1465.pdf>  
Organization RC
- 617** Davila, C. G.; Jaunky, N.; and Goswami, S.: Failure Criteria for FRP Laminates in Plane Stress. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1991.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1991.pdf>  
Organization RC
- 618** Forth, S. C.; Everett, R. A., Jr.; and Newman, J. A.: Damage Tolerance of High Cycle Fatigue Systems. Presented at ICAF 2003—International Committee on Aeronautical Fatigue, May 5-9, 2003, Lucerne, Switzerland.  
Organization RC
- 619** Forth, S. C.; and Urban, M. R.: Damage Tolerance of Integral Structure in Rotorcraft. Presented at International Conference on Computational & Experimental Engineering and Sciences (ICCES '03), July 25-29, 2003, Corfu, Greece.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-icces-scf.pdf>  
Organization RC
- 620** Gaspar, J. L.; and Pappa, R. S.: Membrane Vibration Tests Using Surface-Bonded Piezoelectric Patch Actuation. NASA/TM-2003-212150, February 2003, 12 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212150.pdf>  
Organization RC
- 621** Gaspar, J. L.; and Pappa, R. S.: Membrane Vibration Tests Using Surface-Bonded Piezoelectric Patch Actuation. Presented at 21st International Modal Analysis Conference—IMAC, February 3-6, 2003, Kissimmee, Florida.  
Organization RC
- 622** Gates, T. S.; Odegard, G. M.; and Herring, H. M.: Facesheet Delamination of Composite Sandwich Materials at Cryogenic Temperature. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
Organization RC
- 623** High, J. W.; and Wilkie, W. K.: Method of Fabricating NASA-Standard Macro-Fiber Composite Piezoelectric Actuators. NASA/TM-2003-212427, ARL-TR-2833, June 2003, 30 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212427.pdf>  
Organization RF

- 624** Hilburger, M. W.; Nemeth, M. P.; and Starnes, J. H., Jr.: Shell Buckling Design Criteria Based on Manufacturing Imperfection Signatures. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 625** Holland, D. B.; Virgin, L. N.; and Belvin, W. K.: Investigation of Structural Dynamics in a 2-Meter Square Solar Sail Model Including Axial Load Effects. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1746.pdf>  
Organization RC
- 626** Jegley, D. C.; Bush, H. G.; and Lovejoy, A. E.: Structural Response and Failure of a Full-Scale Stitched Graphite-Epoxy Wing. *Journal of Aircraft*, Volume 40, No. 6, November/December, p. 1192-1199.  
Organization RC
- 627** Jegley, D. C.; Tatting, B. F.; and Gurdal, Z.: Optimization of Elastically Tailored Tow-Placed Plates With Holes. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. 2003/aiaa/NASA-aiaa-2003-1420.pdf.  
Organization RC
- 628** Johnson, A. R.; and Chen, T-K.: An Approximate Dissipation Function for Large Strain Rubber Thermo-Mechanical Analyses. Presented at MAFELAP 2003—The Mathematics of Finite Elements and Applications XI Workshop on Computational Viscoelasticity, June 21-24, 2003, Uxbridge, United Kingdom.  
Organization RC
- 629** Johnson, A. R.; and Chen, T-K.: An Approximate Viscoelastic Dissipation Function for Rubber Thermo-Mechanical Analyses. Presented at 16th US Army Symposium on Solid Mechanics, May 4-7, 2003, Charleston, North Carolina.  
Organization RC
- 630** Johnson, A. R.; and Chen, T-K.: An Approximate Dissipation Function for Large Strain Rubber Thermo-Mechanical Analyses. NASA/TM-2003-212430, ARL-TR-2998, July 2003, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212430.pdf>  
Organization RC
- 631** Johnson, T. F.; and Pilkey, W. D.: Accurate Thermal Stresses for Beams: Normal Stress. Presented at 5th International Congress on Thermal Stresses and Related Topics, June 8-11, 2003, Blacksburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5icts-tfj.pdf>  
Organization RC

- 632** Johnson, T. F.; Weiser, E. S.; and Duong, P. G.: Cryogenic Insulation Bondline Studies for Reusable Launch Vehicles. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-tfj.pdf>  
Organization RC
- 633** Juang, J-N.: Continuous-Time Bilinear System Identification. NASA/TM-2003-212646, September 2003, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212646.pdf>  
Organization RC
- 634** Juang, J-N.; Kim, H-Y.; and Junkins, J. L.: An Efficient and Robust Singular Value Method for Star Pattern Recognition and Attitude Determination. NASA/TM-2003-212142, January 2003, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212142.pdf>  
Organization RC
- 635** Keesecker, A. L.; Davila, C. G.; Johnson, E. R.; and Starnes, J. H., Jr.: Crack Path Bifurcation at a Tear Strap in a Pressurized Shell. *Computers and Structures*, Volume 81, No. 16, July 2003, p. 1633-1642.  
Organization RC
- 636** Knight, N. F., Jr.; Glaessgen, E. H.; and Sleight, D. W.: Probabilistic Risk Assessment Strategy for Damage-Tolerant Composite Spacecraft Component Structural Design. *Journal of Spacecraft and Rockets*, Volume 40, No. 1, January–February 2003, p. 72-82.  
Organization RC
- 637** Kradinov, V.; Madenci, E.; and Ambur, D. R.: Analysis of Bolted Laminates of Varying Thickness and Lay-Up With Metallic Inserts. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 638** Krishnamurthy, T.: Response Surface Approximation With Augmented and Compactly Supported Radial Basis Functions. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1748.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1748.pdf>  
Organization RC
- 639** Muheim, D. M.; and Johnson, E. R.: Mode Jumping of an Isogrid Panel Under Quasi-Static Compression. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1790.  
Organization RC

- 640** Muravyov, A.; and Rizzi, S. A.: Determination of Nonlinear Stiffness With Application to Random Vibration of Geometrically Nonlinear Structures. *Computers and Structures*, Volume 81, No. 15, July 2003, p. 1513-1523.  
Organization RB
- 641** Pappa, R. S.; Black, J. T.; Blandino, J. R.; Jones, T. W.; Danehy, P. M.; and Dorrington, A.: Dot-Projection Photogrammetry and Videogrammetry of Gossamer Space Structures. NASA/TM-2003-212146, January 2003, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212146.pdf>  
Organization RC
- 642** Pappa, R. S.; Black, J. T.; Blandino, J. R.; Jones, T. W.; Danehy, P. M.; and Dorrington, A.: Dot-Projection Photogrammetry and Videogrammetry of Gossamer Space Structures. *Journal of Spacecraft and Rockets*, Volume 40, No. 6, November-December 2003, p. 858-867.  
Organization RC
- 643** Pappa, R. S.; Blandino, J. R.; and Black, J. T.: Photogrammetric Measurement of Gossamer Spacecraft Membrane Wrinkling. Presented at 2003 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, June 2-4, 2003, Charlotte, North Carolina. In Proceedings, Paper No. 31.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-sem-rsp.pdf>  
Organization RC
- 644** Pappa, R. S.; Lassiter, J. O.; and Ross, B. P.: Structural Dynamics Experimental Activities in Ultra-Lightweight and Inflatable Space Structures. *Journal of Spacecraft and Rockets*, Volume 40, No. 1, January-February 2003, p. 15-23.  
Organization RC
- 645** Qin, Z.; Liviu, L.; Hasanyan, D.; and Ambur, D. R.: Circular Cylindrical Shells Immersed in a Magnetic Field: Modeling and Dynamic Behavior. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 646** Quigley, C. J.; Cavallaro, P. V.; Johnson, A. R.; and Sadegh, A. M.: Advances in Fabric and Structural Analyses of Pressure Inflated Structures. Presented at 2003 ASME International Mechanical Engineering Congress and RD&D Expo, November 15-22, 2003, Washington, DC. Paper No. IMEC2003-44060.  
Organization RC
- 647** Raju, I. S.; and Chen, T.: A Computationally Efficient Meshless Local Petrov-Galerkin Method for Axisymmetric Problems. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1673.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1673.pdf>  
Organization RC

- 648** Raju, I. S.; and Phillips, D. R.: Further Developments in the MLPG Method for Beam Problems. *Computer Modeling in Engineering & Sciences*, Volume 4, No. 1, 2003, p. 141-159.  
Organization RC
- 649** Raju, I. S.; and Phillips, D. R.: A Cubic Radial Basis Function in the MLPG Method for Beam Problems. Presented at International Conference on Computational & Experimental Engineering and Sciences (ICCES '03), July 25-29, 2003, Corfu, Greece. In Proceedings, Paper No. 170.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-icces-isr.pdf>  
Organization RC
- 650** Raju, I. S.; Phillips, D. R.; and Krishnamurthy, T.: Meshless Local Petrov-Galerkin Euler-Bernoulli Beam Problems: A Radial Basis Function Approach. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1674.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1674.pdf>  
Organization RC
- 651** Reaves, M. C.; and Horta, L. G.: Piezoelectric Actuator Modeling Using MSC/NASTRAN and MATLAB. NASA/TM-2003-212651, October 2003, 29 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212651.pdf>  
Organization RC
- 652** Rice, C. E.; and Buehrle, R. D.: Validation of Force Limited Vibration Testing at NASA Langley Research Center. NASA/TM-2003-212404, May 2003, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212404.pdf>  
Organization RF
- 653** Rizzi, S. A.: On the Use of Equivalent Linearization for High-Cycle Fatigue Analysis of Geometrically Nonlinear Structures. Presented at Eighth International Conference on Recent Advances in Structural Dynamics, July 14-16, 2003, Southampton, United Kingdom. Paper No. 56.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-8icrasd-sar.pdf>  
Organization RB
- 654** Rouse, M.; Young, R. D.; and Gehrki, R. E.: Structural Stability of a Stiffened Aluminum Fuselage Panel Subjected to Combined Mechanical and Internal Pressure Loads. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1423.pdf>  
Organization RC

- 655** Schultz, M. R.; Hyper, M. W.; Brett, W. R.; Wilkie, W. K.; and Inman, D. J.: Snap Through of Unsymmetric Laminates Using MFC Actuators. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida.  
Organization RC
- 656** Scotti, S. J.; Clay, C.; and Rezin, M.: Structures and Materials Technologies for Extreme Environments Applied to Reusable Launch Vehicles. Presented at AIAA/ICAS International Air & Space Symposium and Exposition, July 14-17, 2003, Dayton, Ohio. AIAA Paper No. 2003-2697.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-2697.pdf>  
Organization RC
- 657** Scotti, S. J.; Poteet, C. C.; Daryabeigi, K.; Nowak, R. J.; Hsu, S-Y.; Schmidt, I. H.; and Ku, S-H.: METAShield - Hot Metallic Aeroshell Concept for RLV/SOV. NASA/TM-2003-212425, July 2003, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212425.pdf>  
Organization RC
- 658** Seshadri, B. R.; Forth, S. C.; Johnston, W. M.; and Domack, M. S.: Residual Strength Characterization of a Curved Integrally-Stiffened Panel. Presented at 7th Joint DoD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans, Louisiana.  
Organization RC
- 659** Slade, K. N.; Belvin, W. K.; and Puschmann, C. L.: Solar Sail Model Ground Testing in Ambient and Vacuum Conditions. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama.  
Organization RC
- 660** Sleight, D. W.; and Trexler, C. A.: Effective Modeling of Thin-Film Shells Exhibiting Wrinkling Deformations. Presented at 4th FEMCI Workshop on Innovation Solution to Challenging Problems, May 7-8, 2003, Greenbelt, Maryland.  
Organization RC
- 661** Smeltzer, S. S., III; and Klang, E. C.: Analysis Methods for Inelastic, Adhesively Bonded Joints With Anisotropic Adherends. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida. Paper No. 104.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-18asc-sss.pdf>  
Organization RC
- 662** Smeltzer, S. S., III; and Waters, W. A., Jr.: Nonlinear Thermal Analyses of a Liquid Hydrogen Tank Wall. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-sss.pdf>  
Organization RC

- 663** Solter, M. J.; Horta, L. G.; Reaves, M. C.; and Panetta, A. D.: A Study of Prototype Actuator Concept for Membrane Boundary Control. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
Organization RC
- 664** Spellman, R. L.: Analysis and Test Correlation of Proof of Concept Box for Blended Wing Body-Low Speed Vehicle. Presented at NAFEMS World Congress 2003, May 27-31, 2003, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-nafems-rls.pdf>  
Organization RF
- 665** Su, X.; Abdi, F.; Taleghani, B. K.; and Blandino, J. R.: Wrinkling Analysis of a Kapton Square Membrane Under Tensile Loading. Presented at 4th AIAA Gossamer Spacecraft Forum, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1985.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1985.pdf>  
Organization RC
- 666** Taleghani, B. K.; Sleight, D. W.; Muheim, D. M.; Belvin, W. K.; and Wang, J. T.: Assessment of Analysis Approaches for Solar Sail Structural Response. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama.  
Organization RC
- 667** Tatting, B. F.; and Gurdal, Z.: Automated Finite Element Analysis of Elastically-Tailored Plates. (NAS1-00135 Virginia Polytechnic & State University.) NASA/CR-2003-212679, December 2003, 52 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212679.pdf>  
Organization RC
- 668** Tessler, A.; Sleight, D. W.; and Wang, J. T.: Nonlinear Shell Modeling of Ultra-Thin Membranes With Emphasis on Structural Wrinkling. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1931.pdf>  
Organization RC
- 669** Tessler, A.; and Spangler, J. L.: An Inverse Finite Element Method for Reconstruction of Elastic Deformations in Beam, Plate and Shell Structures. Presented at MAFELAP 2003—The Mathematics of Finite Element & Applications XI Workshop on Computational Viscoelasticity, June 21-24, 2003, Uxbridge, United Kingdom.  
Organization RC
- 670** Tessler, A.; and Spangler, J. L.: A Variational Principle for Reconstruction of Elastic Deformations in Shear Deformable Plates and Shells. NASA/TM-2003-212445, August 2003, 21 p.  
Organization RC



- 671** Thornburgh, R. P.; and Chattopadhyay, A.: Combined Delamination and Matrix Cracking in Adaptive Composite Laminates. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1773.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1773.pdf>  
Organization RC
- 672** Venter, G.; and Sobieszczanski-Sobieski, J.: Reliability Based Design Using Particle Swarm Optimization. Presented at 5th World Congress of Structural Multidisciplinary Optimization, May 19-23, 2003, Venice, Italy.  
Organization RC
- 673** Vitali, R.; Balabanov, V.; Venter, G.; and Sobieszczanski-Sobieski, J.: Use of Bayesian Analysis and Decision Theory to Improve Particle Swarm Optimization Performance. Presented at 5th World Congress of Structural Multidisciplinary Optimization, May 19-23, 2003, Venice, Italy.  
Organization RC
- 674** Walker, S. P.: Thermal Effects on the Compressive Behavior of IM7/PETI5 Laminates. Presented at 14th International Conference on Composite Materials (ICCM-14), July 14-18, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-14iccm-spw.pdf>  
Organization RC
- 675** Walker, S. P.; and Sullivan, B. J.: Refractory Composites for Sharp Passive Leading Edges on Mach 10 Hypersonic Vehicles. Presented at 27th Annual Conference on Composites, Materials and Structures, January 27-31, 2003, Cocoa Beach, Florida.  
Organization RC
- 676** Walker, S. P.; and Sullivan, B. J.: Sharp Refractory Composite Leading Edges on Hypersonic Vehicles. Presented at 12th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, December 15-19, 2003, Norfolk, Virginia. AIAA Paper No. 2003-6915.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6915.pdf>  
Organization RC
- 677** Wang, J. T.; and Johnson, A. R.: Deployment Simulation Methods for Ultra-Lightweight Inflatable Structures. NASA/TM-2003-212410, ARL-TR-2973, June 2003, 25 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212410.pdf>  
Organization RC
- 678** Wang, J. T.; Poe, C. C., Jr.; Ambur, D. R.; and Sleight, D. W.: Residual Strength Prediction of Damaged Composite Fuselage Panel With R-Curve Method. Presented at American Society for Composites 18th Annual Technical Conference, October 20-22, 2003, Gainesville, Florida.  
Organization RC

