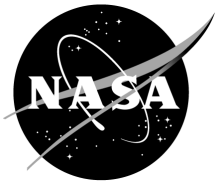
NASA/TM—2007–214963



FY 2005 Scientific and Technical Reports, Articles, Papers, and Presentations

Compiled by
K.A. Narmore
Marshall Space Flight Center, Marshall Space Flight Center, Alabama

June 2007

The NASA STI Program…in Profile

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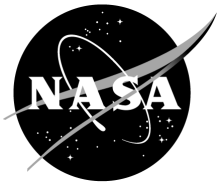

FY 2005 Scientific and Technical Reports, Articles, Papers, and Presentations

Compiled by
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National Aeronautics and
Space Administration

Marshall Space Flight Center • MSFC, Alabama 35812

June 2007

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FOREWORD

In accordance with the NASA Space Act of 1958, the George C. Marshall Space Flight Center (MSFC) has provided for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.

Since July 1, 1960, when MSFC was organized, the reporting of scientific and engineering information has been considered a prime responsibility of the Center. Our credo has been that "research and development work is valuable, but only if its results can be communicated and made understandable to others."

GEORGE C. MARSHALL SPACE FLIGHT CENTER
Marshall Space Flight Center, Alabama

FY 2005 SCIENTIFIC AND TECHNICAL REPORTS,
ARTICLES, PAPERS, AND PRESENTATIONS

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TM—2004–213392 October 2004

Performance of Off-the-Shelf Technologies for Spacecraft Cabin Atmospheric Major Constituent Monitoring. J.D. Tatara* and J.L. Perry. Flight Systems Department, Flight Projects Directorate, and *Qualis Corporation.

Monitoring the atmospheric composition of a crewed spacecraft cabin is central to successfully expanding the breadth and depth of first-hand human knowledge and understanding of space. Highly reliable technologies must be identified and developed to monitor atmospheric composition. This will enable crewed space missions that last weeks, months, and eventually years. Atmospheric composition monitoring is a primary component of any environmental control and life support system. Instrumentation employed to monitor atmospheric composition must be inexpensive, simple, and lightweight and provide robust performance. Such a system will ensure an environment that promotes human safety and health, and that the environment can be maintained with a high degree of confidence. Key to this confidence is the capability for any technology to operate autonomously, with little intervention from the crew or mission control personnel. A study has been conducted using technologies that, with further development, may reach these goals.

TM—2004–213549 November 2004

A Method for Incorporating Changing Structural Characteristics Due to Propellant Mass Usage in a Launch Vehicle Ascent Simulation. D.S. McGhee. Engineering Directorate.

Launch vehicles consume large quantities of propellant quickly, causing the mass properties and structural dynamics of the vehicle to change dramatically. Currently, structural load assessments account for this change with a large collection of structural models representing various propellant fill levels. This creates a large database of models complicating the delivery of reduced models and requiring extensive work for model changes. Presented here is a method to account for these mass changes in a more efficient manner. The method allows for the subtraction of propellant mass as the propellant is used in the simulation. This subtraction is done in the modal domain of the vehicle generalized model. Additional computation required is primarily for constructing the used propellant mass matrix from an initial propellant model and further matrix multiplications and subtractions. An additional eigenvalue solution is required to uncouple the new equations of motion; however, this is a much simpler calculation starting from a system that is already substantially uncoupled. The method was successfully tested in a simulation of Saturn V loads. Results from the method are compared to results from separate structural models for several propellant levels, showing excellent agreement. Further development to encompass more complicated propellant models, including slosh dynamics, is possible.

TM—2004–213550 November 2004

Quartz Crystal Microbalance Operation and In Situ Calibration. K.C. Albyn. Materials, Processes, and Manufacturing Department, Engineering Directorate.

Quartz crystal microbalances (QCMs) are commonly used to measure the rate of deposition of molecular species on a surface. The measurement is often used to select materials with a low outgassing rate for applications where the material has a line of sight to a contamination-sensitive surface. A quantitative, in situ calibration of the balance, or balances, using a pure material for which the enthalpy of sublimation is known, is described in this Technical Memorandum. Supporting calculations for surface dwell times of deposited materials and the effusion cell Clausing factor are presented along with examples of multiple QCM measurements of outgassing from a common source.

TM—2004–213552 November 2004

A "Kane's Dynamics" Model for the Active Rack Isolation System, Part Two: Nonlinear Model Development, Verification, and Simplification. G.S. Beech, R.D. Hampton,* and J.K. Rupert**. Engineering Systems Department, Engineering Directorate, *United States Military Academy, and **Dynetics, Inc.

Many microgravity space-science experiments require vibratory acceleration levels that are unachievable without active isolation. The Boeing Corporation's active rack isolation system (ARIS) employs a novel combination of magnetic actuation and mechanical linkages to address these isolation requirements on the International Space Station.

Effective model-based vibration isolation requires: (1) An isolation device, (2) an adequate dynamic; i.e., mathematical, model of that isolator, and (3) a suitable, corresponding controller. This Technical Memorandum documents the validation of that high-fidelity dynamic model of ARIS.

The verification of this dynamics model was achieved by utilizing two commercial off-the-shelf (COTS) software tools: Deneb's ENVISION®, and Online Dynamics' Autolev™. ENVISION is a robotics software package developed for the automotive industry that employs three-dimensional computer-aided design models to facilitate both forward and inverse kinematics analyses. Autolev is a DOS-based interpreter designed, in general, to solve vector-based mathematical problems and specifically to solve dynamics problems using Kane's method.

The simplification of this model was achieved using the small-angle theorem for the joint angle of the ARIS actuators. This simplification has a profound effect on the overall complexity of the closed-form solution while yielding a closed-form solution easily employed using COTS control hardware.

TM—2004–213604 December 2004
Aluminum-Scandium Alloys: Material Characterization, Friction Stir Welding, and Compatibility With Hydrogen Peroxide (MSFC Center Director's Discretionary Fund Final Report, Project No. 04–13). J.A. Lee and P.S. Chen, Materials, Processes, and Manufacturing Department, Engineering Directorate.