- 679** Werlink, R. J.: Composite Bending Box Section Modal Vibration Fault Detection. Presented at 21st International Modal Analysis Conference—IMAC, February 3-6, 2003, Kissimmee, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-21imac-rjw.pdf>  
Organization RF
- 680** Woods-Vedeler, J. A.; and Armand, S.: Progress in the Phase O Model Development of STAR Concept for Dynamics and Control Testing. NASA/TM-2003-212645, October 2003, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212645.pdf>  
Organization RC
- 681** Zomkowski, P. P.: Preliminary Design and Analysis of the GIFTS Instrument Pointing System. (NCC1-01017 George Washington University, JIAFS.) NASA/CR-2003-211937, March 2003, 133 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr211937.pdf>  
Organization RC

## Geosciences

### Category 42 Geosciences (General)

- 682** Abdelkhalik, O. O.; Weaver, T.; Nairouz, B.; and Newman, B. A.: Engineering Feasibility and Trade Studies for the NASA/VSGC MicroMaps Space Mission. (L-16151 Old Dominion University.) NASA/CR-2003-212652, September 2003, 101 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212652.pdf>  
Organization RE
- 683** Browell, E. V.; Hair, J. W.; Butler, C. F.; Grant, W. B.; DeYoung, R. J.; Fenn, M. A.; Brackett, V. G.; Clayton, M. B.; Brasseur, L. H.; Harper, D.; Ridley, B. A.; Klonecki, A. A.; Hess, P. G.; and Emmons, L. K.: Ozone, Aerosol, Potential Vorticity, and Trace Gas Trends Observed at High Latitudes Over North America From February to May 2000. *Journal of Geophysical Research*, Volume 108, No. D4, February 27, 2003, p. TOP 17-1 - 17-16.  
Organization RE
- 684** Crawford, J. H.; Olson, J. T.; Davis, D. D.; Chen, G.; Barrick, J. D.; Shetter, R.; Lefer, B.; Jordan, C. E.; Anderson, B. E.; Clarke, A.; Sachse, G. W.; Blake, N. J.; Singh, H. B.; Sandholm, S. T.; *et al.*: Clouds and Trace Gas Distributions During TRACE-P. *Journal of Geophysical Research*, Volume 108, No. D21, November 2003, p. GTE 39-1-GTE 39-13.  
Organization RE
- 685** Crawford, J. H.; Shetter, R.; Lefer, B.; Cantrell, C.; Junkerman, W.; and Madronich, S.: Cloud Impacts on UV Spectral Actinic Flux Observed During International Photolysis Frequency Measurement and Model Intercomparison (IPMMI). *Journal of Geophysical Research*, Volume 108, No. D16, August 2003, p. IPM 4-1 - IPM 4-11.  
Organization RE

- 686** Kleb, M. M.; and Scott, A. D., Jr.: Compendium of NASA Data Base for the Global Tropospheric Experiment's Transport and Chemical Evolution Over the Pacific (TRACE-P)—Volume 2: P-3B. NASA/TM-2003-212429, Vol.2, October 2003, 564 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212429vol2.pdf>  
 Organization RE
- 687** Kleb, M. M.; and Scott, A. D., Jr.: Compendium of NASA Data Base for the Global Tropospheric Experiment's Transport and Chemical Evolution Over the Pacific (TRACE-P)—Volume 1: DC-8. NASA/TM-2003-212429/Vol1, October 2003, 546 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212429vol1.pdf>  
 Organization RE
- 688** Omar, A. H.; Winker, D. M.; and Won, J-G.: Aerosol Models for the CALIPSO Lidar Inversion Algorithms. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-spiers-aho.pdf>  
 Organization RE
- 689** Omar, A. H.; Winker, D. M.; Won, J-G.; Vaughn, M.; and Hostetler, C. A.: Selection Algorithm for the CALIPSO Lidar Aerosol Extinction-to-Backscatter Ratio. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
 Organization RE
- 690** Pierce, R. B.; Al-Saadi, J. A.; Schaack, T.; Lenzen, A.; Zapotocny, T.; Johnson, D. R.; Kattaka, C.; Buker, M.; Hitchman, M. H.; Tripoli, G. J.; Fairlie, T. D.; Olson, J. R.; Natarajan, M.; Crawford, J. H.; *et al.*: Regional Air Quality Modeling System (RAQMS) Predictions of the Tropospheric Ozone Budget Over East Asia. *Journal of Geophysical Research*, Volume 108, No. D21, November 11, 2003, p. GTE 46-1-GTE 46-17.  
 Organization RE

### **Category 43 Earth Resources and Remote Sensing**

- 691** Hu, Y-X.: Multisensor Inversion With High-Performance FPGA Computation. Presented at 2nd IEEE International Conference on Field-Programmable Technology, December 15-17, 2003, Tokyo, Japan.  
 Organization RE
- 692** Poole, L. R.; Trepte, C. R.; Harvey, V. L.; Toon, G. C.; and Van Valkenburg, R. L.: An Initial Assessment of SAGE III Polar Stratospheric Cloud Observations. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. A52G-06.  
 Organization RE

- 693** Poole, L. R.; Trepte, C. R.; Harvey, V. L.; Van Valkenburg, R. L.; and Toon, G. C.: SAGE III PSC Observations During the 2002-2003 Arctic Winter. Presented at SOLVE II / WINTERSOL Joint Science Team Meeting, October 21-24, 2003, Orlando, Florida.  
Organization RE
- 694** Thomason, L. W.: Using Satellite-Based Measurements of Stratospheric Aerosol Characteristics in Climate Models. Presented at ECMWF/SPARC Symposium, June 26-26, 2003, Reading, England.  
Organization RE
- 695** Thomason, L. W.: Stratospheric Aerosol Observations by the Stratosphere Aerosol and Gas Experiments Series. Presented at IUGG 2003—International Union of Geodesy and Geophysics XXIII General Assembly, June 30–July 11, 2003, Sapporo, Japan.  
Organization RE
- 696** Thomason, L. W.: Assessment of Stratospheric Aerosol Properties. Presented at 11th SPARC Science Steering Group Meeting, September 22-25, 2003, Frankfurt, Germany.  
Organization RE
- 697** Thomason, L. W.; Taha, G.; and Kizer, E. A.: A 25-Year History of Aerosol Extinction Measurements by the Stratospheric Aerosol Gas Experiment Series. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 698** Zhou, D. K.; and Smith, W. L.: Geophysical Retrieval Algorithm and Validation. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
Organization RE

#### **Category 44 Energy Production and Conversion**

- 699** Alexander, D. S.: Advanced Energetics for Aeronautical Applications. (NAG1-02048 MSE Technology Applications, Inc.) NASA/CR-2003-212169, February 2003, 105 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212169.pdf>  
Organization A

#### **Category 45 Environment Pollution**

- 700** Anderson, B. E.; Hudgins, C. H.; Plant, J. V.; Branham, H. S.; Thornhill, K. L.; Boudries, H.; Canagaratna, M.; Miake-Lye, R. C.; Wormhoudt, J.; Worsnop, D. R.; Miller, T.; Ballenthin, J.; Hunton, D.; Viggiano, A.; *et al.*: Overview of Results From the NASA Experiment to Characterize Aircraft Volatile Aerosol and Trace Species Emissions (EXCAVATE). Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany.  
Organization RE

- 701** Boudries, H.; Wormhoudt, J.; Worsnop, D. R.; Canagaratna, M.; Onasch, T.; Miake-Lye, R. C.; and Anderson, B. E.: Aerosol and Gas Chemistry of Commercial Aircraft Emissions Measured in the NASA EXCAVATE Experiment. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany.  
Organization RE
- 702** Grant, W. B.: Acid Rain and Deposition. In *Handbook for Climate, Weather, and Water: Atmospheric Chemistry, Hydrology & Societal Impact*, Ch. 15, Thomas D. Potter & B. R. Colman, eds., McGraw-Hill, 2003, p. 269-283.  
Organization RE
- 703** Lu, C-H.; Yue, G. K.; Joseph, E. D.; and Mohnen, V. A.: Retrieval Analysis of Aerosol Integral Properties From Simulated Extinction at SAGE II and HALOE Wavelengths. *Journal of Geophysical Research*, Volume 108, No. D7, April 2003, p. AAC 1-1 - AAC 1-9.  
Organization RC
- 704** Wei, C-F.; Kotamarthi, V. R.; Ogunsola, O. J.; Wuebbles, D. J.; Brasseur, G. P.; Blake, D. R.; Brune, B.; Browell, E. V.; Avery, M. A.; Sachse, G. W.; and Sandholm, S. T.: Seasonal Variability of Ozone Mixing Ratios and Budgets in the Tropical Southern-Pacific: A GCTM Perspective. *Journal of Geophysical Research*, Volume 108, No. D2, January 23, 2003, p. PEM 7-1–PEM 7-23.  
Organization RE
- 705** Zhou, D. K.; Smith, W. L.; Li, J.; and Mango, S.: Tropospheric CO Observed With NAST-I: Retrieval Algorithm, First Results, and Validation. Presented at International TOVS Study Conference (ITSC-13), October 29–November 4, 2003, Ste. Adele, Canada.  
Organization RE

#### Category 46 Geophysics

- 706** Browell, E. V.; Butler, C. F.; Grant, W. B.; Kooi, S. A.; Notari, A.; Brackett, V. G.; Lait, L. R.; and Newman, P. A.: Comparison of Polar Stratospheric Cloud Properties Observed During SOLVE-I and SOLVE-II Campaigns. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 707** Considine, D. B.; Kawa, S. R.; Schoeberl, M. R.; and Douglass, A. R.: N<sub>2</sub>O and NO<sub>y</sub> Observations in the 1999/2000 Arctic Polar Vortex: Implications for Transport Processes in a CTM. *Journal of Geophysical Research*, Volume 108, No. D5, March 16, 2003, p. ACH 5-1 - ACH 5-16.  
Organization RE

- 708** Creilson, J. K.; Fishman, J.; Wozniak, A. E.; and Szykman, J. J.: Use of Satellite-Derived Air Pollution Observations to Provide Insight into the Relationship Between Population, Long-Range Transport, and Climate. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 709** Fishman, J.; Barrie, L. A.; and Langen, J.: Aura as Part of Integrated Global Atmospheric Chemistry Observation (IGACO): Putting Together the Bigger Picture. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 710** Fishman, J.; Chandra, S.; Thompson, A. M.; Ziemke, J. R.; Hudson, R. D.; Newchurch, M. J.; Creilson, J. K.; and Wozniak, A. E.: Tropospheric Ozone From TOMS: Providing the First Depictions of the Extent of Global Pollution. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 711** Grant, W. B.; Browell, E. V.; Butler, C. F.; Gibson, S. C.; Kooi, S. A.; and Von der Gathen, P.: Estimation of Arctic Polar Vortex Ozone Loss During the Winter of 1999-2000 Using Vortex-Averaged Airborne Differential Absorption Lidar Ozone Measurements of N<sub>2</sub>O Isopleths. *Journal of Geophysical Research*, Volume 108, No. D10, May 2003, p. ACH 3-1–ACH 3-9.  
Organization RE
- 712** Lingenfelter, G. S.; Remsberg, E. E.; Harvey, V. L.; and Grose, W. L.: Estimated Synoptic Distributions of SABER Data. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 713** Lingenfelter, G. S.; Remsberg, E. E.; Harvey, V. L.; Grose, W. L.; Russell, J. M., III; and Mlynczak, M. G.: Synoptic Distributions of SABER Temperature Data and Implications for Derived Dynamical Quantities. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 714** Magill, B. E.; Gordley, L. L.; Thompson, R. E.; Russell, J. M., III; and Remsberg, E. E.: Long Term Calibration of the HALOE Instrument. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 715** McHugh, M. J.; Hervig, M. E.; Magill, B. E.; Thompson, R. E.; and Remsberg, E. E.: Improving Mesospheric Temperature, Water Vapor and Polar Mesospheric Cloud Extinctions From HALOE. *Geophysical Research Letters*, Volume 30, No. 8, 2003, p. 23-1 - 23-4.  
Organization RE

- 716** Mertens, C. J.: SABER Observations of Mesospheric Temperatures and Comparisons With Falling Sphere Measurements Taken During the 2002 Summer MaCWAVE Campaign. Presented at MaCWAVE Workshop, October 11-16, 2003, Kulungsborn, Germany.  
Organization RE
- 717** Mertens, C. J.; Che, C-Y.; Remsberg, E. E.; Russell, J. M., III; Mlynczak, M. G.; Gordley, L. L.; Lopez-Puertas, M.; Picard, R. H.; Winick, J. R.; and Wintersteiner, P. P.: Impact of SABER-Observed CO<sub>2</sub> Concentrations of SABER-CSU Lidar Mesospheric Temperature Comparisons at Fort Collins, Colorado. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. In Proceedings, EOS Transaction AGU 84(46) Fall Meeting Suppl., Abstract.  
Organization RE
- 718** Mills, F. P.; Cageao, R. P.; Sander, S. P.; Allen, M.; Yung, Y. L.; Remsberg, E. E.; Russell, J. M., III; and Richter, U.: OH Column Abundance Over Table Mountain Facility, California: Intra-Annual Variations and Comparisons to Model Predictions for 1997-2001. *Journal of Geophysical Research*, December 12, 2003, p. ACH 17-1 - 17-16.  
Organization RE
- 719** Neil, D. O.; Fishman, J.; and Szykman, J. J.: Utilization of NASA Data and Information to Support Emission Inventory Development. Presented at NARSTO Emission Inventory Workshop, October 14-17, 2003, Austin, Texas.  
Organization RE
- 720** Nesse, H.; Stadsnes, J.; Mertens, C. J.; Saetre, C.; Asanes, A.; Aksnes, A.; and Ostgaard, N.: Upper Atmosphere Temperature Effects of Energetic Electron Precipitation During Substorms. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. In Proceedings, EOS Transaction AGU, 84(46), Fall Meeting Suppl., Abstract.  
Organization RE
- 721** Pippin, M. R.; Ladd, I.; and Fishman, J.: An Evaluation of the GLOBE Surface Ozone Protocol After Five Years of Implementation. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 722** Poole, L. R.; Trepte, C. R.; Harvey, V. L.; Toon, G. C.; and Van Valkenburg, R. L.: SAGE III Observations of Arctic Polar Stratospheric Clouds - December 2002. *Geophysical Research Letters*, Volume 30, No. 23, December 2003, p. ASC 11-1–ASC 11-4.  
Organization RE
- 723** Remsberg, E. E.; Lingenfelter, G. S.; Harvey, V. L.; Grose, W. L.; Russell, J. M., III; Mlynczak, M. G.; Gordley, L. L.; and Marshall, B. T.: On the Verification of the Quality of SABER Temperature, Geopotential Height, and Wind Fields by Comparison With Met Office Assimilated Analyses. *Journal of Geophysical Research*, Volume 108, No. D20, October 17, 2003, p. ACL 4-1–ACL 4-10.  
Organization RE

- 724** Remsberg, E. E.; Mertens, C. J.; Schmidlin, F. J.; Goldberg, R. A.; She, C-Y.; Williams, B. P.; Pesnell, W. D.; Russell, J. M., III; Mlynczak, M. G.; Gordley, L. L.; Lopez-Puertas, M.; Picard, R. H.; Winick, J. R.; and Wintersteiner, P. P.: SABER Observations of Polar Summer/Winter Mesospheric and Lower Thermospheric Temperatures and Comparisons with Correlative Measurements Taken During the MaCWAVE Campaign. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. In Proceedings, EOS Transaction AGU, 84(46) Fall Meeting Suppl., Abstract.  
Organization RE
- 725** Rodriguez, W. J.; and Harvey, V. L.: Stratosphere-Troposphere Exchange Studies Using SAGE II Data. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 726** Russell, J. M., III; Anderson, J.; and Remsberg, E. E.: HALOE Contributions to Solar Occultation Satellite Science Studies. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 727** Zhao, Y.; Taylor, M. J.; Mertens, C. J.; and Russell, J. M., III: Comparison of TIMED/SABER non-LTE Temperature Retrievals with Ground Based Mesospheric Temperature Mapper Measurements. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. In Proceedings, EOS Transaction AGU 84(46) Fall Meeting Suppl., Abstract.  
Organization RE