This Technical Memorandum describes the development of several high-strength aluminum (Al) alloys that are compatible with hydrogen peroxide (H_2O_2) propellant for NASA Hypersonic-X (Hyper-X) vehicles' fuel tanks and structures. The yield strengths for some of these Al-magnesium-based alloys are more than 3 times stronger than the conventional 5254–H112 Al alloy, while maintaining excellent H_2O_2 compatibility similar to class 1 5254 alloy. The alloy development strategy is to add scandium, zirconium, and other transitional metals with unique electrochemical properties, which will not act as catalysts, to decompose the highly concentrated 90 percent H_2O_2. Test coupons are machined from sheet metals for H_2O_2 long-term exposure testing and mechanical properties testing. In addition, the ability to weld the new alloys using friction stir welding has also been explored. The new high-strength alloys could represent an enabling material technology for Hyper-X vehicles, where flight weight reduction is a critical requirement.

TM—2004–213605 December 2004
FY 2003 Scientific and Technical Reports, Articles, Papers, and Presentations. B.A. Fowler, Compiler. Marshall IT Services Office, Office of Chief Information Officer.

This Technical Memorandum (TM) presents formal NASA technical reports, papers published in technical journals, and presentations by Marshall Space Flight Center (MSFC) personnel in FY 2003. It also includes papers of MSFC contractors.

After being announced in STAR, all NASA series reports may be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

The information in this TM may be of value to the scientific and engineering community in determining what information has been published and what is available.

TM—2005–213609 March 2005
Safe, Affordable Fission Engine- (SAFE-) 100a Heat Exchanger Thermal and Structural Analysis. B.E. Steeve. Structures, Mechanics, and Thermal Department, Engineering Directorate.

A potential fission power system for in-space missions is a heat pipe-cooled reactor coupled to a Brayton cycle. In this system, a heat exchanger (HX) transfers the heat of the reactor core to the Brayton gas. The Safe, Affordable Fission Engine-(SAFE-) 100a is a test program designed to thermally and hydraulically simulate a 95 Btu/s prototypic heat pipe-cooled reactor using electrical resistance heaters on the ground. This Technical Memorandum documents the thermal and structural assessment of the HX used in the SAFE-100a program.

TM—2005–213688 March 2005
Revolutionary Concepts of Radiation Shielding for Human Exploration of Space. J.H. Adams, Jr., T.A. Parnell,* D.H. Hathaway, J.C. Gregory,* R.N. Grugel, J.W. Watts, and R.M. Winglee**. Microgravity Science and Applications Department, Science Directorate, *The University of Alabama in Huntsville, and **University of Washington.

This Technical Memorandum covers revolutionary ideas for space radiation shielding that would mitigate mission costs while limiting human exposure, as studied in a workshop held at Marshall Space Flight Center at the request of NASA Headquarters. None of the revolutionary new ideas examined for the first time in this workshop showed clear promise. The workshop attendees felt that some previously examined concepts were definitely useful and should be pursued. The workshop attendees also concluded that several of the new concepts warranted further investigation to clarify their value.

TM—2005–213846 April 2005
International Space Station Bacteria Filter Element Service Life Evaluation. J.L. Perry. Spacecraft and Vehicle Systems Department, Engineering Directorate.

The International Space Station (ISS) uses high-efficiency particulate air filters to remove particulate matter from the cabin atmosphere. Known as bacteria filter elements (BFEs), there are 13 elements deployed on board the ISS's U.S. segment in the flight 4R assembly level. The preflight service life prediction of 1 yr for the BFEs is based upon engineering analysis of data collected during developmental testing that used a synthetic dust challenge. While this challenge is considered reasonable and conservative from a design perspective, an understanding of the actual filter loading is required to best manage the critical ISS program resources. Testing was conducted on BFEs returned from the ISS to refine the service life prediction. Results from this testing and implications to ISS resource management are provided.

TM—2005–213848 February 2005
A "Kane's Dynamics" Model for the Active Rack Isolation System, Part Three: Addition of Umbilicals to the Nonlinear Model. J.K. Rupert,* R.D. Hampton,** and G.S. Beech. Engineering Systems Department, Engineering Directorate, *Dynetics, Inc., and **United States Military Academy.

In the late 1980s, microgravity researchers began to voice their concern that umbilical-transmitted energy could significantly degrade the acceleration environment of microgravity

space science experiments onboard manned spacecraft. Since umbilicals are necessary for many experiments, control designers began to seek ways to compensate for these "indirect" disturbances.

Hampton et al. used the Kane's method to develop a model of the active rack isolation system (ARIS) that includes (1) actuator control forces, (2) direct disturbance forces, and (3) indirect, actuator-transmitted disturbances. Their model does not, however, include the indirect, umbilical-transmitted disturbances. Since the umbilical stiffnesses are not negligible, these indirect disturbances must be included in the model. Until the umbilicals have been appropriately included, the model will be incomplete.

This Technical Memorandum presents a nonlinear model of ARIS with umbilicals included. Model verification was achieved by utilizing two commercial-off-the-shelf software tools. Various forces and moments were applied to the model to yield simulated responses of the system. Plots of the simulation results show how various critical points on an ARIS-outfitted international standard payload rack behave under the application of direct disturbances, indirect disturbances, and control forces. Simulations also show system response to a variety of initial conditions.

TM—2005–213902 July 2005

Method for Determination of <5 ppm Oxygen in Sodium Samples. R.S. Reid, J.J. Martin, and G.L. Schmidt*. Propulsion Research Center, Space Transportation Directorate and *New Mexico Institute of Mining and Technology.

Alkali metals used in pumped loops or heat pipes must be sufficiently free of nonmetallic impurities to ensure long heat rejection system life. Life issues are well established for alkali metal systems. Impurities can form ternary compounds between the container and working fluid, leading to corrosion. This Technical Memorandum discusses the consequences of impurities and candidate measurement techniques to determine whether impurities have been reduced to sufficiently low levels within a single-phase liquid metal loop or a closed two-phase heat transfer system, such as a heat pipe. These techniques include the vanadium wire equilibration, neutron activation analysis, plug traps, distillation, and chemical analysis. Conceptual procedures for performing vanadium wire equilibration purity measurements on sodium contained in a heat pipe are discussed in detail.

TM—2005–214007 July 2005

Designing for Human Presence in Space: An Introduction to Environmental Control and Life Support Systems (ECLSS), Appendix I, Update—Historical ECLSS for U.S. and U.S.S.R./Russian Space Habitats. P. O. Wieland. Spacecraft and Vehicle Systems Department, Engineering Directorate.

Human exploration and utilization of space requires habitats to provide appropriate conditions for working and living. These conditions are provided by environmental control and life support systems (ECLSS) that ensure appropriate atmosphere composition, pressure, and temperature; manage and distribute water, process waste matter, provide fire detection and suppression; and other functions as necessary.

The tables in appendix I of NASA RP–1324 "Designing for Human Presence in Space" summarize the life support functions and processes used onboard U.S. and U.S.S.R/Russian space habitats. These tables have been updated to include information on thermal control methods and to provide additional information on the ECLS systems.

TM—2005–214008 August 2005

An Assessment of the International Space Station's Trace Contaminant Control Subassembly Process Economics. J.L. Perry, H.E. Cole,* and H.N. El-Lessy**. Spacecraft and Vehicle Systems Department, Engineering Directorate *The Boeing Company, Huntsville, AL, and **The Boeing Company, Houston, TX.

The International Space Station (ISS) Environmental Control and Life Support System includes equipment specifically designed to actively remove trace chemical contamination from the cabin atmosphere. In the U.S. on-orbit segment, this function is provided by the trace contaminant control subassembly (TCCS) located in the atmosphere revitalization subsystem rack housed in the laboratory module, Destiny. The TCCS employs expendable adsorbent beds to accomplish its function leading to a potentially significant life cycle cost over the life of the ISS. Because maintaining the TCCSs proper can be logistically intensive, its performance in flight has been studied in detail to determine where savings may be achieved. Details of these studies and recommendations for improving the TCCS's process economics without compromising its performance or crew health and safety are presented and discussed.

TM—2005–214061 September 2005

Thermal Catalytic Oxidation of Airborne Contaminants by a Reactor Using Ultra-Short Channel Length, Monolithic Catalyst Substrates (MSFC Center Director's Discretionary Fund Final Report, Project No. 02–18). J.L. Perry, K.M. Tomes, and J.D. Tatara*. Spacecraft and Vehicle Systems Department, Engineering Directorate and *Qualis Corporation.

Contaminated air, whether in a crewed spacecraft cabin or terrestrial work and living spaces, is a pervasive problem affecting human health, performance, and well-being. The need for highly effective, economical air quality processes spans a wide range of terrestrial and space flight applications. Typically, air quality control processes rely on absorption-based processes. Most industrial packed-bed adsorption processes use activated

carbon. Once saturated, the carbon is either dumped or regenerated. In either case, the dumped carbon and concentrated waste streams constitute a hazardous waste that must be handled safely while minimizing environmental impact. Thermal catalytic oxidation processes designed to address waste handling issues are moving to the forefront of cleaner air quality control and process gas decontamination processes. Careful consideration in designing the catalyst substrate and reactor can lead to more complete contaminant destruction and poisoning resistance. Maintenance improvements leading to reduced waste handling and process downtime can also be realized. Performance of a prototype thermal catalytic reaction based on ultrashort waste channel, monolith catalyst substrate design, under a variety of process flow and contaminant loading conditions, is discussed.

TM—2005–214184 September 2005

In-Space Propulsion: Connectivity to In-Space Fabrication and Repair. L. Johnson, D. Harris, A. Trausch, G.L. Matloff,* T. Taylor,** and K. Cutting***. In-Space propulsion Technology Office, Space Transportation Programs/ Projects Office, *New York City College of Technology, **BAE Systems, and ***Gray Research.

The connectivity between new in-space propulsion technologies and the ultimate development of an in-space fabrication and repair infrastructure are described in this Technical Memorandum. A number of advanced in-space propulsion technologies are being developed by NASA, many of which are directly relevant to the establishment of such an in-space infrastructure. These include aerocapture, advanced solar-electric propulsion, solar-thermal propulsion, advanced chemical propulsion, tethers, and solar photon sails. Other, further term technologies have also been studied to assess their utility to the development of such an infrastructure.

TM—2005–214186 September 2005

Advanced Sensor Concepts (MSFC Director's Fund Final Report, Project No. 03-11). D.C. Alhorn, D.E. Howard, and D.A. Smith. Instrument and Payload Systems Department, Engineering Directorate.

The Advanced Sensor Concepts project was conducted under the Center Director's Discretionary Fund at the Marshall Space Flight Center. Its objective was to advance the technology originally developed for the Glovebox Integrated Microgravity Isolation Technology project. The objective of this effort was to develop and test several new motion sensors. To date, the investigators have invented seven new technologies during this endeavor and have conceived several others. The innovative basic sensor technology is an absolute position sensor. It employs only two active components, and it is simple, inexpensive, reliable, repeatable, lightweight, and relatively unobtrusive. Two sensors can be utilized in the same physical space to achieve redundancy. The sensor has micrometer positional accuracy and can be configured as a two- or three-dimensional sensor. The sensor technology has the potential to pioneer a new class of linear and rotary sensors. This sensor is the enabling technology for autonomous assembly of modular structures in space and on extraterrestrial locations.

TM—2005–214189 September 2005

Space Shuttle Pad Exposure Period Meteorological Parameters STS–1 Through STS–107. B.G. Overbey and B.C. Roberts. Spacecraft and Vehicle Systems Department, Engineering Directorate.