#### **Category 47 Meteorology and Climatology**

- 728** Ayers, J. K.; Khaiyer, M. M.; Minnis, P.; Nguyen, L.; Sharon, T.; Albrecht, B. A.; Fairall, C. W.; Uttal, T.; and Wood, R.: Comparison of In Situ, Surface, and Satellite Cloud Measurements Over the Eastern Pacific. Presented at U.S. CLIVAR PanAmerican Workshop, September 15-18, 2003, Boulder, Colorado.  
Organization RE
- 729** Baum, B. A.; Frey, R. A.; Mace, G. G.; Harkey, M. K.; and Yang, P.: Nighttime Multilayered Cloud Detection Using MODIS and ARM Data. *Journal of Applied Meteorology*, Volume 42, No. 7, July 2003, p. 905-919.  
Organization RE
- 730** Bess, T. D.; Wong, T.; and Smith, G. L.: Sampling Errors of Monthly-Mean Radiative Fluxes From the Earth Radiation Budget Satellite. Presented at 83rd American Meteorological Society Annual Meeting, February 9-13, 2003, Long Beach, California. Paper No. 1.7.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-83ams-tdb.pdf>  
Organization RE



- 731** Browell, E. V.; Fenn, M. A.; Grant, W. B.; Avery, M. A.; Neuber, R.; McGee, T. J.; Trepte, C. R.; Butler, C. F.; Kooi, S. A.; Notari, A.; Hair, J. W.; and Lait, L. R.: Large-Scale Ozone Variations in the Arctic During SOLVE-2 and Comparisons of Remote and In Situ Ozone Profile Measurements. Presented at 2003 American Geophysical Union (AGU) Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 732** Browell, E. V.; Ismail, S.; Ferrare, R. A.; Kooi, S. A.; Notari, A.; and Butler, C. F.: Large-Scale Water Vapor, Aerosol, and Cloud Distribution Determined Airborne Lidar (LASE) Measurements During the IHOP Field Experiment. Presented at AMS Annual Meeting, February 9-13, 2003, Long Beach, California.  
Organization RE
- 733** Browell, E. V.; Ismail, S.; Ferrare, R. A.; Kooi, S. A.; Notari, A.; Butler, C. F.; Brackett, V. G.; Revercomb, H.; and Antonelli, P.: Airborne Remote Measurements of Water Vapor, Relative Humidity, Aerosol, and Cloud Distributions During the IHOP Field Experiment. Presented at ISTP 2003—6th International Symposium on Tropospheric Profiling: Needs and Technologies, September 14-20, 2003, Leipzig, Germany.  
Organization RE
- 734** Burton, S. P.; and Thomason, L. W.: Molecular Density Retrieval and Temperature Climatology for 40-60 km From SAGE II. *Journal of Geophysical Research*, Volume 108, No. D19, October 2003, p. ACL 2-1 - ACL 2-9.  
Organization RE
- 735** Butler, C. F.; Browell, E. V.; Hostetler, C. A.; Grant, W. B.; Kooi, S. A.; Notari, A.; and Lait, L. R.: Polar Stratospheric Cloud Properties Observed During SOLVE-2 and Comparisons with SOLVE-1 Results. Presented at 2003 American Geophysical Union (AGU) Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 736** Chakrapani, V.; Minnis, P.; Doelling, D. R.; and Khaiyer, M. M.: New Visible to Broadband Shortwave Conversions for Deriving Albedos From GOES-8 Over the ARM-SGP. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 737** Chambers, L. H.; Detweiler, P. T.; Fischer, J.; Sepulveda, R.; and Arabini, E.: Ideas for GLOBE's Future Drawn From the 7-Year Experience of the CERES S'COOL Project. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. ED21D-07.  
Organization RE
- 738** Chambers, L. H.; Young, D. F.; Costulis, P. K.; Detweiler, P. T.; Stoddard, D. B.; Sepulveda, R.; Watkins, J. D.; and Falcone, A.: The CERES S'COOL Project. *Bulletin of the American Meteorological Society*, Volume 84, No. 6, June 2003, p. 759-765.  
Organization RE

- 739** Charlock, T. P.; Rose, F. G.; Rutan, D.; and Jin, Z.: CERES Aerosol Forcing to SW and LW at Surface and TOA. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 740** Chen, G.: Diagnostic Analysis of Ozone Seasonal Trend Based on Ozonesonde and Airborne Observations From PEACE A/B and TRACE-P. Presented at Pacific Exploration of Asian Continental Emissions Workshop, August 24-30, 2003, Tokyo City, Japan.  
Organization RE
- 741** Chen, Y.; Sun-Mack, S.; Minnis, P.; Young, D. F.; and Smith, W. L., Jr.: Surface Spectral Emissivity Derived From Aqua MODIS Data. Presented at IUGG 2003—International Union of Geodesy and Geophysics XXIII General Assembly, June 30–July 11, 2003, Sapporo, Japan. Abstract No. MIO2a/30P/D-016.  
Organization RE
- 742** Chepfer, H.; Minnis, P.; Nguyen, L.; and Yang, P.: Dual-Satellite Retrievals of Tropical Ice Cloud Particle Shapes and IWC During CRYSTAL-FACE: Comparisons With In-Situ and Ground Site Observations. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 743** Chu, W. P.; Trepte, C. R.; Zawodny, J. M.; Thomason, L. W.; Cisewski, M. C.; Rault, D. F.; Taha, G.; Moore, J. R.; and Risley, A. D.: First Year Measurement of Stratospheric Aerosol and Gas Experiment III/Meteor. Presented at SPIE's 48th Annual Meeting International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RE
- 744** Chu, W. P.; Trepte, C. R.; Zawodny, J. M.; Thomason, L. W.; Cisewski, M. C.; Rault, D. F.; Taha, G.; Moore, J. R.; and Risley, A. D.: Overview of the SAGE III's First Year Measurements. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 745** Clark, C.; Sepulveda, R.; and Chambers, L. H.: Experiences of an Educator/Scientist Team. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. ED41E-02.  
Organization RE
- 746** Connors, V. S.; Reichle, H.; Morrow, W.; Campanion, J.; Sandy, M.; Hall, C.; Wood, H.; and Ribando, R. J.: The MicroMAPS Project: A NASA - Virginia Space Grant Consortium Initiative. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE

- 747** Delnore, V. E.: Selection, Establishment, and Operation of Ground Stations for the Crystal-Face Mission. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 748** Doelling, D. R.; Minnis, P.; Khaiyer, M. M.; Nguyen, L.; and Smith, W. L., Jr.: Cirrus Cloud Life Cycles During CRYSTAL-FACE From GOES Data. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 749** Doelling, D. R.; Minnis, P.; Nordeen, M. L.; and Khaiyer, M. M.: Improved ARM-SGP TOA OLR Fluxes From GOES-8 Based on CERES. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 750** Doelling, D. R.; Minnis, P.; Walter, B. J.; Nordeen, M. L.; and Arabini, E.: Characteristics of Convective Cloud Systems Over Costa Rica, Darwin and Guam for CRYSTAL. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 751** Dong, X.; Minnis, P.; Mace, G. G.; Smith, W. L., Jr.; Marchand, R. T.; and Rapp, A. D.: Comparison of Stratus Cloud Properties Deduced From Surface, GOES, and Aircraft Data During March 2000 ARM Cloud IOP. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 752** Duda, D. P.; Minnis, P.; Costulis, P. K.; and Palikonda, R.: CONUS Contrail Frequency Estimated From RUC and Flight Track Data. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany. In Proceedings.  
Organization RE
- 753** Fan, A.; and Lin, B.: Net Surface Fluxes Over Tropical Oceans From TRMM. Presented at 3rd International Workshop on Sea Flux, February 12-13, 2003, Long Beach, California.  
Organization RE
- 754** Fan, A.; and Lin, B.: Comparison of Latent and Sensible Heat Fluxes Over Tropical Oceans Observed by TRMM and DMSP Satellites. Presented at 83rd American Meteorological Society Annual Meeting, February 9-13, 2003, Long Beach, California.  
Organization RE
- 755** Ferrare, R. A.; Browell, E. V.; Ismail, S.; Barrick, J. D.; Diskin, G. S.; Kooi, S. A.; Brasseur, L. H.; Brackett, V. G.; Clayton, M. B.; Lesht, B.; Podolske, J. R.; Schmidlin, F. J.; Turner, D. D.; and Whiteman, D. N.: Lidar Characterizations of Water Vapor Measurements Over the ARM SGP Site. Presented at American Meteorological Society Annual Meeting, February 9-13, 2003, Long Beach, California.  
Organization RE

- 756** Ferrare, R. A.; Clayton, M. B.; Feltz, W. F.; Ogren, J. A.; Andrews, E.; and Turner, D.: Measurements of Water Vapor and Aerosol Profiles Over the ARM SGP Site. Presented at ISTP 2003—6th International Symposium on Tropospheric Profiling: Needs and Technologies, September 14-20, 2003, Leipzig, Germany.  
Organization RE
- 757** Fishman, J.; Balok, A. E.; and Creilson, J. K.: Global Distribution of Tropospheric Ozone From Satellite Measurements Using the Empirically Corrected Tropospheric Ozone Residual Technique: Identification of the Regional Aspects of Air Pollution. *Atmospheric Chemistry and Physics*, Volume 3, July 2003, p. 893-907.  
Organization RE
- 758** Flittner, D. E.; Loughman, R.; Rault, D. F.; McPeters, R. D.; and Hilsenrath, E.: Water Vapor Profiling Using Limb Scatter Measurements. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 759** Flittner, D. E.; Loughman, R.; Rault, D. F.; McPeters, R. D.; Janz, S.; and Hilsenrath, E.: The Effect of Cloud/Surface Heterogeneity Upon the Retrieval of Ozone Profiles From Limb Scatter Data. Presented at 1st International VU/VIS Limb Workshop, April 14-16, 2003, Bremen, Germany.  
Organization RE
- 760** Ganoë, G. G.; Johnson, T. A.; and Somero, J. R.: Evaluation of Experimental Data From the GAINS Balloon GPS Surface Reflection Instrument. Presented at 83rd American Meteorological Society Annual Meeting, February 9-13, 2003, Long Beach, California. Paper No. 1.4.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-83ams-ggg.pdf>  
Organization RD
- 761** Garber, D. P.; Minnis, P.; and Costulis, P. K.: A USA Commercial Flight Track Database for Upper Tropospheric Aircraft Emission Studies. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-ecaac-dpg.pdf>  
Organization RE
- 762** Genkova, I.; Long, C. N.; Heck, P. W.; and Minnis, P.: Satellite and Surface Data Synergy for Developing a 3D Cloud Structure and Properties Characterization Over the ARM SGP— Stage 1: Cloud Amounts, Optical Depths, and Cloud Heights Reconciliation. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 763** Grose, W. L.; Lingenfelter, G. S.; Remsberg, E. E.; and Harvey, V. L.: Analysis of the February 2002 Stratospheric Warming Using SABER Data. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE

- 764** Guo, G.; Yang, P.; Hu, Y-X.; Winker, D. M.; Hostetler, C. A.; Baum, B. A.; and Reichardt, J.: Manifestations of Interference Fluctuations of Phase Functions and Backscattering Cross Sections for Ice Crystals With Specific Orientations. *Journal of Optical A: Pure and Applied Optics*, Volume 5, No. 5, September 2003, p. 520-527.  
Organization RE
- 765** Heck, P. W.; Minnis, P.; Khaiyer, M. M.; Smith, W. L., Jr.; Young, D. F.; and Nguyen, L.: Evaluation of Day-Night Continuity in Retrievals of Cloud Properties From GOES. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 766** Heymsfield, A. J.; Matrosov, S.; and Baum, B. A.: Ice Water Path-Optical Depth Relationships for Cirrus and Deep Stratiform Ice Cloud Layers. *Journal of Applied Meteorology*, Volume 42, No. 11, October 2003, p. 1369-1390.  
Organization RE
- 767** Ho, S-P.; Lin, B.; Minnis, P.; and Fan, T-F.: Estimates of Cloud Vertical Structure and Water Amount Over Tropical Oceans Using VIRS and TMI Data. *Journal of Geophysical Research*, Volume 108, No. D14, July 27, 2003, p. AAC 10-1 - 10-6.  
Organization RE
- 768** Hopkins, P. E.; Tangen, S. A.; Ribando, R. J.; Wood, H. G.; and Connors, V. S.: MicroMAPS Missions to CO Detection. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 769** Hu, Y-X.: Using Backscattered Circular Component for Cloud Particle Shape Discrimination. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 770** Huang, J.; Minnis, P.; Lin, B.; Khaiyer, M. M.; and Heck, P. W.: Determination of Ice-Water Path Over the ARM SGP Using Combined Surface and Satellite Datasets. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 771** Ismail, S.; Browell, E. V.; Ferrare, R. A.; Grant, W. B.; Kooi, S. A.; Brackett, V. G.; and Mahoney, M. J.: Airborne Lidar Observations of Cirrus Clouds in the Tropics, Mid-Latitudes, and the Arctic. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE

- 772** Ismail, S.; Browell, E. V.; Ferrare, R. A.; Kooi, S. A.; Notari, A.; Halverson, J.; Krishnamurti, T. N.; and Rupa, K.: LASE Characterization of the Hurricane Environment and the Influence of Moisture on Hurricane Forecasting. Presented at American Meteorological Society Annual Meeting, February 9-13, 2003, Long Beach, California.  
Organization RE
- 773** Ismail, S.; Singh, U. N.; Browell, E. V.; Kavaya, M. J.; Peri, F., Jr.; Barnes, N. P.; Edwards, W. C.; Yu, J.; Koch, G. J.; and Abedin, M. N.: DIAL Technology Developments for Space-Based O<sub>3</sub>, H<sub>2</sub>O, CO<sub>2</sub>, Aerosol, and Cloud Measurements. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RE
- 774** Kamineni, R.; Krishnamurti, T. N.; Ferrare, R. A.; Ismail, S.; and Browell, E. V.: Impact of High Resolution Water Vapor Cross-Sectional Data on Hurricane Forecasting. *Geophysical Research Letters*, Volume 30, No. 5, March 1, 2003, p. 38-1 - 38-4.  
Organization RE
- 775** Khaiyer, M. M.; Huang, J.; Minnis, P.; Lin, B.; Smith, W. L., Jr.; Fan, A.; and Rapp, A. D.: Validation of Satellite-Derived Liquid Water Paths Using ARM SGP Microwave Radiometers. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado.  
Organization RE
- 776** Kratz, D. P.; Mlynczak, M. G.; Mertens, C. J.; Brindley, H.; Gordley, L. L.; Martin-Torres, J.; Miskolczi, F. M.; and Turner, D. D.: An Inter-Comparison of Far-Infrared Line-by-Line Radiative Transfer Models. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 90, No. 3-4, February 1, 2005, p. 323-341.  
Organization RE
- 777** Larar, A. M.; Smith, W. L.; Zhou, D. K.; and Mango, S.: Validation Studies Using NAST-Interferometer Field Measurements. Presented at International TOVS Study Conference (ITSC-13), October 29–November 4, 2003, Ste. Adele, Canada.  
Organization RE
- 778** Lee, R. B., III; Bush, K. A.; Paden, J.; Pandey, D. K.; Wilson, R. S.; Smith, G. L.; and Priestley, K. J.: On-Orbit Calibrations of the ERBE Active-Cavity Radiometers on the Earth Radiation Budget Satellite (ERBS): 1984-2002. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain. In Proceedings, SPIE Vol. 5234, Paper No. 5234A-48.  
Organization RE