During the 113 missions of the Space Transportation System (STS) to date, the Space Shuttle fleet has been exposed to the elements on the launch pad for ≈4,195 days. The Natural Environments Branch at Marshall Space Flight Center archives atmospheric environments to which the Space Shuttle vehicles are exposed. This Technical Memorandum (TM) provides a summary of the historical record of the meteorological conditions encountered by the Space Shuttle fleet during the pad exposure period. Parameters included in this TM are temperature, relative humidity, wind speed, wind direction, sea level pressure, and precipitation. Extremes for each of these parameters for each mission are also summarized. Sources for the data include meteorological towers and hourly surface observations. Data are provided from the first launch of the STS in 1981 through the launch of STS–107 in 2003.

TP—2005–213608 January 2005

On the Relation Between Spotless Days and the Sunspot Cycle. Robert M. Wilson and David H. Hathaway. Earth and Space Science Laboratory, Science and Technology Directorate.

Spotless days are examined as a predictor for the size and timing of a sunspot cycle. For cycles 16–23 the first spotless day for a new cycle, which occurs during the decline of the old cycle, is found to precede minimum amplitude for the new cycle by about ≈34 mo, having a range of 25–40 mo. Reports indicate that the first spotless day for cycle 24 occurred in January 2004, suggesting that minimum amplitude for cycle 24 should be expected before April 2007, probably sometime during the latter half of 2006. If true, then cycle 23 will be classified as a cycle of shorter period, inferring further that cycle 24 likely will be a cycle of larger than average minimum and maximum amplitudes and faster than average rise, peaking sometime in 2010.

TP—2005–214187 September 2005

Closed Cycle Magnetohydrodynamic Nuclear Space Power Generation Using Helium/Xenon Working Plasma. R.J. Litchford and N. Harada*. Propulsion Research Center, Science and Technology Directorate and *Nagaoka University of Technology.

A multimegawatt-class nuclear fission powered closed cycle magnetohydrodynamic space power plant using a helium/xenon working gas has been studied, to include a comprehensive system analysis. Total plant efficiency was expected to be 55.2 percent including preionization power. The effects of compressor stage number, regenerator efficiency, and radiation cooler temperature on plant efficiency were investigated. The specific mass of the power generation plant was also examined. System specific mass was estimated to be 3 kg/kWe for a net electrical output power of 1 MWe, 2–3 kg/kWe at 2 MWe, and ≈2 kg/KWe at >3 MWe. Three phases of research and development plan were proposed: (1) Phase I—proof of principle, (2) Phase II—demonstration of power generation, and (3) Phase III—prototypical closed loop test.

TP—2005–214188 September 2005

Baseline Computational Fluid Dynamics Methodology for Longitudinal-Mode Liquid-Propellant Rocket Combustion Instability. R.J. Litchford. Propulsion Research Center, Science and Technology Directorate.

A computational method for the analysis of longitudinal-mode liquid rocket combustion instability has been developed based on the unsteady, quasi-one-dimensional Euler equations where the combustion process source terms were introduced through the incorporation of a two-zone, linearized representation: (1) A two-parameter collapsed combustion zone at the injector face, and (2) a two-parameter distributed combustion zone based on a Lagrangian treatment of the propellant spray. The unsteady Euler equations in inhomogeneous form retain full hyperbolicity and are integrated implicitly in time using second-order, high-resolution, characteristic-based, flux-differencing spatial discretization with Roe-averaging of the Jacobian matrix. This method was initially validated against an analytical solution for nonreacting, isentropic duct acoustics with specified admittances at the inflow and outflow boundaries. For small amplitude perturbations, numerical predictions for the amplification coefficient and oscillation period were found to compare favorably with predictions from linearized small-disturbance theory as long as the grid exceeded a critical density (≈100 nodes/wavelength). The numerical methodology was then exercised on a generic combustor configuration using both collapsed and distributed combustion zone models with a short nozzle admittance approximation for the outflow boundary. In these cases, the response parameters were varied to determine stability limits defining resonant coupling onset.

CP—2005–213607 January 2005

Fifth International Symposium on Liquid Space Propulsion. R. Garcia, Compiler. Propulsion Systems Department, Engineering Directorate.

This document contains the proceedings of the Fifth International Symposium on Liquid Space Propulsion, held October 27–30, 2003, in Chattanooga, TN. The International Liquid Space Propulsion Symposia provide the principal forum for all aspects of liquid rocket propulsion. The aim of the symposium series is to gather international experts in the field of liquid rocket engines on a regular basis for presentations and discussions of the current status of research and development. Besides an exchange of information about future trends, it also fortifies existing cooperation and acts as a nucleus to establish networks to enhance international scientific collaboration in the liquid rocket propulsion area.

CP—2005–213741 March 2005

MIT–NASA Workshop: Transformational Technologies. D.V. Smitherman, J. Hoffman,* R. Patel,* J.C. Mankins,** C.B. Christensen,*** E.C. Gresham, A. Simmons,*** and C.A. Mullins***. Future Concepts Office, Space Systems Programs/Projects Office, *Massachusetts Institute of Technology, **NASA Headquarters, and ***The Tauri Group.

As a space faring nation, we are at a critical juncture in the evolution of space exploration. NASA has announced its Vision for Space Exploration, a vision of returning humans to the Moon, sending robots and eventually humans to Mars, and exploring the outer solar system via automated spacecraft. However, mission concepts have become increasingly complex, with the potential to yield a wealth of scientific knowledge. Meanwhile, there are significant resource challenges to be met. Launch costs remain a barrier to routine space flight; the ever-changing fiscal and political environments can wreak havoc on mission planning; and technologies are constantly improving, and systems that were state of the art when a program began can quickly become outmoded before a mission is even launched. This Conference Publication describes the workshop and featured presentations by world-class experts presenting leading-edge technologies and applications in the areas of power and propulsion; communications; automation, robotics, computing, and intelligent systems; and transformational techniques for space activities. Workshops such as this one provide an excellent medium for capturing the broadest possible array of insights and expertise, learning from researchers in universities, national laboratories, NASA field Centers, and industry to help better our future in space.