- 779** Lee, R. B., III; Smith, G. L.; Kratz, D. P.; Priestley, K. J.; Szewczyk, Z. P.; Thomas, S.; Bush, K. A.; Paden, J.; Pandey, D. K.; Wilson, R. S.; and Al-Hajjah, A.: Measurements of Filtered Lunar Radiances Using the NASA Terra Spacecraft/CERES Thermistor Bolometer Sensors During 2000 and 2001. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California. In Proceeding, SPIE Vol. 5151, Paper No. 5151-37.  
Organization RE
- 780** Lee, R. B., III; Wilson, R. S.; and Bush, K. A.: Total Solar Irradiance (TSI), Long-Term Variability Trends Derived From October 1984-September 2003, Earth Radiation Budget Satellite (ERBS)/Earth Radiation Budget Experiment (ERBE) Measurements. Presented at 30th International Symposium of Remote Sensing of Environment, November 10-14, 2003, Honolulu, Hawaii.  
Organization RA
- 781** Lee, Y. K.; Yang, P.; Mishchenko, M. I.; Baum, B. A.; Hu, Y-X.; Huang, H. L.; Wiscombe, W.; and Baran, A. J.: Use of Circular Cylinders as Surrogates for Hexagonal Pristine Ice Crystals in Scattering Calculations at Infrared Wavelengths. *Applied Optics*, Volume 42, No. 15, May 20, 2003, p. 2653-2664.  
Organization RE
- 782** Lin, B.; Minnis, P.; Chambers, L. H.; and Hu, Y. X.: Tropical Deep Convection Observed by TRMM Satellite. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 783** Lin, B.; Minnis, P.; and Fan, A.: Cloud Liquid Water Amount Variations With Temperature Observed During the Surface Heat Budget of the Arctic Ocean (SHEBA) Experiment. *Journal of Geophysical Research*, Volume 108, No. D14, July 27, 2003, p. AAC 13-1 - 13-9.  
Organization RE
- 784** Lin, B.; Minnis, P.; and Fan, A.: The Change of Cloud Liquid Water Path on Temperature Over Polar Areas. Presented at 7th Conference on Polar Meteorology and Oceanography and Joint Symposium on High-Latitude Climate Variations, May 12-16, 2003, Hyannis, Massachusetts. In Proceedings, Paper No. 5.14.  
Organization RE
- 785** Loeb, N. G.; Manalo-Smith, N.; Kato, S.; Miller, W. F.; Gupta, S. K.; Minnis, P.; and Wielicki, B. A.: Angular Distribution Models For Top-of-Atmosphere Radiative Flux Estimation From the Clouds and the Earth's Radiant Energy System Instrument on the Tropical Rainfall Measuring Mission Satellite—Part I: Methodology. *Journal of Applied Meteorology*, Volume 42, No. 2, February 2003, p. 240-265.  
Organization RE

- 786** Luo, Y.; Krueger, S. K.; Mace, G. G.; and Xu, K-M.: Cirrus Cloud Properties From a Cloud-Resolving Model Simulation Compared to Cloud Radar Observations. *Journal of the Atmospheric Sciences*, Volume 60, No. 3, February 2003, p. 510-525.  
Organization RE
- 787** Mari, C.; Saut, C.; Jacob, D. J.; Staudt, A.; Avery, M. A.; Brune, W. H.; Faloon, I.; Heikes, B. G.; Sachse, G. W.; Sandholm, S. T.; Singh, H. B.; and Tan, D.: On the Relative Role of Convection, Chemistry and Transport Over the South Pacific Convergence Zone During PEM-Tropics B: A Case Study. *Journal of Geophysical Research*, Volume 108, No. D2, January 27, 2003, p. PEM 4-1 - 4-16.  
Organization RE
- 788** Minnis, P.; Ayers, J. K.; and Weaver, S. P.: Contrail Frequency Over the United States From Surface Observations. *Journal of Climate*, Volume 16, No. 21, November 2003, p. 3447-3462.  
Organization RE
- 789** Minnis, P.; Nguyen, L.; and Ayers, J. K.: Diurnal Variations in Cloud Properties Over the Eastern Pacific From GOES-8 During EPIC 2001. Presented at U.S. CLIVAR PanAmerican Workshop, September 15-18, 2003, Boulder, Colorado.  
Organization RE
- 790** Minnis, P.; Nguyen, L.; Garber, D. P.; Duda, D. P.; and Palikonda, R.: Simulation of Contrail Coverage Over the USA Missed During the Air Traffic Shutdown. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany. In Proceedings.  
Organization RE
- 791** Minnis, P.; Palikonda, R.; and Ayers, J. K.: Contrail Coverage Over the North Pacific From MODIS and AVHRR Data. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany. In Proceedings.  
Organization RE
- 792** Minnis, P.; Smith, W. L., Jr.; Nguyen, L.; Heck, P. W.; and Khaiyer, M. M.: Near-Real-Time Satellite Cloud Products for Icing Detection and Aviation Weather Over the USA. Presented at FAA In-Flight Icing/Ground De-Icing International Conference, June 16-20, 2003, Chicago, Illinois. In Proceedings, Paper No. 2003-01-2097.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-faa-pm.pdf>  
Organization RE
- 793** Minnis, P.; Spangenberg, D. A.; and Chakrapani, V.: Distribution and Validation of Cloud Cover Derived From AVHRR Data Over the Arctic Ocean During the SHEBA Year. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado. In Proceedings.  
Organization RE



- 794** Minnis, P.; Young, D. F.; Sun-Mack, S.; Heck, P. W.; Doelling, D. R.; and Trepte, Q.: CERES Cloud Property Retrievals From Imagers on TRMM, Terra and Aqua. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 795** Minnis, P.; Young, D. F.; Sun-Mack, S.; Trepte, Q.; Chen, Y.; Heck, P. W.; and Wielicki, B. A.: Comparison of CERES Cloud Properties Derived From Aqua and Terra MODIS Data and TRMM VIRS Radiances. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. H31F-02.  
Organization RE
- 796** Mlynczak, M. G.; Johnson, D. G.; Bingham, G. E.; Jucks, K. W.; Gordley, L. L.; Harries, J. E.; and Traub, W. A.: The Far-Infrared Spectroscopy of the Troposphere (FIRST) Project. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
Organization RE
- 797** Mlynczak, M. G.; Johnson, D. G.; Bingham, G. E.; Jucks, K. W.; Traub, W. A.; Gordley, L. L.; and Harries, J.: The Far-Infrared Spectroscopy of the Troposphere (FIRST) Project. Presented at Advanced Infrared Technology & Applications Workshop, September 9-11, 2003, Pisa, Italy.  
Organization RE
- 798** Mlynczak, M. G.; Martin-Torres, J.; Russell, J. M., III; Beaumont, K.; Jacobson, S.; Kozyra, J.; Lopez-Puertas, M.; Funke, B.; Mertens, C. J.; Gordley, L. L.; Picard, R. H.; Winick, J. R.; Wintersteiner, P. P.; and Paxton, L.: The Natural Thermostat of Nitric Oxide Emission at 5.3  $\mu\text{m}$  in the Thermosphere Observed During the Solar Storms of April 2002. *Geophysical Research Letters*, Volume 30, No. 21, November 1, 2003, p. SSC 2-1 - SSC 2-5.  
Organization RE
- 799** Navarro, B.; Twohy, C. H.; Baumgardner, D.; Heymsfield, A. J.; Weinstock, E. M.; Minnis, P.; Poellot, M. R.; Bui, P.; Herman, R.; Lawson, P.; and Garrett, T.: The Microphysical and Radiative Evolution of a Cirrus Anvil During CRYSTAL-FACE. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. A11B-06.  
Organization RE
- 800** Neil, D. O.; Kittaka, C.; and Fishman, J.: Advancing Air Quality Monitoring From Space. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 801** Nguyen, L.; Minnis, P.; Doelling, D. R.; Smith, W. L., Jr.; Duda, D. P.; Khaiyer, M. M.; Poellot, M. R.; Mace, G. G.; and Uttal, T.: Comparison of Surface, Satellite, and Aircraft Ice Cloud Properties During CRYSTAL-FACE. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE

- 802** Nguyen, L.; Minnis, P.; Smith, W. L., Jr.; Khaiyer, M. M.; Heck, P. W.; Sun-Mack, S.; Uttal, T.; and Comstock, J.: The Retrieval of Cloud Properties for Partially Cloud-Filled Pixels During CRYSTAL-FACE. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 803** Nowicki, G. D.; Nordeen, M. L.; Heck, P. W.; Doelling, D. R.; Khaiyer, M. M.; Minnis, P.; and Sun-Mack, S.: Cloud Microphysical and Radiative Properties Derived From MODIS, VIRS, AVHRR and GMS Data Over the Tropical Western Pacific. Presented at 13th ARM Science Team Meeting, March 31–April 4, 2003, Broomfield, Colorado. In Proceedings.  
Organization RE
- 804** Palikonda, R.; Phan, D.; Chakrapani, V.; and Minnis, P.: Contrail Coverage Over the USA Derived From MODIS and AVHRR Data. Presented at European Conference on Aviation, Atmosphere, and Climate, June 30–July 3, 2003, Friedrichshafen, Germany. In Proceedings.  
Organization RE
- 805** Pandey, D. K.; Lee, R. B., III; Paden, J.; Bush, K. A.; Snyder, D.; Wilson, R. S.; Banks, W.; Al-Hajjah, A.; and Thomas, S.: Twelve Month Running Trends From Earth Radiation Budget Satellite (ERBS) Active Cavity Radiometric Measurements and Global Surface Temperatures. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 806** Pyatt, H.; Albrecht, B. A.; Fairall, C. W.; Bond, N. A.; and Minnis, P.: Evolution of Marine Atmospheric Boundary Layer Structure Across the Cold Tongue ITCZ Complex. Presented at U.S. CLIVAR PanAmerican Workshop, September 15-18, 2003, Boulder, Colorado.  
Organization RE
- 807** Randall, D. A.; Krueger, S. K.; Bretherton, C.; Curry, J. A.; Duynkerke, P.; Moncreiff, M.; Ryan, B.; Starr, D. O.; Miller, M.; Rossow, W.; Tselioudis, G.; and Wielicki, B. A.: Confronting Models With Data: The GEWEX Cloud Systems Study. *Bulletin of the American Meteorological Society*, Volume 84, No. 4, April 2003, p. 455-469.  
Organization RE
- 808** Rault, D. F.; Flittner, D. E.; Loughman, R.; and McPeters, R. D.: Ozone Retrieval From SAGE III Limb Scattering. Presented at 1st International UV/Vis Limb Workshop, April 14-16, 2003, Bremen, Germany.  
Organization RE
- 809** Rault, D. F.; Flittner, D. E.; Loughman, R.; and McPeters, R. D.: Ozone Retrieval From SAGE III Limb Scattering. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE

- 810** Rault, D. F.; Flittner, D. E.; Loughman, R.; and McPeters, R. D.: Ozone Retrieval From SAGE III Limb Scattering Measurement. Presented at Optical Remote Sensing of the Atmosphere, February 3-6, 2003, Quebec City, Canada.  
Organization RE
- 811** Rault, D. F.; Loughman, R.; and Sioris, C.: Retrieval of Atmospheric Ozone and Nitrogen Dioxide Vertical Distribution From SAGE III Limb Scattering Measurements. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 812** Sherwood, S.; Chae, J-H.; McGill, M.; and Minnis, P.: Deep Convective Cloud Top Heights During CRYSTAL-FACE. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. A22A-1058.  
Organization RE
- 813** Smith, G. L.; Szewczyk, Z. P.; Mylnczak, P. E.; Lee, R. B., III; Wielicki, B. A.; Priestley, K. J.; Harries, J.; DeWitt, S.; and Clerbaux, N.: Method for Comparison of GERB and CERES Radiances. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 814** Smith, W. L.: Validation of Aqua AIRS Sounding Retrievals-Implications for IASI. Presented at Europe's Meteorological Satellite Organisation Meeting, July 17-20, 2003, Darmstadt, Germany.  
Organization RE
- 815** Smith, W. L.: Remote Sensing of the Earth's Surface and Atmosphere. Presented at Royal Meteorological Society Conference, September 1-5, 2003, Norwich, United Kingdom.  
Organization RE
- 816** Smith, W. L.; and Zhou, D. K.: Thermodynamic Properties of Clouds and the Atmosphere Derived With High Spectral Resolution Airborne NAST and Aqua Satellite AIRS Measurements. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 817** Smith, W. L.; and Zhou, D. K.: Validation of Satellite AIRS Retrievals With Aircraft NAST-I Observations—Implication for Future Satellite Sounding Capabilities. Presented at International TOVS Study Conference (ITSC-13), October 29–November 4, 2003, Ste. Adele, Canada.  
Organization RE

- 818** Smith, W. L.; Zhou, D. K.; Larar, A. M.; Tobin, D. C.; Huang, H. L.; and Revercomb, H.: Comparison of AIRS and NAST-1 Spectra and Retrievals During CRYSTAL-FACE. Presented at Optical Remote Sensing of the Atmosphere, February 3-6, 2003, Quebec, Canada.  
Organization RE
- 819** Smith, W. L.; Zhou, D. K.; Revercomb, H.; and Antonelli, P.: Hyper-Spectral Atmospheric Sounding. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 820** Smith, W. L., Jr.; Minnis, P.; Bernstein, B.; McDonough, F.; and Khaiyer, M. M.: Comparison of Super-Cooled Liquid Water Cloud Properties Derived From Satellite and Aircraft Measurements. Presented at FAA In-Flight Icing/Ground De-Icing International Conference, June 16-20, 2003, Chicago, Illinois. Paper No. 2003-01-2156.  
Organization RE
- 821** Spangenberg, D. A.; Chakrapani, V.; and Minnis, P.: Cloud Climatology of the SHEBA Year Derived From an Automated Arctic Cloud Mask. Presented at 7th Conference on Polar Meteorology and Oceanography and Joint Symposium on High-Latitude Climate Variations, May 12-16, 2003, Hyannis, Massachusetts. In Proceedings, Paper No. 7.6.  
Organization RE
- 822** Stackhouse, P. W., Jr.: NASA/GEWEX Surface Radiation Budget Cycle Experiment Radiation Panel. Presented at Global Energy & Water Cycle Experiment Radiation Panel, November 9-15, 2003, Victoria, British Columbia, Canada.  
Organization RE
- 823** Sun-Mack, S.; Minnis, P.; Chen, Y.; and Arduini, R. F.: Clear-Sky Narrowband Albedos from VIRS and MODIS. Presented at SPIE's 2003 Conference on Remote Sensing of Clouds and the Atmosphere VIII, September 8-12, 2003, Barcelona, Spain.  
Organization RE
- 824** Sun-Mack, S.; Minnis, P.; Heck, P. W.; and Young, D. F.: Global Distributions of Cloud Properties for CERES. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 825** Thomason, L. W.; and Taha, G.: SAGE III Aerosol Extinction Measurements: Initial Results. *Geophysical Research Letters*, Volume 30, No. 12, June 24, 2003, p. 33-1–33-4.  
Organization RE
- 826** Trepte, Q.; Minnis, P.; and Spangenberg, D. A.: Improved Nighttime and Twilight Polar Cloud Detection Algorithms Using Terra and Aqua Observations. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE

- 827** Turner, D. D.; Ackerman, S. A.; Baum, B. A.; Revercomb, H.; and Yang, P.: Cloud Phase Determination Using Ground-Based AERI Observations at SHEBA. *Journal of Applied Meteorology*, Volume 42, No. 6, June 2003, p. 701-715.  
Organization RE
- 828** Uttal, T.; Sun-Mack, S.; Minnis, P.; and Key, J.: Comparison of Surface and Satellite Measurements of Arctic Cloud Properties. Presented at 7th Conference on Polar Meteorology and Oceanography and Joint Symposium on High-Latitude Climate Variations, May 12-16, 2003, Hyannis, Massachusetts. In Proceedings, Paper No. 7.3.  
Organization RE
- 829** Wang, D-H.; Minnis, P.; Nguyen, L.; and Doelling, D. R.: Comparison of Cloud-Radiative Properties From Model Prediction and Satellite Retrievals During CRYSTAL-FACE. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California. Paper No. A22A-1053.  
Organization RE
- 830** Wang, D.; and Minnis, P.: Cloud-Resolving NWP Modeling of the Deep-Convection-Induced Cirrus During CRYSTAL-FACE. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 831** Wang, P-H.; Cess, R. D.; Wong, T.; Minnis, P.; and Kent, G. S.: Cloud Structure Over Tropical Pacific During 1985–1999: Preliminary Analysis. Presented at 2003 AGU Fall Meeting, December 8-12, 2003, San Francisco, California.  
Organization RE
- 832** Wang, P-H.; Minnis, P.; Wielicki, B. A.; Wong, T.; Cess, R. D.; Zhang, M.; Vann, L. B.; and Kent, G. S.: Characteristics of the 1997/98 El Nino Cloud Distributions From SAGE II Observations. *Journal of Geophysical Research*, Volume 108, No. D1, January 16, 2003, p. AAC 5-1 - AAC 5-11.  
Organization RE
- 833** Wang, P.; and Baum, B. A.: Satellite Remote Sensing: Cloud Properties (MS 348). In *Encyclopedia of Atmospheric Sciences*, Volume 5, James R. Holton, Judith A. Curry, and John A. Pyle, eds., Academic Press, 2003, p. 1956-1965.  
Organization RE
- 834** Wielicki, B. A.: CERES Aerosol Radiative Forcing. Presented at Workshop on Global Aerosol Measurements for Climate - Present and Future, September 15-20, 2003, Paris, France.  
Organization RE

- 835** Wilson, R. S.; Lee, R. B., III; Paden, J.; Pandey, D. K.; Priestley, K. J.; Thomas, S.; and Al-Hajjah, A.: On-Orbit Solar Calibrations Using the Aqua Clouds and Earth's Radiant Energy System (CERES) In-Flight Calibration System. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RE
- 836** Winker, D. M.: The CALIPSO Mission. Presented at 2nd International Workshop on Mineral Dust, September 10-12, 2003, Paris, France.  
Organization RE
- 837** Winker, D. M.: CALIPSO. Presented at Workshop on Global Aerosol Measurements for Climate Studies, September 15-19, 2003, Paris, France.  
Organization RE
- 838** Winker, D. M.: The CALIPSO Mission. Presented at 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), July 21-25, 2003, Toulouse, France.  
Organization RE
- 839** Winker, D. M.; and Pelon, J.: The CALIPSO Mission: Active and Passive Sensing of Aerosols and Clouds. Presented at EGS-AGU-EUG Joint Assembly 2003, April 6-11, 2003, Nice, France.  
Organization RE
- 840** Xu, K-M.: A Statistical Comparison of ECMWF Forecasted Cloud Fields With Earth Observing System (EOS) Satellite Observations. Presented at IUGG 2003—International Union of Geodesy and Geophysics XXIII General Assembly, June 30–July 11, 2003, Sapporo, Japan.  
Organization RE
- 841** Xu, K-M.; Krueger, S. K.; Randall, D. A.; and Xie, S. C.: A Summary of GCSS WG 4-Atmospheric Radiation Measurement (ARM) Case 3 Intercomparison Study. Presented at IUGG 2003—International Union of Geodesy and Geophysics XXIII General Assembly, June 30–July 11, 2003, Sapporo, Japan.  
Organization RE
- 842** Xu, K-M.; Wong, T.; and Parker, L. L.: A Satellite Cloud, Radiation and Precipitation Data Set for Climate Sensitivity Studies. Presented at IUGG 2003—International Union of Geodesy and Geophysics XXIII General Assembly, June 30–July 11, 2003, Sapporo, Japan.  
Organization RE
- 843** Yang, P.; Baum, B. A.; Heymsfield, A. J.; Hu, Y-X.; Huang, H. L.; Tsay, S-C.; and Ackerman, S. A.: Single-Scattering Properties of Droxtals. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 79–80, June–September 2003, p. 1159-1169.  
Organization RE

- 844** Yang, P.; Hu, Y-X.; Winker, D. M.; Zhao, J.; Hostetler, C. A.; Poole, L. R.; Baum, B. A.; Mishchenko, M. I.; and Reichardt, J.: Enhanced Lidar Backscattering by Horizontally Oriented Ice Crystal Plates in Cirrus Clouds. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 79–80, June–September 2003, p. 1139-1157.  
Organization RE
- 845** Yang, P.; Mlynczak, M. G.; Wei, H-L.; Kratz, D. P.; Baum, B. A.; Hu, Y-X.; Heidinger, A.; and Mishchenko, M. I.: Spectral Signature of Cirrus Clouds in the Far-Infrared Region: Single-Scattering Calculations and Radiative Sensitivity Study. *Journal of Geophysical Research*, Volume 108, No. D18, September 17, 2003, p. AAC 3-1 - AAC 3-15.  
Organization RE
- 846** Yang, P.; Wei, H-L.; Baum, B. A.; Huang, H. L.; Heymsfield, A. J.; Hu, Y-X.; Gao, B-C.; and Turner, D. D.: The Spectral Signature of Mixed-Phase Clouds Composed on Non-Spherical Ice Crystals and Spherical Liquid Droplets in the Terrestrial Window Region. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 79–80, June–September 2003, p. 1171-1188.  
Organization RE
- 847** Yang, P.; Wei, H-L.; Kattawar, G. W.; Hu, Y-X.; Winker, D. M.; Hostetler, C. A.; and Baum, B. A.: Sensitivity of the Backscattering Mueller Matrix to Particle Shape and Thermodynamics Phase. *Applied Optics*, Volume 42, No. 21, July 2003, p. 4389-4395.  
Organization RE
- 848** Zhang, J.; Lohmann, U.; and Lin, B.: A New Statistically Based Autoconversion Rate Parameterization for Use in Large-Scale Models. *Journal of Geophysical Research*, Volume 107, No. D24, December 27, 2002, p. AAC 3-1 - 3-16.  
Organization RE

## Life Sciences

### Category 51 Life Sciences (General)

- 849** Rivera, G.; Savitzky, A. H.; and Hinkley, J. A.: Mechanical Properties of the Integument of the Common Garter Snake. Presented at SICB 2003—Society for Integrative and Comparative Biology Annual Meeting, January 4-8, 2003, Toronto, Ontario, Canada.  
Organization RC

### Category 54 Man/System Technology and Life Support

- 850** Comstock, J. R., Jr.; Jones, L. C.; and Pope, A. T.: The Effectiveness of Various Attitude Indicator Display Sizes and Extended Horizon Lines on Attitude Maintenance in a Part-Task Simulation. Presented at Human Factors and Ergonomics Society 47th Annual Meeting, October 13-17, 2003, Denver, Colorado. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-47hfes-jrc.pdf>  
Organization RD

- 851** Glaab, L. J.; and Hughes, M. F.: Terrain Portrayal for Head Down Displays (TP-HDD) - Flight Test. Presented at EAA Airventure 2003 NASA Forum, July 29–August 4, 2003, Oshkosh, Wisconsin.  
Organization RD
- 852** Glaab, L. J.; and Hughes, M. F.: Synthetic Vision Systems General Aviation Overview. Presented at EAA Airventure 2003 NASA Forum, July 29–August 4, 2003, Oshkosh, Wisconsin.  
Organization RD
- 853** Guo, L.; Cardullo, F. M.; Telban, R. J.; Houck, J. A.; and Kelly, L. C.: The Results of Simulator Study to Determine the Effects on Pilot Performance of Two Different Motion Cueing Algorithms and Various Delays, Compensated and Uncompensated. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas. In Proceedings, AIAA Paper No. 2003-5676.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5676.pdf>  
Organization RD
- 854** Pope, A. T.: Extending the Reach of Biofeedback. Presented at Annual Meeting of Association for Applied Psychophysiology, March 27-30, 2003, Jacksonville, Florida.  
Organization RD
- 855** Prinzel, L. J., III: Team-Centered Perspective for Adaptive Automation Design. NASA/TM-2003-212154, February 2003, 28 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212154.pdf>  
Organization RD
- 856** Prinzel, L. J., III; Hughes, M. F.; Arthur, J. J.; Kramer, L. J.; Glaab, L. J.; Bailey, R. E.; Parrish, R. V.; and Uenking, M. D.: Synthetic Vision CFIT Experiments for GA and Commercial Aircraft: A Picture is Worth a A Thousand Lives. Presented at Human Factors and Ergonomics Society 47th Annual Meeting, October 13-17, 2003, Denver, Colorado. Paper No. 38.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-47hfes-ljp.pdf>  
Organization RD
- 857** Prinzel, L. J., III; Parasuraman, R.; Freeman, F. G.; Scerbo, M. W.; Mikulka, P. J.; and Pope, A. T.: Three Experiments Examining the Use of Electroencephalogram, Event-Related Potentials, and Heart-Rate Variability for Real-Time Human-Centered Adaptive Automation Design. NASA/TP-2003-212442, September 2003, 70 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212442.pdf>  
Organization RD



## Mathematical and Computer Sciences

### Category 59 Mathematical and Computer Sciences (General)

- 858** Archer, M.; Di Vito, B. L.; and Munoz, C. (*Editors*): Design and Application of Strategies/Tactics in Higher Order Logics. NASA/CP-2003-212448, September 2003, 118 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003-cp212448.pdf>  
Organization RD
- 859** Di Vito, B. L.: Strategy-Enhanced Interactive Proving and Arithmetic Simplification for PVS. Presented at 1st International Workshop on Design and Application of Strategies/Tactics in Higher Order Logics (STRATA 2003), September 8, 2003, Roma, Italy. In Proceedings, NASA/CP-2003-212448.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-strata-bld.pdf>  
Organization RD
- 860** Green, L. L.: Applications of Automatic Differentiation at NASA Langley Research. Presented at Joint University of Hertfordshire/Cranfield University, Automatic Differentiation Workshop, June 5-6, 2003, Cranfield, United Kingdom.  
Organization RA
- 861** Green, L. L.: Challenges for the Automatic Differentiation Tool Development Community. Presented at Joint University of Hertfordshire/Cranfield University Automatic Differentiation Workshop, June 5-6, 2003, Cranfield, United Kingdom.  
Organization RA
- 862** Hines, G. D.; Rahman, Z.; Jobson, D. J.; and Woodell, G. A.: Multi-Image Registration for an Enhanced Vision System. Presented at AeroSense 2003—Aerospace/Defense Sensing, Simulation, and Controls, April 21-25, 2003, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-aerosense-gdh.pdf>  
Organization RF
- 863** Li, W.: Profile Optimization Method for Robust Airfoil Shape Optimization in Viscous Flow. NASA/TM-2003-212408, May 2003, 14 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212408.pdf>  
Organization RA
- 864** Li, W.; and Padula, S. L.: Performance Trades Study for Robust Airfoil Shape Optimization. Presented at 21st AIAA Applied Aerodynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3790.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3790.pdf>  
Organization RA

**865** Litton, D. K.; Edwards, J. R.; and White, J. A.: Algorithmic Enhancements to the VULCAN Navier-Stokes Solver. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3979.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3979.pdf>  
Organization RB

**866** Storaasli, O. O.: Scientific Applications on a Reconfigurable, FPGA-Based Hypercomputer. Presented at 6th Military and Aerospace Programmable Logic Devices (MAPLD) International Conference, September 9-11, 2003, Washington, DC.  
Organization RC

### **Category 60 Computer Operations and Hardware**

**867** Eidson, T. M.: Additional Security Considerations for Grid Management. (NAS1-02117 National Institute of Aerospace.) NASA/CR-2003-212168, NIA Report No. 2003-02, September 2003, 14 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212168.pdf>  
Organization AK

**868** Geser, A. E.; Hofbauer, D.; and Waldmann, J.: Match-Bounded String Rewriting Systems. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212685, NIA Report No. 2003-09, December 2003, 23 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212685.pdf>  
Organization RD

**869** Munoz, C.: Rapid Prototyping in PVS. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212418, NIA Report No. 2003-03, December 2003, 26 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212418.pdf>  
Organization RD

**870** Sandford, S. P.: ARES and Beyond: Autonomous Aerial Platforms Create a Unique Measurement Capability for Earth and Planetary Science. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California.  
Organization OB

### **Category 61 Computer Programming and Software**

**871** Alexandrov, N. M.; Atkins, H. L.; Bibb, K. L.; Biedron, R. T.; Carpenter, M. H.; Gnoffo, P. A.; Hammond, D. P.; Jones, W. T.; Kleb, W. L.; Lee-Rausch, E. M.; Nielsen, E. J.; Park, M. A.; Raman, V. V.; Roberts, T. W.; *et al.*: Team Software Development for Aerothermodynamic and Aerodynamic Analysis and Design. NASA/TM-2003-212421, November 2003, 50 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212421.pdf>  
Organization RA

- 872** Armstrong, C. D.; Humphreys, W. M., Jr.; and Fijany, A.: The Design of Fault Tolerant Quantum Dot Cellular Automata Based Logic. Presented at 11th NASA Symposium on VLSI Design, May 28-29, 2003, Coeur d'Alene, Idaho.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-11vlsi-cda.pdf>  
Organization RC
- 873** Hayhurst, K. J.; and Holloway, C. M.: Considering Object Oriented Technology in Aviation Applications. Presented at 22nd Digital Avionics Systems Conference, October 12-16, 2003, Indianapolis, Indiana. Paper No. 3.B.1.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-22dasc-kjh.pdf>  
Organization RD
- 874** Holloway, C. M.; and Hayhurst, K. J.: Software System Safety & the NASA Aeronautics Blueprint. Presented at 21st International System Safety Conference, August 4-8, 2003, Ottawa, Ontario, Canada. In Proceedings, p. 1183-1192.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-21issc-cmh.pdf>  
Organization RD
- 875** Johnson, C.; and Holloway, C. M.: A Survey of Logic Formalisms to Support Mishap Analysis. *Reliability Engineering and System Safety*, Volume 80, No. 3, June 2003, p. 271-291.  
Organization RD
- 876** Johnson, C.; and Holloway, C. M.: The ESA/NASA SOHO Mission Interruption: Using the STAMP Accident Analysis Technique for a Software Related 'Mishap'. *Software Practice and Experience*, Volume 33, No. 12, October 2003, p. 1177-1198.  
Organization RD
- 877** Kenney, P. S.: Rapid Prototyping of an Aircraft Model in an Object-Oriented Simulation. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas. AIAA Paper No. 2003-5816.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5816.pdf>  
Organization RD
- 878** Kenney, P. S.; and Croom, M. A.: Simulating the ARES Aircraft in the Mars Environment. Presented at 2nd AIAA "Unmanned Unlimited" Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California. AIAA Paper No. 2003-6579.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-6579.pdf>  
Organization RD

**879** Kleb, W. L.; Nielsen, E. J.; Gnoffo, P. A.; Park, M. A.; and Wood, W. A.: Collaborative Software Development in Support of Fast Adaptive AeroSpace Tools (FASST). Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3978.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3978.pdf>

Organization RB

**880** Madden, M. M.; and Neuhaus, J.: A Design for Composing and Extending Vehicle Models. Presented at AIAA Modeling and Simulation Technologies Conference & Exhibit, August 11-14, 2003, Austin, Texas.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-5458.pdf>

Organization RD

**881** Miller, S. P.; Tribble, A. C.; Carlson, T. M.; and Danielson, E. J.: Flight Guidance System Requirements Specification. (NCC1-01001 Rockwell Collins.) NASA/CR-2003-212426, June 2003, 176 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212426.pdf>

Organization RD

## **Category 62 Computer Systems**

**882** Belcastro, C. M.; and Belcastro, C. M.: On the Validation of Safety Critical Aircraft Systems, Part II—An Overview of Experimental Methods. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas.

Organization RD

**883** Belcastro, C. M.; and Belcastro, C. M.: On the Validation of Safety Critical Aircraft Systems, Part I—An Overview of Analytical & Simulation Methods. Presented at AIAA Guidance, Navigation, and Control Conference & Exhibit, August 11-14, 2003, Austin, Texas.

Organization RD

**884** Geser, A. E.; and Miner, P. S.: A Fast and Provably Correct Fault-Tolerant On-Line Diagnosis Protocol. Presented at CHARME 2003—12th Advanced Research Working Conference on Correct Hardware Design and Verification Methods, October 21-24, 2003, L'Aquila, Italy.

Organization RD

**885** Maddalon, J. M.; and Miner, P. S.: An Architectural Concept for Intrusion Tolerance in Air Traffic Networks. Presented at 3rd Integrated Communications, Navigation, and Surveillance (ICNS) Conference & Workshop, May 19-22, 2003, Annapolis, Maryland.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-3icns-jmm.pdf>

Organization RD

**886** Rushby, J.: A Comparison of Bus Architectures for Safety-Critical Embedded Systems. (NCC1-377 SRI International.) NASA/CR-2003-212161, March 2003, 63 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212161.pdf>

Organization RD

## Category 63 Cybernetics

**887** Mukhopadhyay, V.: A Historical Perspective of Analysis and Control of Aeroelastic Responses. *Journal of Guidance, Control, and Dynamics*, Volume 26, No. 5, September-October 2003, p. 673-684.

Organization RA

**888** Tang, X.; Tao, G.; and Joshi, S. M.: Adaptive Actuator Failure Compensation for Parametric Strict Feedback Systems and an Aircraft Application. *Automatica*, Volume 39, No. 11, November 2003, p. 1975-1982.

Organization RD

## Category 64 Numerical Analysis

**889** Alexandrov, N. M.: Computational Issues on Simulation-Based Design. Presented at 18th International Symposium on Mathematical Programming, August 18-22, 2003, Copenhagen, Denmark.

Organization RA

**890** Cao, Y.; Hussaini, M. Y.; and Zang, T. A.: On the Exploitation of Sensitivity Derivatives for Improving Sampling Methods. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA 2003-1656.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1656.pdf>

Organization RA

**891** Carpenter, M. H.; Gottlieb, D. I.; and Shu, C-W.: On the Conservation and Convergence to Weak Solutions of Global Schemes. *Journal of Scientific Computing*, Volume 18, No. 1, February 2003, p. 111-132.

Organization RB

**892** Crespo, L. G.: Stochastic Control Synthesis of Systems with Structured Uncertainty. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212167, NIA Report 2003-01, December 2003, 31 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212167.pdf>

Organization RA

**893** Crespo, L. G.; and Sun, J. Q.: Stochastic Optimal Control via Bellman's Principle. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212419, NIA Report No. 2003-04, December 2003, 29 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212419.pdf>

Organization RA

- 894** Li, W.; and Padula, S. L.: Robust Airfoil Optimization in High Resolution Design Space. Presented at 5th World Congress of Structural Multidisciplinary Optimization, May 19-23, 2003, Venice, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-5wscsmo-wl.pdf>  
Organization RA
- 895** Mathelin, L.; and Hussaini, M. Y.: A Stochastic Collocation Algorithm for Uncertainty Analysis. (NCC1-02025 Florida State University.) NASA/CR-2003-212153, February 2003, 16 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212153.pdf>  
Organization RA
- 896** Mathelin, L.; Hussaini, M. Y.; Zang, T. A.; and Bataille, F.: Uncertainty Propagation for Turbulent, Compressible Flow in a Quasi-1D Nozzle Using Stochastic Methods. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-4240.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-4240.pdf>  
Organization RA
- 897** Mavriplis, D. J.: Revisiting the Least-Squares Procedure for Gradient Reconstruction on Unstructured Meshes. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212683, NIA Report No. 2003-06, December 2003, 26 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212683.pdf>  
Organization RB
- 898** Padula, S. L.; Gumbert, C. R.; and Li, W.: Aerospace Applications of Optimization Under Uncertainty. Presented at 4th International Symposium on Uncertainty Modeling and Analysis, September 21-24, 2003, College Park, Maryland.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-4isuma-slp.pdf>  
Organization RA
- 899** Shin, J-Y.: Parameter Transient Behavior Analysis on Fault Tolerant Control System. (NCC-1-02043 National Institute of Aerospace.) NASA/CR-2003-212682, NIA Report No. 2003-05, December 2003, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212682.pdf>  
Organization RD
- 900** Wood, W. A.; and Kleb, W. L.: Exploring XP for Scientific Research. *IEEE Software*, Volume 20, No. 3, May/June 2003, p. 30-36.  
Organization RB
- 901** Wood, W. A.; and Kleb, W. L.: Failure of Anisotropic Unstructured Mesh Adaption Based on Multidimensional Residual Minimization. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3824.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3824.pdf>  
Organization RB

## Category 65 Statistics and Probability

- 902** Mahadevan, S.; and Smith, N. L.: System Risk Assessment and Allocation in Conceptual Design. (NCC1-01031 Vanderbilt University.) NASA/CR-2003-212162, May 2003, 105 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212162.pdf>  
Organization RA

## Category 66 Systems Analysis

- 903** Alexandrov, N. M.; and Lewis, R. M.: Dynamically Reconfigurable Approach to Multidisciplinary Problems. Presented at 16th AIAA Computational Fluid Dynamics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3431.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3431.pdf>  
Organization RA
- 904** Kincaid, R. K.: Scale-Free Graphs for General Aviation Flight Schedules. (NCC1-03022 College of William and Mary.) NASA/CR-2003-212648, November 2003, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212648.pdf>  
Organization RA
- 905** Luxhoj, J. T.; Jalil, M.; and Jones, S. M.: A Risk-Based Decision Support Tool for Evaluating Aviation Technology Integration in the National Airspace System. Presented at AIAA's 3rd Annual Aviation Technology, Integration, and Operations Technical Forum, November 17-19, 2003, Denver, Colorado.  
Organization RA
- 906** White, A. L.: Comments on the Probability Model for the Modified Condition/Decision Coverage Method of Testing Software. *IEE Proceedings. Software*, Volume 150, No. 1, February 2003, p. 3-12.  
Organization RD
- 907** White, A. L.: Mean Time to Unsafe Failure for Markov, Semi-Markov, and Globally Time Dependent Models. Presented at 2003 IEEE Aerospace Conference, March 8-15, 2003, Big Sky, Montana.  
Organization RD

## Physics

### Category 70 Physics (General)

- 908** Howell, P. A.; and Zalameda, J. N.: Computational Analysis for Thermal NDE of Composites. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
Organization RC

- 909** Niland, M.; and Heeg, J.: What if They've Never Seen a Frozen Lake: Approaches to Teaching Physics in Zambia. Presented at 1st North American Symposium on Science and Technology Education, May 30–June 3, 2003, Williamsburg, Virginia.  
Organization RC
- 910** Winfree, W. P.; Madaras, E. I.; White, J.; Zimdars, D.; and Williamson, S.: Void Detection in Foam With Pulsed Terahertz Frequency Electromagnetic Waves. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
Organization RC
- 911** Winfree, W. P.; and Parker, F. R.: Assessment of Corrosion in Complex Aircraft Components From Multiple Radiographic Images. Presented at 7th Joint DoD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans, Louisiana.  
Organization RC
- 912** Winfree, W. P.; and Zalameda, J. N.: Thermographic Determination of Delamination of Depth in Composites. Presented at Thermosense XXV, April 21-25, 2003, Orlando, Florida.  
Organization RC
- 913** Winfree, W. P.; and Zalameda, J. N.: Improved Thermographic Flaw Detection From Combined Analysis of Time and Spatial Thermal Response. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
Organization RC
- 914** Yost, W. T.; Cramer, K. E.; and Perey, D. F.: Characterization of Effluents Given Off by Wiring Insulation. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-30rpqne-wty.pdf>  
Organization RC

### Category 71 Acoustics

- 915** Anastasi, R. F.; and Madaras, E. I.: Aging Wire Insulation Assessment by Phase Spectrum Examination of Ultrasonic Guided Waves. Presented at SPIE's 8th Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 2-6, 2003, San Diego, California. Paper No. 29.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-8spie-rfa.pdf>  
Organization RC
- 916** Brentner, K. S.; and Farassat, F.: Modeling Aerodynamically Generated Sound of Helicopter Rotors. *Progress in Aerospace Sciences*, Volume 39, No. 2–3, February–April 2003, p. 83-120.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-pas-ksb.pdf>  
Organization RB



- 917** Brooks, T. F.; and Humphreys, W. M., Jr.: Flap Edge Aeroacoustic Measurements and Predictions. *Journal of Sound and Vibration*, Volume 261, No. 1, March 13, 2003, p. 31-74.  
Organization RB
- 918** Buehrle, R. D.; Gibbs, G. P.; Klos, J.; and Mazur, M.: Modeling and Validation of Damped Plexiglas Windows for Noise Control. Presented at 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1870.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1870.pdf>  
Organization RB
- 919** Burley, C. L.: Rotorcraft Aeroacoustic and Wake Predictions and Comparison With HART II Measurements. Presented at Higher Harmonic Control Aeroacoustics Rotor Test Workshop, September 15, 2003, Friedrichshafen, Germany.  
Organization RB
- 920** Burley, C. L.; Brooks, T. F.; van der Wall, B.; Richard, H.; Raffel, M.; Beaumier, P.; Delrieux, Y.; Lim, J. W.; Yu, Y. H.; Tung, C.; Pengel, K.; and Mercker, E.: Rotor Wake Definition for Accurate BVI and Broadband Noise Prediction—Results From the HART-II Study. Presented at 29th European Rotorcraft Forum, September 16-18, 2003, Friedrichshafen, Germany.  
Organization RB
- 921** Burley, C. L.; Brooks, T. F.; van der Wall, B.; Richard, H.; Raffel, M.; Beaumier, P.; Delrieux, Y.; Lim, J. W.; Yu, Y. H.; Tung, C.; Pengel, K.; and Mercker, E.: Rotor Wake Vortex Definition Using 3C-PIV Measurements - Corrected for Vortex Orientation. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA 2003-3175.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3175.pdf>  
Organization RB
- 922** Cabell, R. H.; Cox, D. E.; and Gibbs, G. P.: Interaction Metrics for Feedback of Sound Radiation From Stiffened Panels. Presented at 11th AIAA/ASME/AHS Adaptive Structures Conference, April 7-10, 2003, Norfolk, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-1812.pdf>  
Organization RB
- 923** Choudhari, M. M.; Chang, C-L.; Streett, C. L.; and Balakumar, P.: Integrated Transition Prediction: A Case Study in Supersonic Laminar Flow Control. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada. AIAA Paper No. 2003-0973.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0973.pdf>  
Organization RB

- 924** Edwards, B. D.; and Conner, D. A.: XV-15 Tiltrotor Aircraft: 1997 Acoustic Testing. NASA/TM-2003-212151, AMCOM/AFDD/TR-03-A-001, April 2003, 63 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212151.pdf>  
Organization RB
- 925** Edwards, B. D.; and Conner, D. A.: XV-15 Tiltrotor Aircraft: 1999 Acoustic Testing—Test Report. NASA/TM-2003-212152, AMCOM/AFDD/TR-03-A-002, April 2003, 68 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212152.pdf>  
Organization RB
- 926** Farassat, F.; and Casper, J. H.: Some Analytic Results for the Study of Broadband Noise Radiation From Wings, Propellers and Jets in Uniform Motion. *International Journal of Aeroacoustics*, Volume 2, No. 3–4, 2003, p. 335-350.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-ija-ff.pdf>  
Organization RB
- 927** Farassat, F.; and Posey, J. W.: The Role of Analytic Methods in Computational Aeroacoustics. Presented at Aerospace National Simulation Symposium 2003, June 12-13, 2003, Tokyo, Japan. Proceedings of the Aerospace Numerical Simulation Symposium 2003.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-anss-ff.pdf>  
Organization RB
- 928** Fleming, G. G.; Senzig, D. A.; McCurdy, D. A.; Roof, C. J.; and Rapoza, A. S.: Engine Installation Effects of Four Civil Transport Airplanes: Wallops Flight Facility Study. NASA/TM-2003-212433, October 2003, 69 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212433.pdf>  
Organization RB
- 929** Forsyth, D.; Gulding, J.; and DiPardo, J.: Review of Integrated Noise Model (INM) Equations and Processes. (NAS1-97040 Boeing Commercial Airplane Company.) NASA/CR-2003-212414, May 2003, 56 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212414.pdf>  
Organization RB
- 930** Gibbs, G. P.; and Cabell, R. H.: Active/Passive Control of Sound Radiation From Panels Using Constrained Layer Damping. Presented at 11th AIAA/ASME/AHS Adaptive Structures Conference, April 7-10, 2003, Norfolk, Virginia. AIAA Paper No. 2003-1813.  
Organization RB
- 931** Golub, R. A.; and Posey, J. W.: Aircraft System Noise Prediction: Past, Present, and Future. Presented at 145th Meeting of the Acoustical Society of America, April 28–May 2, 2003, Nashville, Tennessee.  
Organization RB

- 932** Hardin, J. C.; and Wang, F. Y.: Sound Generation by Aircraft Wake Vortices. (IAA-1-600 Volpe National Transportation Systems Center.) NASA/CR-2003-212674, December 2003, 28 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212674.pdf>  
Organization RB
- 933** Henderson, B. S.: Category 5: Sound Generation in Viscous Problems; Problem 2: Sound Generation by Flow Over a Cavity. Presented at 4th Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, October 20-22, 2003, Cleveland, Ohio.  
Organization RB
- 934** Henderson, B. S.; and Pourmovahed, A.: An Investigation of the Flow Field and Sound Producing Characteristics of Low Speed Cavity Flow Using Particle Image Velocimetry. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
Organization RB
- 935** Hutcheson, F. V.; and Brooks, T. F.: Measurement of Trailing Edge Noise Using Directional Array and Coherent Output Power Methods. *International Journal of Aeroacoustics*, Volume 1, No. 4, 2003, p. 329-353.  
Organization RB
- 936** Johnson, M. E.; Lalime, A. L.; Grosveld, F. W.; Rizzi, S. A.; and Sullivan, B. M.: Development of an Efficient Binaural Simulation for the Analysis of Structural Acoustic Data. Presented at Eighth International Conference on Recent Advances in Structural Dynamics, July 14-16, 2003, Southampton, United Kingdom. Paper No. 77.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-8icrasd-mej.pdf>  
Organization RB
- 937** Johnston, P. H.: Free Response of Piezoelectric Crystals in Series and in Parallel. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-rpqne-phj2.pdf>  
Organization RC
- 938** Johnston, P. H.; and Waters, K. R.: Tomographic Imaging of an Ultrasonic Field in a Plane Using a Linear Array. Presented at 30th Annual Review of Progress in Quantitative Nondestructive Evaluation, July 27–August 1, 2003, Green Bay, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-rpqne-phj.pdf>  
Organization RC
- 939** Jones, M. G.; Parrott, T. L.; and Watson, W. R.: Comparison of Acoustic Impedance Eduction Techniques for Locally-Reacting Liners. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3306.pdf>  
Organization RB