CP—2005–213900 July 2005

NASA Technical Interchange Meeting (TIM): Advanced Technology Lifecycle Analysis System (ATLAS) Technology Tool Box. D.A. O'Neil, D.A. Craig,* C.B. Christensen,** and E.C. Gresham**. Advanced Projects Team, Future Concepts Office, Space Systems Programs, Projects Office, *NASA Headquarters, and **The Tauri Group.

The objective of this Technical Interchange Meeting was to increase the quantity and quality of technical, cost, and programmatic data used to model the impact of investing in different technologies. The focus of this meeting was the Technology Tool Box (TTB), a database of performance, operations, and programmatic parameters provided by technologists and used by systems engineers. The TTB is the data repository used by a system of models known as the Advanced Technology Lifecycle Analysis System (ATLAS). This report describes the result of the November meeting, and also provides background information on ATLAS and the TTB.

CR—2005–213845 April 2005

On Structural Design of a Mobile Lunar Habitat With Multi-Layered Environmental Shielding. M. Rais-Rohani. NASA's Faculty Fellowship Program, Mississippi State University.

This report presents an overview of a Mobile Lunar Habitat (MLH) structural design consisting of advanced composite materials. The habitat design is derived from the cylindrical-shaped U.S. Lab module aboard the International Space Station (ISS) and includes two lateral ports and a hatch at each end that geometrically match those of the ISS Nodes. Thus, several MLH units can be connected together to form a larger lunar outpost of various architectures. For enhanced mobility over the lunar terrain, the MLH uses six articulated insect-like robotic, retractable legs enabling the habitat to fit aboard a launch vehicle. The carbon-composite shell is sandwiched between two layers of hydrogen-rich polyethylene for enhanced radiation shielding. The pressure vessel is covered by modular double-wall panels for meteoroid impact shielding supported by externally mounted stiffeners. The habitat's structure is an assembly of multiple parts manufactured separately and bonded together. Based on the geometric complexity of a part and its material system, an appropriate fabrication process is proposed.

CR—2005–213847 January 2005

The 2004 NASA Faculty Fellowship Program Research Reports. J.R. Pruitt, G. Karr,* L.M. Freeman,** and R. Hassan*** (Program Directors) and J.B. Day (Compiler and Editor). Prepared for the Education Programs Department, Customer and Employee Relations Directorate, *The University of Alabama in Huntsville, **The University of Alabama, Tuscaloosa, and ***Alabama A&M University.

For the 40th consecutive year, the NASA Faculty Fellowship Program (NFFP) was conducted at Marshall Space Flight Center (MSFC). The program was sponsored by NASA Headquarters, Washington, DC, and operated under contract by The University of Alabama, The University of Alabama in Huntsville, and Alabama A&M University. In addition, promotion and applications are managed by the American Society for Engineering Education (ASEE) and assessment is completed by Universities Space Research Association (USRA). The nominal starting and finishing dates for the 10-week program were June 1 through August 6, 2004. The primary objectives of the NASA Faculty Fellowship Program are to: (1) Increase the quality and quantity of research collaborations between NASA and the academic community that contribute to the Agency's space aeronautics and space science mission; (2) Engage faculty from colleges, universities, and community colleges in current NASA research and development; (3) Foster a greater public awareness of NASA science and technology, and therefore facilitate academic and workforce literacy in these areas; (4) Strengthen faculty capabilities to enhance the STEM workforce, advance competition, and infuse mission-related research and technology content into classroom teaching; and (5) Increase participation of underrepresented and underserved faculty and institutions in NASA science and technology.

CR—2005–214006 July 2005

The *M*-Integral for Computing Stress Intensity Factors in Generally Anisotropic Materials. P.A. Wawrzynek,* B.J. Carter,* and L. Banks-Sills**. NASA's Space Shuttle Main Engine (SSME) Program, *Fracture Analysis Consultants, and **Tel Aviv University.

Single-crystal super alloys are commonly used for components in the hot sections of contemporary jet and rocket engines. Due to the anisotropic nature of single-crystal materials, the use of existing isotropic fracture mechanics calculations leads to errors in stress intensity factors. The difference can be substantial.

Presented in this report is the solution for calculating stress intensity factors in generally anisotropic materials using the *M*-integral. Included are examples of this solution applied to Brazilian disk crack growth specimens.

ABBAS, M.M. XD12
TANKOSIC, D. UAH
CRAVEN, P.D. XD12
SPANN, J.F. XD12
LECLAIR, A. UAH
WEST, E.A. XD12

Laboratory Investigation of the Physical and Optical Properties of the Analog of Individual Cosmic Dust Grains—Abstract Only. For presentation at and publication in Conference Proceedings of The Gordon Research Conference on Origins of Solar Systems, New London, CT, June 26–July 1, 2005.

ABBAS, M.M. XD12
TANKOSIC, D. UAH
CRAVEN, P.D. XD12
SPANN, J.F. XD12
LECLAIR, A. UAH
WEST, E.A. XD12
TAYLOR, L. University Of Tennessee
HOOVER, R.B. XD12

Measurements of Photoelectric Yield and Physical Properties of Individual Lunar Dust Grains—Abstract Only. For presentation at the Dust in Planetary Systems, Kauai, HI, September 26–30, 2005.

ABBAS, M.M. XD12
TANKOSIC, D. UAH
CRAVEN, P.D. XD12
SPANN, J.F. XD12
LECLAIR, A. UAH
WEST, E.A. XD12
WEINGARTNER, J.C. George Mason University
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NUTH, J.A. UAB
ET AL.

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GERASIMENKO, L.M. Winogradsky Institute of Microbiology RAS
HOOVER, R.B. XD12
MITSKEVICH, I.N. Winogradsky Institute of Microbiology RAS
MULYUKIN, A.L. Winogradsky Institute of Microbiology RAS
POGLAZOVA, M.N. Winogradsky Institute of Microbiology RAS
RAZANOV, A.Y. Paleontological Institute RAS

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BHATTACHARYA, M. XD12/UAH
LIN, Z-W. XD12

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ADAMS, R.B. NP10
CASSIBRY, J.T. UAH

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AHN, H.S. University of Maryland
ADAMS, J.H. XD12
BASHINGZHAGYAN, G.L. Moscow State University
BATKOV, K.E. Moscow State University
CHANG, J. Max-Planck Institute for Solar Systems Research/Purple Mountain Observatory
CHRISTL, M. XD12
FAZELY, A.R. Southern University
GANEL, O. University of Maryland
GUNASINGHA, R.M. Southern University
ET AL.