- 940** Kinzie, K. W.; and Bridges, J. E.: Jet Aeroacoustic Research at NASA. Presented at 4th ASME/JSME Joint Fluids Engineering Conference, July 6-10, 2003, Honolulu, Hawaii. Paper No. FEDSM2003-45052.  
Organization RB
- 941** Klos, J.; and Bernhard, R. J.: Prediction of Damped Circular Cylindrical Shell Vibration Using Energy Flow Analysis. Presented at 146th Meeting of the Acoustical Society of America, November 10-14, 2003, Austin, Texas. In Journal of the Acoustical Society of America, Vol.114, No. 4, Pt. 2, Oct. 03.  
Organization RB
- 942** Klos, J.; and Palumbo, D. L.: In-Situ Evaluation of Aircraft Interior Noise Reduction Technologies. Presented at 146th Meeting of the Acoustical Society of America, November 10-14, 2003, Austin, Texas.  
Organization RB
- 943** Klos, J.; and Palumbo, D. L.: Measurement of Insertion Loss of an Acoustic Treatment in the Presence of Additional Uncorrelated Sound Sources. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3158.pdf>  
Organization RB
- 944** Klos, J.; Robinson, J. H.; and Buehrle, R. D.: Sound Transmission Through a Curved Honeycomb Composite Panel. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3157.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3157.pdf>  
Organization RB
- 945** Kraft, R. E.; Yu, J.; Kwan, H. W.; Seybert, A. F.; Tathavadekar, P.; and Beer, B.: Acoustic Treatment Design Scaling Methods: Phase II Final Report. (NAS3-26617 GE Aircraft Engines, Inc.) NASA/CR-2003-212428, July 2003, 147 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212428.pdf>  
Organization RB
- 946** Lee, S.; Kinzie, K. W.; and Doty, M.: Effects of Initial Conditions of Subsonic Jet Development. Presented at American Physical Society Meeting, November 23-25, 2003, East Rutherford, New Jersey.  
Organization RB
- 947** Lieber, L. S.: Small Engine Technology (SET) Task 24 Business and Regional Aircraft System Studies. (NAS3-27483 Honeywell Engines and Systems.) NASA/CR-2003-212399, May 2003, 325 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212399.pdf>  
Organization RB

- 948** Maestrello, L.: Laminarization of Turbulent Boundary Layer on Flexible and Rigid Surfaces. *AIAA Journal*, Volume 41, No. 1, January 2003, p. 34-39.  
Organization RB
- 949** Morris, P. J.; and Farassat, F.: Readers' Forum: Reply by the Authors to C. K. W. Tam. *AIAA Journal*, Volume 41, No. 9, September 2003, p. 1845-1847.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-aj-pjm.pdf>  
Organization RB
- 950** Nark, D. M.; Farassat, F.; Pope, D. S.; and Vatsa, V. N.: The Development of the Ducted Fan Noise Propagation and Radiation Code CDUCT-LaRC. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3242.pdf>  
Organization RB
- 951** Nguyen, D. T.; Watson, W. R.; Tungkahotara, S.; and Rajan, S. D.: Parallel Finite Element Domain Decomposition for Structural/Acoustic Analysis. *Journal of Computational and Applied Mechanics*, Volume 4, No. 2, 2003, p. 1-15.  
Organization RB
- 952** Palumbo, D. L.: Evaluation of Acoustic Properties of Lightweight, Granular and Materials. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
Organization RB
- 953** Parrott, T. L.; Jones, M. G.; and Homeijer, B.: Effect of Resonator Axis Shew on Normal Incidence Impedance. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3307.pdf>  
Organization RB
- 954** Posey, J. W.: The Role of Analytic Methods in Computational Aeroacoustics. Presented at National Aerospace Laboratory Meeting, June 9, 2003, Tokyo, Japan.  
Organization RB
- 955** Prosser, W. H.; Gorman, M. R.; and Madaras, E. I.: Acoustic Emission Detection and Location of High Velocity Foam Impact. Presented at 46th Acoustic Emission Working Group Meeting, August 4-6, 2003, Portland, Oregon.  
Organization RC
- 956** Prosser, W. H.; and Perey, D. F.: Multiplexing Technology for Acoustics Emission Monitoring of Aerospace Vehicles. Presented at 4th International Workshop on Structural Health Monitoring, September 15-17, 2003, Stanford, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-4iwshm-whp.pdf>  
Organization RC

- 957** Prosser, W. H.; Perey, D. F.; Gorman, M. R.; and Scales, E. F.: System for Multiplexing Acoustic Emission (AE) Instrumentation. U. S. Patent 6,628,567. Issued September 30, 2003.  
Organization RC
- 958** Rizzi, S. A.; and Sullivan, B. M.: Prediction-Based Aircraft Flyover Noise Synthesis. Presented at 145th Meeting of the Acoustical Society of America, April 28–May 2, 2003, Nashville, Tennessee.  
Organization RB
- 959** Rizzi, S. A.; Sullivan, B. M.; and Cook, B. A.: Signal Processing for Aircraft Flyover Noise Synthesis and Propagation. Presented at 146th Meeting of the Acoustical Society of America, November 10-14, 2003, Austin, Texas.  
Organization RB
- 960** Robinson, J. H.; Buehrle, R. D.; Klos, J.; and Grosveld, F. W.: Radiated Sound Power From a Curved Honeycomb Panel. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3156.pdf>  
Organization RA
- 961** Schein, D. B.; and Kinzie, K. W.: Ultra-Quiet Distributed Exhaust Nozzle Technology. Presented at National Defense Industrial Association (NDIA) Aircraft Survivability Conference, November 3-6, 2003, Monterey, California.  
Organization RB
- 962** Shams, Q. A.; Sealey, B. S.; Zuckerwar, A. J.; and Bott, L. M.: Infrasonic Windscreen. Presented at 146th Meeting of the Acoustical Society of America, November 10-14, 2003, Austin, Texas.  
Organization RB
- 963** Singer, B. A.; and Lockard, D. P.: Shear Effects in Aeroacoustic Predictions. *Journal of Sound and Vibration*, Volume 267, No. 4, October 30, 2003, p. 961-966.  
Organization RB
- 964** Singer, B. A.; Lockard, D. P.; and Lilley, G. M.: Hybrid Acoustic Predictions. *Computers and Mathematics with Applications*, Volume 46, No. 4, August 2003, p. 647-670.  
Organization RB
- 965** Stanescu, D.; Hussaini, M. Y.; and Farassat, F.: Aircraft Engine Noise Scattering by Fuselage and Wings - A Computational Approach. *Journal of Sound and Vibration*, Volume 263, No. 2, May 29, 2003, p. 319-333.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-jsv-ds.pdf>  
Organization RB

- 966** Stanescu, D.; Xu, J.; Hussaini, M. Y.; and Farassat, F.: Computation of Engine Noise Propagation and Scattering Off an Aircraft. *International Journal of Aeroacoustics*, Volume 1, No. 4, 2002, p. 403-420.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-ija-ds.pdf>  
Organization RB
- 967** Steinwolf, A.; and Rizzi, S. A.: Non-Gaussian PDF Modeling of Turbulent Boundary Layer Fluctuating Pressure Excitation. Presented at Eighth International Conference on Recent Advances in Structural Dynamics, July 14-16, 2003, Southampton, United Kingdom. Paper No. 8.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-8icrasd-as.pdf>  
Organization RB
- 968** Sullivan, B. M.; and Powell, C. A.: Effects of Spectrum Shape on Subjective Preference to Broadband Jet Aircraft Interior Sounds. *Noise Control Engineering Journal*, Volume 50, No. 5, September–October 2003, p. 160-175.  
Organization RB
- 969** Tam, C. K.; Ju, H.; Jones, M. G.; Watson, W. R.; and Parrott, T. L.: A Computational and Experimental Study of Slit Resonators. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina. AIAA Paper No. 2003-3310.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3310.pdf>  
Organization RB
- 970** Thomas, R. H.: Aeroacoustics of Propulsion Airframe Integration: Overview of NASA's Research. Presented at NOISE-CON 2003—The 2003 National Conference on Noise Control Engineering, June 23-25, 2003, Cleveland, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-noisecon-rht.pdf>  
Organization RB
- 971** Watson, W. R.; Robinson, J. H.; Jones, M. G.; and Parrott, T. L.: Design and Attenuation of Periodic Checkerboard Liners. Presented at 9th AIAA/CEAS Aeroacoustics Conference and Exhibit, May 12-14, 2003, Hilton Head, South Carolina.  
Organization RB
- 972** Xu, J.; Stanescu, D.; Hussaini, M. Y.; and Farassat, F.: Computation of Engine Noise Propagation and Scattering Off an Aircraft. Presented at 41st AIAA Aerospace Sciences Meeting and Exhibit, January 6-9, 2003, Reno, Nevada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-0542.pdf>  
Organization RB

- 973** Zhang, Y.; Wang, F. Y.; and Hardin, J. C.: Spectral Characteristics of Wake Vortex Sound During Roll-Up. (IAA-1-600 Volpe National Transportation Systems Center.) NASA/CR-2003-212673, December 2003, 30 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cr/NASA-2003-cr212673.pdf>  
Organization RB

## Category 72 Atomic and Molecular Physics

- 974** Barnes, J. C.: Space-Based Earth Observations in 21st Century. Presented at NATO Advanced Study Institute, International School of Atomic and Molecular Spectroscopy 20th Course: Frontiers of Optical Spectroscopy, May 16-June 1, 2003, Erice, Italy.  
Organization RF
- 975** Devi, V. M.; Benner, D. C.; Smith, M. A.; Brown, L. R.; and Dulick, M.: Absolute Intensity Measurements of the  $^{12}\text{C}^{16}\text{O}_2$  Laser Bands Near 10  $\mu\text{m}$ . *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 76, No. 3–4, February 2003, p. 393-410.  
Organization RE
- 976** Devi, V. M.; Benner, D. C.; Smith, M. A.; Brown, L. R.; and Dulick, M.: Multispectrum Analysis of Pressure Broadening and Pressure Shift Coefficients in the  $^{12}\text{C}^{16}\text{O}_2$  and  $^{13}\text{C}^{16}\text{O}_2$  Laser Bands. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 76, No. 3–4, February 2003, p. 411-434.  
Organization RE
- 977** Devi, V. M.; Benner, D. C.; Smith, M. A.; and Rinsland, C. P.: Nitrogen Broadening and Shift Coefficients in 4.2 to 4.5 $\mu\text{m}$  Bands of  $\text{CO}_2$ . *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 76, No. 3–4, February 2003, p. 289-307.  
Organization RE

## Category 74 Optics

- 978** Bai, Y.; Yu, J.; Barnes, N. P.; Lee, H. R.; Petros, M.; and Chen, S.: Tunable Mid-Infrared Coherent Source for Lidar: CW OPO. Presented at Conference on Lidar Remote Sensing for Environmental Monitoring IV, August 3-8, 2003, San Diego, California.  
Organization RF
- 979** Bai, Y.; Yu, J.; Barnes, N. P.; Petros, M.; and Chen, S.: Intracavity Pumped Traveling-Wave Optical Parametric Oscillator. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland. In Proceedings, Paper No. CTuM13.  
Organization RF



- 980** Chen, S.; Yu, J.; Singh, U. N.; Petros, M.; and Bai, Y.: A Diode-Pumped Tm:Ho:LuLF Master-Oscillator-Power-Amplifier (MOPA) at 2.05  $\mu\text{m}$ . Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF
- 981** Li, Y.; Roberts, W. L.; Brown, M. S.; and Herring, G. C.: Transient Grating Spectroscopy With Delay Thermalization in Non-Combusting CO/Air Mixtures. *Optics Communications*, Volume 226, No. 1-6, October 15, 2003, p. 255-258.  
Organization RB
- 982** Sachse, G. W.: Optical Path Switching Based Differential Absorption Radiometry for Substance Detection. U. S. Patent 6,611,329. Issued August 26, 2003.  
Organization RF
- 983** Tai, H.: Theory of Fiber Optical Bragg Grating - Revisited. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-48spie-ht.pdf>  
Organization RC
- 984** Wu, M-C.; and Prosser, W. H.: Simultaneous Temperature and Strain Sensing for Cryogenic Applications Using Dual-Wavelength Fiber Bragg Gratings. Presented at SPIE's 48th Annual Meeting—International Symposium on Optical Science and Technology, August 3-8, 2003, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-48spie-mcw.pdf>  
Organization RC
- 985** Wu, M-C.; Prosser, W. H.; Rogowski, R. S.; and DeHaven, S. L.: Using Dual-Wavelength Fiber Gratings for Temperature and Strain Sensing at Cryogenic Temperature. Presented at JANNAF 39th CS/27th APS/21st PSHS/3rd MSS Joint Subcommittee Meeting, December 1-5, 2003, Colorado Springs, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-jannaf-mcw.pdf>  
Organization RC
- 986** Wu, M-C.; and Rogowski, R. S.: Fabrication of Self-Apodized Short Length Fiber Bragg Gratings. *Applied Optics*, Volume 42, No. 22, September 2003, p. 5017-5023.  
Organization RC
- 987** Yu, J.; Lee, H. R.; Barnes, N. P.; Bai, Y.; and Murray, K. E.: Tunable Infrared Radiation for Remote Sensing Applications. Presented at 2003 CLEO/QELS—Conference on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conference, June 1-6, 2003, Baltimore, Maryland.  
Organization RF

## Category 76 Solid-State Physics

- 988** Armstrong, C. D.; and Humphreys, W. M., Jr.: The Development of Design Tools for Fault Tolerant Quantum Dot Cellular Automata Based Logic. Presented at 2nd International Workshop on Quantum Dots for Quantum Computing and Classical Size Effect Circuits, August 7-9, 2003, South Bend, Indiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-2iwqd-cda.pdf>  
Organization RC
- 989** Barnes, B. W.; and Koch, G. J.: Low Cost Coherent Doppler Lidar Data Acquisition and Processing. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-12clrc-bwb.pdf>  
Organization RF
- 990** Koch, G. J.; Petros, M.; Barnes, B. W.; Beyon, J. Y.; Amzajerjian, F.; Yu, J.; Kavaya, M. J.; and Singh, U. N.: Validar: A Testbed for Advanced 2- $\mu$ m Coherent Doppler Wind Lidar. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
Organization RF
- 991** Koch, G. J.; Petros, M.; Yu, J.; Beyon, J. Y.; Barnes, B. W.; Amzajerjian, F.; Davis, R. E.; Kavaya, M. J.; Ismail, S.; and Singh, U. N.: 2 $\mu$ m Coherent DIAL Measurements of Atmospheric CO<sub>2</sub>. Presented at 12th Coherent Laser Radar Conference, June 15-20, 2003, Bar Harbor Maine.  
Organization RF
- 992** Petros, M.; Yu, J.; Chen, S.; Singh, U. N.; Walsh, B. M.; and Barnes, N. P.: Diode Pumped 105 mJ Ho:Tm:LuLF Oscillator. Presented at Advanced Solid-State Photonics, February 2-5, 2003, San Antonio, Texas.  
Organization RF
- 993** Williams-Byrd, J. A.; Petway, L. B.; and Edwards, W. C.: High Conversion Sum Frequency Generation Using Various SFG Configurations. Presented at Advanced Solid-State Photonics, February 2-5, 2003, San Antonio, Texas.  
Organization RF

## Category 77 Thermodynamics and Statistical Physics

- 994** Cramer, K. E.; Yost, W. T.; and Perey, D. F.: Aging Wire Insulation Assessment by Gas Chromatography. Presented at 7th Joint DoD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans, Louisiana.  
Organization RC

- 995** Edquist, K. T.; and Alter, S. J.: Computational Aeroheating Predictions for Mars Lander Configurations. Presented at 36th AIAA Thermophysics Conference, June 23-26, 2003, Orlando, Florida. AIAA Paper No. 2003-3639.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/aiaa/NASA-aiaa-2003-3639.pdf>  
Organization RA

## Social Sciences

### Category 81 Administration and Management

- 996** Caripo, R. S.: NASA Cost Estimating Framework for Project Management. Presented at International Quality and Productivity Center, September 25–October 1, 2003, Canberra, Australia.  
Organization AH
- 997** Parsons, V. S.: A Framework for Categorizing Important Project Variables. Presented at American Society for Engineering Management 24th National Conference, October 15-18, 2003, St. Louis, Missouri.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-24asem-vsp.pdf>  
Organization AH
- 998** Parsons, V. S.: Plausible Explanations for Trends in Project Programmatic Findings. Presented at American Society for Engineering Management 24th National Conference, October 15-18, 2003, St. Louis, Missouri.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-24asem-vsp2.pdf>  
Organization AH