Elemental Spectra from the First ATIC Flight—Abstract Only. For presentation at the 29th International Cosmic Ray Conference/Tata Institute of Fundamental Research, Pune, India, August 3–10, 2005.

ALEXANDER, L.A. TD50
BISHOP-BEHEL, K. NP40
BENFIELD, M.P.J. SAIC
KELLEY, A. EV23
WOODCOCK, G.R. Gray Research, Inc.
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AMAND, A. Phyco Tech, Inc.
HOOVER, R.B. XD12
JERMAN, G. XD12
ROZANOV, A.Y. Paleontological Institute of Russian Academy of Sciences
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WILSON, C.A. XD12
CONNELL, P. GACE
NUNEZ, S.M. GACE
BLAY, P. GACE
BECKMANN, V. Goddard Space Flight Center (GSFC)
REGLERO, V. GACE
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ASTAFIEVA, M.M. Paleontological Institute of Russian Academy of Sciences
HOOVER, R.B. XD12
ROZANOV, A.Y. Paleontological Institute of Russian Academy of Sciences
VREVSKIY, A.B. Institute of Geology and Geochronology of the Precambrian
Fossil Microorganisms in Archaean Deposits of Northern Karelia—Abstract Only. For presentation at the SPIE Optics and Photonics 2005, San Diego, CA, July 31–August 4, 2005.

BAGDIGIAN, R.M. SV10
CLOUD, D. Hamilton Sundstrand Space Systems Intl.
Status of the International Space Station Regenerative ECLSS Water Recovery and Oxygen Generation Systems—Final Paper. For presentation at the International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

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BAIZE, D. Langley Research Center
BARANEK, M. U.S. Navy
CRONIN, M. ZIN Technologies Inc.
GONDA, J. Mitre Corp.
KOELBL, T. ED13
NARINS, M. FAA
SMITH, A. Rannoch Corp.
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YOUNG, R.M. NP23
ADAMS, C.L. Gray Research, Inc.
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BALLARD, R.O. ER11
REIMR—A Process for Utilizing Liquid Rocket Propulsion-Oriented "Lessons Learned" to Mitigate Risk in Nuclear Thermal Propulsion Development—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2005.

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BROWN, K.K. ER21
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BARTHELMY, S.D. GSFC
CHINCARINI, G. INAF
BURROWS, D. University Degli Studi Di
GEHRELS, N. Pennsylvania State University
COVINO, S. INAF
MORETTI, A. INAF

ROMANO, P. INAF
O'BRIEN, P. University of Leicester
KOUVELIOTOU, C. XD12
ET AL.

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BARTHELMY, S.D. GSFC
CANNIZZO, J.K. GSFC/University of Maryland
GEHRELS, N. GSFC
CUSUMANO, G. INAF
O'BRIEN, P. University of Leicester
VAUGHAN, S. University of Leicester
ZHANG, B. University of Nevada Las Vegas
BURROWS, D.N. Pennsylvania State University
KOUVELIOTOU, C. XD12
ET AL.

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BASSLER, J.A. SD40
GRUGEL, R.N. SD40
BODIFORD, M.P. SD40
FISKE, M.R. Morgan Research Corp.
GILLEY, S.D. Tec-Masters, Inc.
EPPS, S.J. Teledyne Brown Eng.
EVANS, B.W. Teledyne Brown Eng.
EZELL, D.D. Teledyne Brown Eng.

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FISKE, M.R. Morgan Research Corp.
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PANOV, A.D. Moscow State University
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AHN, H.S. University of Maryland
BASHINDZHAGYAN, G.L. Moscow State University
CHANG, J. Max Plank Institute for Solar Systems/ Purple Mountain Observatory
CHRISTL, M. XD12
FAZLEY, A.R. Southern University
GANEL, O. University of Maryland
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Deconvolution of Energy Spectra in the ATIC Experiment—Abstract Only. For presentation at the 29th International Cosmic Ray Conference/Tata Institute of Fundamental Research, Pune, India, August 3–10, 2005.

BEMPORAD, A. Universita' di Firenze
POLETTO, G. INAF
SUESS, S.T. XD12
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SCHWARDRON, N.A. Southwest Research Institute (SWRI)
ELLIOTT, H.A. SWRI
RAYMOND, J.C. Harvard-Smithsonian Center for Astrophysics

Current Sheet Evolution in the Aftermath of a CME Event—Abstract Only. For publication in the Astrophysical Journal.

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SUESS, S.T. XD12
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ELLIOTT, H.A. GSFC
RAYMOND, J.C. Harvard-Smithsonian Center for Astrophysics

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BERGERON, N.P. University of Louisiana
HOLLERMAN, W.A. University of Louisiana
GOEDEKE, S.M. Oak Ridge
HOVATER, M. EM50
HUBBS, W. EM50
FINCHUM, A. EM50
MOORE, R.J. University of Louisiana
ALLISON, S.W. Oak Ridge
EDWARDS, D.L. EM50

Experimental Evidence of Triboluminescence Induced by Hypervelocity Impact—Final Paper. For presentation at the Hypervelocity Impact Symposium 2005, Lake Tahoe, CA, October 09–13, 2005.

BEST, J. FD41
SORGE, L. USA
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SIAS, D. SGT

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BEST, P.J. NP60
UNGER, R.J. NP60
WAITS, D.A. NP60

Auxiliary Propulsion Activities in Support of NASA's Exploration Initiative—Abstract Only. For presentation at the AIAA 1st Space Exploration Conference, Orlando, FL, January 30–February 2, 2005.