### Category 82 Documentation and Information Science

- 999** Barkstrom, B. R.: Data Product Configuration Management and Versioning in Large-Scale Production of Satellite Scientific Data. Presented at ICSE 2003—25th International Conference on Software Engineering, May 3-10, 2003, Portland, Oregon. In *Software Configuration Management: ISCE Workshops SCM 2001 & SCM 2003*.  
Organization RE
- 1000** Barkstrom, B. R.; Hinke, T. H.; Gavali, S.; and Seufzer, W. J.: Enhanced Product Generation at NASA Data Centers Through Grid Technology. Presented at Global Grid Forum 8, June 24-27, 2003, Seattle, Washington.  
Organization RE
- 1001** Barkstrom, B. R.; Hinke, T. H.; Gavali, S.; Smith, W.; Seufzer, W. J.; Hu, C.; and Corder, D. E.: Distributed Generation of NASA Earth Science Data Products. *Journal of Grid Computing*, Volume 1, No. 2, January 2003, p. 101-116.  
Organization RE

- 1002** Caton, R.; and Townes, K. L.: NASA Center for Distance Learning Video Productions. Presented at Society for Information Technology & Teacher Education 2003—14th International Conference, March 24-29, 2003, Albuquerque, New Mexico.  
Organization SH
- 1003** Helmsie, C. L.; and Smail, J. W.: Swimming in the Right Sea of Information: Semantic Search Processing. Presented at FLICC Content Management Group Meeting on Intranet Search Engines, January 28, 2003, Washington, DC.  
Organization SL
- 1004** Liu, X-M.; Maly, K.; Zubair, M.; Hong, Q.; Nelson, M. L.; Knudson, F.; and Holtkamp, I.: Federated Searching Interface Techniques for Heterogeneous OAI Repositories. *Journal of Digital Information*, Volume 20, No. 4, May 2002.  
Organization RF
- 1005** Nelson, M. L.; Harrison, T. L.; and Rocker, J.: OAI and NASA's Scientific and Technical Information. *Library Hi Tech*, Volume 21, No. 2, 2003, p. 140-150.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/jp/NASA-2003-lht-mln.pdf>  
Organization SL
- 1006** Pinelli, T. E.: Distinguishing Engineers From Scientists—The Case for an Engineering Knowledge Community. *Science and Technology Libraries*, Volume 21, No. 3-4, 2003, p. 131-163.  
Organization SH
- 1007** Pinelli, T. E.; and Grimstead, H. M.: Increasing Scientific Literacy, Inspiring Tomorrow's Explorers. *Community Media Review*, Volume 25, No. 4, Winter 2002-2003, p. 37-39.  
Organization SH
- 1008** Rehder, J. J.: Automatic Hypertext Link Generation Using Semantic Annotations. Presented at 12th International World Wide Web Conference, May 19-24, 2003, Budapest, Hungary.  
Organization RF
- 1009** Stewart, S. H. (*Compiler*): NASA Langley Scientific and Technical Information Output—2002. NASA/TM-2003-212675, December 2003, 190 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tm/NASA-2003-tm212675.pdf>  
Organization SL
- 1010** Townes, K. L.; and Caton, R.: Using the NASA LIVE™ Videoconferencing Program in Teacher Education. Presented at Society for Information Technology & Teacher Education 2003—14th International Conference, March 24-29, 2003, Albuquerque, New Mexico.  
Organization SH

- 1011** Williams, W. B.; Giersch, C. E.; Bensen, W. E.; and Holland, S. M.: NASA CONNECT™: Space Suit Science in the Classroom. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada. Paper No. 03ICES-330. <http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-33ices-wbw.pdf>  
Organization SH

### **Category 83 Economics and Cost Analysis**

- 1012** Holmes, B. J.: 21st Century Innovations in Air Mobility. Presented at University of North Dakota, Dean John D. Odegard Memorial Lecture, February 25, 2003, Grand Forks, North Dakota.  
Organization OH

## **Space Sciences**

### **Category 89 Astronomy**

- 1013** Miroshnichenko, A. S.; Kusakin, A. V.; Bjorkman, K. S.; Rudy, R. J.; Lynch, D. K.; Mazuk, S.; Venturini, C. C.; Puetter, R. C.; and Perry, R. B.: HD 19993 and HD 29035: New Bright A-Type Emission-Line Stars. *Astronomy and Astrophysics*, Volume 412, No. 1, December 2003, p. 219-228.  
Organization OB

### **Category 91 Lunar and Planetary Exploration**

- 1014** Gohn, G. S.; Clark, A. C.; Queen, D. G.; Levine, J. S.; McFarland, E. R.; and Powars, D. S.: Operational Summary for the USGS—NASA Langley Corehole, Hampton, Virginia. In *U.S. Geological Survey Open-File Report 01-87-A*, 2003, 21 p.  
Organization RE
- 1015** Levine, J. S.; Blaney, D. L.; Connerney, J. E.; Greeley, R.; Head, J. W., III; Hoffman, J. H.; McKay, C. P.; Sotin, C. P.; and Summers, M. E.: Science From Mars Airplane: The Aerial Regional-Scale Environmental Survey (ARES) of Mars. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California. AIAA Paper No. 2003-6576.  
Organization RE
- 1016** Levine, J. S.; and Summers, M. E.: Non-Equilibrium Chemistry and the Composition of the Atmosphere of Mars. Presented at 6th International Conference on Mars, July 20-25, 2003, Pasadena, California.  
Organization RE

- 1017** Powars, D. S.; Bruce, T. S.; Bybell, L. M.; Cronin, T. M.; Edwards, L. E.; Frederiksen, N. O.; Gohn, G. S.; Horton, J. W., Jr.; Izett, G. A.; Johnson, G. H.; Levine, J. S.; McFarland, E. R.; Poag, C. W.; and Quick, J. E.: Preliminary Geological Summary for the USGS—NASA Langley Corehole, Hampton, Virginia. In *U.S. Geological Survey Open-File Report 01-87-B, et al.*, United States Geological Survey, 2001, 20 p.  
Organization RE
- 1018** Takashima, N.; Hollis, B. R.; Zoby, E. V.; Sutton, K.; Olejniczak, J.; Wright, M. J.; and Prabhu, D.: Preliminary Aerothermodynamics Analysis of Titan Aerocapture Aeroshell. Presented at 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 20-23, 2003, Huntsville, Alabama. AIAA Paper No. 2003-4952.  
Organization RB
- 1019** Wright, H. S.; Croom, M. A.; Braun, R. D.; Qualls, G. D.; and Levine, J. S.: ARES Mission Overview—Capabilities and Requirements of the Robotic Aerial Platform. Presented at 2nd AIAA “Unmanned Unlimited” Systems, Technologies, and Operations—Aerospace, Land, and Sea Conference and Workshop & Exhibit, September 15-18, 2003, San Diego, California. AIAA Paper No. 2003-6577.  
Organization RF

### **Category 93 Space Radiation**

- 1020** Anderson, B. M.; Nealy, J. E.; Geffre, J. R.; and Troutman, P. A.: Astronaut Radiation Exposures for Candidate Gateway Mission Profile. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6219.  
Organization RF
- 1021** Anderson, B. M.; Nealy, J. E.; Kim, M-H.; Qualls, G. D.; and Wilson, J. W.: Analysis of a Radiation Model of the Shuttle Space Suit. NASA/TP-2003-212158, March 2003, 41 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/tp/NASA-2003-tp212158.pdf>  
Organization RF
- 1022** Anderson, B. M.; Wilson, J. W.; Atwell, W.; Hugger, C. P.; and Nealy, J. E.: Radiation Exposure Analysis for ISS: The Female Astronaut in EVA. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada. Paper No. 03ICES-138.  
Organization RF
- 1023** Blattnig, S. R.; Norbury, J. W.; and Norman, R.B.: Radiation Shielding for Space Flight. Presented at 13th Annual Wisconsin Space Conference, August 14-15, 2003, Green Bay, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-13wsc-srb.pdf>  
Organization RC

- 1024** Cloudsley, M. S.; De Angelis, G.; Anderson, B. M.; Nealy, J. E.; and Wilson, J. W.: Advanced Shielding Concepts for a Manned Mission to Callisto. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6216.  
Organization RC
- 1025** De Angelis, G.; Cloudsley, M. S.; Nealy, J. E.; Qualls, G. D.; Singleterry, R. C., Jr.; Tripathi, R. K.; and Wilson, J. W.: Radiation Analysis Tools for Missions Beyond LEO. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6218.  
Organization RC
- 1026** De Angelis, G.; Nealy, J. E.; Badavi, F. F.; and Wilson, J. W.: An Improved Dynamic Environmental Model for LEO Applications. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada.  
Organization RC
- 1027** Heinbockel, J. H.; Feldman, M.; Cloudsley, M. S.; Wilson, J. W.; and Singleterry, R. C., Jr.: Solutions to the Low Energy Neutron Boltzmann Equation. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada.  
Organization RC
- 1028** Hugger, C. P.; Nealy, J. E.; Cloudsley, M. S.; Wilson, J. W.; Qualls, G. D.; Atwell, W.; Cucinotta, F. A.; Golightly, M. J.; Semones, S.; and Shavers, M. R.: Preliminary Validation of an ISS Radiation Shielding Model. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6220.  
Organization RC
- 1029** Hugger, C. P.; Qualls, G. D.; Atwell, W.; Cucinotta, F. A.; Shavers, M. R.; Nealy, J. E.; de Angelis, G.; and Wilson, J. W.: Preliminary Validation of an ISS 8A Shielding Model. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada.  
Organization RF
- 1030** Hugger, C. P.; Qualls, G. D.; Wilson, J. W.; Cucinotta, F. A.; Shavers, M. R.; and Zapp, N.: ISS as a Platform for Environmental Model Evaluation. Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico. In Proceedings, Volume 654, p. 1011-1017.  
Organization RF
- 1031** Nealy, J. E.; Badavi, F. F.; Atwell, W.; Wilson, J. W.; Cloudsley, M. S.; and Chew, G.: A Software Tool for Estimates of Sterilization Rates by Jovial Radiation. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. In Proceedings, AIAA Paper No. 2003-6257.  
Organization RC

- 1032** Nealy, J. E.; Tripathi, R. K.; Anderson, B. M.; Sundered, C. A.; Qualls, G. D.; and Wilson, J. W.: Shielding the Next Generation Spacecraft Infrastructure. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada.  
Organization RC
- 1033** Singleterry, R. C., Jr.; Johns, B. D.; Fan, K. Y.; Cheatwood, F. M.; and Qualls, G. D.: Development of Collaborative Engineering Environments for Spacecraft Design. Presented at 14th Space Radiation Health Investigators' Workshop, April 27-30, 2003, League City, Texas.  
Organization RC
- 1034** Singleterry, R. C., Jr.; Sobieszczanski-Sobieski, J.; Johns, B. D.; and Fan, K. Y.: Collaborative Engineering Environments. Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico.  
Organization RC
- 1035** Tripathi, R. K.; and Wilson, J. W.: Reliability Methods for Shield Design Process. Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/mtg/NASA-2003-staif-rkt.pdf>  
Organization RC
- 1036** Tripathi, R. K.; and Wilson, J. W.: Reliability Methods for Human Space Mission. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. AIAA Paper No. 2003-6225.  
Organization RC
- 1037** Tweed, J.; Wilson, J. W.; Tripathi, R. K.; Miller, J.; Zeitlin, C. J.; Heilbronn, L. H.; and Walker, S.: Shielding Transmission Validation With Solid State Detectors. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada. In Proceedings, Paper No. 2003-01-2331.  
Organization RC
- 1038** Ware, J.; Ferl, J.; Wilson, J. W.; Cloudsley, M. S.; De Angelis, G.; Tweed, J.; and Zeitlin, C. J.: Test Results of Improved Spacecraft Shielding Material Components. Presented at 33rd International Conference on Environmental Systems (ICES), July 7-10, 2003, Vancouver, Canada. In Proceedings, Paper No. 2003-01-2330.  
Organization RC
- 1039** Wilson, J. W.; Glaessgen, E. H.; Jensen, B. J.; Orwoll, R. A.; Saether, E.; Adams, D. O.; Humes, D. H.; Kelliher, W. C.; Thibeault, S. A.; Anderson, B. M.; Nealy, J. E.; and Tripathi, R. K.: Next Generation Shielding Materials for Earth Neighborhood Infrastructure. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. In Proceedings, AIAA Paper No. 2003-6258.  
Organization RC



- 1040** Wilson, J. W.; Jones, I. W.; Maiden, D. L.; and Goldhagen, P.: Atmospheric Ionizing Radiation (AIR): Analysis, Results, and Lessons Learned From June 1997 ER-2 Campaign. NASA/CP-2003-212155, February 2003, 424 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/cp/NASA-2003-cp212155.pdf>  
Organization RC
- 1041** Wilson, J. W.; Kim, M. Y.; de Angelis, G.; Cucinotta, F. A.; Yoshizawa, N.; and Badavi, F. F.: Implementation of Gy-Eq for Deterministic Effects Limitation in Shield Design. Presented at NASA 14th Space Radiation Health Investigator's Workshop, March 13-17, 2003, Chiba, Japan. In Proceedings.  
Organization RC
- 1042** Wilson, J. W.; Korte, J. J.; Sobieszczanski-Sobieski, J.; Badavi, F. F.; Chokshi, S. M.; Martinovic, Z. N.; Cerro, J. A.; and Qualls, G. D.: Radiation Shielding, MDO Processes, and RLV Design. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. In Proceedings, AIAA Paper No. 2003-6259.  
Organization RC
- 1043** Wilson, J. W.; Nealy, J. E.; De Angelis, G.; Badavi, F. F.; Cucinotta, F. A.; and Cloudsley, M. S.: A New Leo ISS Environmental Model. Presented at 14th Space Radiation Health Investigators' Workshop, April 27-30, 2003, Houston, Texas.  
Organization RC
- 1044** Wilson, J. W.; Nealy, J. E.; De Angelis, G.; Badavi, F. F.; Hugger, C. P.; Cucinotta, F. A.; and Kim, M. Y.: Dynamic/Anisotropic Low Earth Orbit Environmental Models. Presented at AIAA SPACE 2003 Conference and Exhibit, September 23-25, 2003, Long Beach, California. In Proceedings, AIAA Paper No. 2003-6221.  
Organization RC
- 1045** Wilson, J. W.; Nealy, J. E.; de Angelis, G.; Cloudsley, M. S.; and Badavi, F. F.: Deep Space Environments and Shielding. Presented at Space Technology & Applications International Forum (STAIF-2003), February 2-6, 2003, Albuquerque, New Mexico. In Proceeding, Volume 654, p. 993-1010.  
Organization RC
- 1046** Wilson, J. W.; Tripathi, R. K.; Qualls, G. D.; Cucinotta, F. A.; Prael, R. E.; Norbury, J. W.; Heinbockel, J. H.; Tweed, J.; and de Angelis, G.: Advances in Space Radiation Shielding Codes. Presented at NASA 14th Space Radiation Health Investigator's Workshop, March 13-17, 2003, Chiba, Japan. In Proceedings.  
Organization RC
- 1047** Wilson, J. W.; Tweed, J.; Heinbockel, J. H.; Tripathi, R. K.; Cucinotta, F. A.; and Mertens, C. J.: Advanced in Space Radiation Transport Codes. Presented at 14th Space Radiation Health Investigators Workshop, April 27-30-2003, Houston, Texas.  
Organization RC

## General

### Category 99 General

- 1048** Schultz, J.: Crafting Flight: Aircraft Pioneers and the Contributions of the Men and Women of NASA Langley Research Center. NASA/SP-2003-4316, October 2003, 244 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/2003/spec/NASA-2003-sp4316.pdf>  
Organization SG

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