BHARDWAJ, A. National Research Council (NRC)
ELSNER, R.F. XD12
GLADSTONE, G.R. SWRI
WAITE, JR., J.H. University of Michigan
LUGAZ, N. University of Michigan
CRAVENS, T.E. University Of Kansas
BRANDUARDI-RAYMONT, G. UCL, Mullard Space Science Laboratory (MSSL)
RAMSAY, G. University College London
SORIA, R. University College London
ET AL.

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BHARDWAJ, A. NRC
ELSNER, R.F. XD12
GLADSTONE, G.R. SWRI
WAITE, JR., J.H. University of Michigan
CRAVENS, T.E. University of Kansas
OSTGAARD, N. University of California
CHANG, S-W. UAH/SD50
METZGER, A.E. Jet Propulsion Laboratory (JPL)
MAJEED, T. University of Michigan

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ELSNER, R.F. XD12
GLADSTONE, G.R. SWRI
CRAVENS, T.E. University of Kansas
WAITE, JR., J.H. University of Michigan
BRANDUARDI-RAYMONT, G. UCL, MSSL
FORD, P.G. Center for Space Research

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ELSNER, R.F. XD12
GLADSTONE, G.R. SWRI
CRAVENS, T.E. University of Michigan
WAITE, JR., J.H. University of Michigan
BRANDUARDI-RAYMONT, G. UCL, MSSL
OSTGAARD, N. University of Bergen
DENNERL, K. MPI fur Extraterrestrische
LISSE, C. University of Maryland
ET AL.

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ELSNER, R.F. XD12
WAITE, JR., J.H. University of Michigan
GLADSTONE, G.R. SWRI
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GLADSTONE, G.R. SWRI
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ELSNER, R.F. XD12
OSTGAARD, N. University of Bergen
WAITE, JR., J.H. University of Michigan
CRAVENS, T.E. University of Kansas
CHANG, S-W. UAH/SD50
MAJEED, T. University of Michigan/American University
METZGER, A.E. JPL

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BLAKESLEE, R.J. XD11
MACH, D.M. XD11
BATEMAN, M.G. XD11
BAILEY, J. XD11

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BLEVINS, J.A. XD22
DRAKE, G.W. XD22
OSBORNE, R.J. ERC, Inc.

Development of Ionic Liquid Monopropellants for In-Space Propulsion—Abstract Only. For presentation at the 41st AIAA/ASME/SAE/ ASEE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

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BODIFORD, M.P. SD40
BURKS, K.H. SD40
FISKE, M.R. Morgan Research Corp.
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In Situ Resource-Based Lunar and Martian Habitat Structures Development at NASA MSFC—Abstract Only. For presentation at the 1st Space Exploration Conference: Continuing the Voyage of Discovery, Orlando, FL, January 30–February 2, 2005.

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MCGREGOR, W. Morgan Research Corp.
POPE, R.D. Qualis Corp.

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BROWN, G.N. SY10
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BONAMENTE, M. UAH
JOY, M. XD12
LAROQUE, S. University of Chicago
CARLSTROM, J. University of Chicago
REESE, E. University of California, Davis

Cosmological Constraints from Sunyaev-Zeldovich Effect and X-Ray Data for 37 Galaxy Clusters—Abstract Only. For presentation at The Future of Cosmology With Clusters of Galaxies, Kona, HI, February 26–March 2, 2005.

BONAMENTE, M. UAH
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MITTAZ, P.D. UAH
KAASTRA, J.S. SRON Ulrecht
NEVALAINEN, J. Harvard-Smithsonian
Thermal and Non-Thermal Nature of the Soft Excess Emission from Sersic 150–03 Observed with XMM-Newton—Abstract Only. For publication in the Astrophysical Journal.

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SORENSEN, K.F. NP23
JANSEN, R. University of Toledo
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Free Reboost Electrodynamic Tether on the International Space Station—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ ASEE Joint Propulsion Conference, Tucson, AZ. July 10–13, 2005.

BRADSHAW, R.C. University of Massachusetts
SCHMIDT, D.P. University of Massachusetts
ROGERS, J.R. XD42
KELTON, K.F. Washington University
HYERS, R.W. University of Massachusetts
Machine Vision for High Precision Volume Measurement Applied to Levitated Containerless Materials Processing—Abstract Only. For publication in the Review of Scientific Instruments.

BRAGG-SITTON, S.M. ER11
Heat Pipe Reactor Dynamic Response Tests: SAFE–100a Reactor Core Prototype—Final Paper. For presentation in the Proceedings of the Space Nuclear Conference 2005, San Diego, CA, June 5–9, 2005.

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Dynamic Response Testing in an Electrically Heated Reactor Test Facility—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

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MORTON, T.J. University of New Mexico
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NELSON, K.W. TD51
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DECKER, R. EV13
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GILLIES, D.C. XD41
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A Comparison of Experimental EPMA Data and Monte Carlo Simulation—Abstract Only. For presentation at the Workshop on Modeling Electron Transport for Application in Electron and X-Ray Analysis and Metrology, Gaithersburg, MD, November 8–10, 2004.

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Quantitative Electron Probe Microanalysis: State of the Art—Abstract Only. For presentation at the Goldschmidt Conference, Moscow, ID, May 20–25, 2005.

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Characterization Strategies and Requirements for Lunar Regolith Simulant Materials—Abstract Only. For presentation at the Workshop on Granular Materials, Orlando, FL, February 1–3, 2005.

CARRASQUILLO, R.L. EV50
ISS ECLSS Technology Evolution for Exploration—Abstract Only. For presentation at the 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10–13, 2005.

CARRASQUILLO, R.L. EV50

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CARRINGTON, C.K. SP20
DAY, G. Boeing Phantom Works

A High-Energy Technology Demonstration Platform: The First Step in a Stepping Stones Approach to Energy-Rich Space Infrastructures—Presentation. For presentation at the 2004 JUSTSAP Workshop, Kona, HI, November 11–14, 2004.

CARTER, D.L. EV50
TABB, D. EV50
TATARA, J.D. Qualis Corp.
MASON, P.K. Hamilton Sundstrand

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CASE, J.T. University of Missouri-Rolla
ROBBINS, J. University of Missouri-Rolla
KHARKOVSKY, S. University of Missouri-Rolla
HEPBURN, F.L. EM20
ZOUGHI, R. University of Missouri-Rolla

Microwave and Millimeter Wave Imaging of the Space Shuttle External Fuel Tank Spray on Foam Insulation (SOFI) Using Synthetic Aperture Focusing Techniques (SAFT)—Abstract Only. For presentation at The 32nd Annual Review of Progress in Quantitative Nondestructive Evaluation Conference, Brunswick, ME, July 31–August 5, 2005, and for publication in the American Institute of Physics.

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ROBBINS, J. University of Missouri-Rolla
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HEPBURN, F.L. EM20
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Microwave and Millimeter Wave Imaging of the Space Shuttle External Fuel Tank Spray on Foam Insulation (SOFI) Using Synthetic Aperture Focusing Techniques (SAFT)—Final Paper. For presentation at the 32 Annual Review of the Progress in Quantitative Nondestructive Evaluation Conference, Brunswick, ME, July 31–August 5, 2005, and for publication in the American Institute of Physics (AIP) Journal.

CECIL, D. UAH
GOODMAN, S.J. XD11
BOCCIPPIO, D.J. XP11
ZIPSER, E.J. University of Utah
NESBITT, S.W. Colorado State University

Three Years of TRMM Precipitation Features Part 1: Radar, Radiometric and Lightning Characteristics—Final Paper. For publication in the Monthly Weather Review.

CHANDLER, F. The Boeing Company
GRAYSON, G. The Boeing Company
MAZURKIVICH, P. NP60

The Importance of Detailed Component Simulations in the Feedsystem Development for a Two-Stage-to-Orbit Reusable Launch Vehicle—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

CHANDLER, M.O. XD12
AVANOV, L.A. XD12

Estimation of the Variation of the Magnetic Field Across the Magnetopause: Model/Data Synthesis—Abstract Only. For presentation at the American Geophysical Union 2005 Fall Meeting, San Francisco, CA, December 5–9, 2005, and in the Conference Proceedings of the EOS 2005 Annual American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005.

CHANG, H. XD42/UAH
SMITH, D.D. XD42/Univeristy of Mexico

Gain-Assisted Superluminal Propagation in Coupled Optical Resonators—Abstract Only. For publication in the Optic Letters.

CHANG, H. XD42/UAH
SMITH, D.D. XD42/University of New Mexico
FULLER, K.A. National Space Science and Technology Center
DIMMOCK, J.O. UAH
GREGORY, D.A. UAH
FRAZIER, D.O. XD42

Slow and Fast Light in Coupled Microresonators—Abstract Only. For presentation at The International Society for Optical Engineering Optics and Photonics Conference, San Jose, CA, January 22–27, 2005.

CHANG, J. Purple Mountain Laboratory
SCHMIDT, W.K.H. Max-Planck-Institut für Aeronomie
ADAMS, J.H. XD12
AHN, H.S. University of Maryland
BASHINDZHAGYAN, G.L. Moscow State University
BATKOV, K.E. Moscow State University
CHRISTL, M. Louisiana State University
FAZELY, A.F. Southern University
GANEL, O. University of Maryland
ET AL.

The Electron Spectrum Above 20 GeV Measured by ATIC–2—Abstract Only. For presentation at the 29th International Cosmic Ray conference/Tata Institute of Fundamental Research, Pune, India, August 3–10, 2005.

CHAVERS, D.G. XD22
BENGTSON, R. University of Texas at Austin
BREIZMAN, B. University of Texas at Austin
CHANG-DIAZ, F. XD22
JONES, J. XD22
DOBSON, C. XD22
Status of Magnetic Nozzle and Plasma Detachment Experiment—Abstract Only. For presentation at the 53rd JPM/2nd LPS/SP Joint Meeting (JANNAF), Monterey, CA, December 5–8, 2005.

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Magnetic Nozzle and Plasma Detachment Experiment—Experiment Status—Abstract Only. For presentation Space Technology and Applications International Forum, Albuquerque, NM, February 12–16, 2006.

CHEN, P-S. EM03
MITCHELL, M.L. EM03
Alloy NASA–HR–1—Final Paper. For publication in Aerospace Structural Metals, Purdue Research Foundation.

CHENG, G.C. UAB
FARMER, R.C. UAB
Numerical Simulation of Spray Combustion Flows with a Linearized Real-Fluid Model—Final Paper. For presentation at the Multiphase Flow 2005 Conference, Portland, ME, October 31–November 2, 2005.

CHEW, G. SAIC
PELACCIO, D.G. SAIC
CHIROUX, R. SAIC
PERVAN, S. SAIC
RAUWOLF, G.A. SAIC
WHITE, C. ER11
Preliminary Assessment of Thrust Augmentation of NEP Based Missions—Extended Abstract. For presentation at the American Institute of Aeronautics and Astronautics—Space 2005 Space Conference, Long Beach, CA, August 30–September 1, 2005.

CHOU, S-H. XD11
ZAVODSKY, B. XD11
LAPENTA, W.M. XD11
JEDLOVEC, G.J. XD11
Assimilation of Atmospheric Infrared Sounder (AIRS) Data in a Regional Model—Abstract Only. For presentation at the 14th Conference on Satellite Meteorology and Oceanography, Atlanta, GA, January 29–February 2, 2006.

CHOUDHARY, D.P. SD50
Large Solar Flares and Sheared Magnetic Field Configuration—Final Paper. For publication in Eos—An AGU News Journal.

CHRISTIAN, H.J. XD11
Global Lightning Activity—Abstract Only. For presentation at the Cosmosphere and Space Center, Wichita, KA, April 14–15, 2005, and at The Mexican Meteorological Conference, Cancun, Mexico, February 28–March 4, 2005.

CHRISTIAN, H.J. XD11
Global Lightning Observations—Abstract Only. For presentation at the 7th Plinius Conference on Mediterranean Storms, Rithymnon, Crete, October 1–9, 2005.

CHUNG, Y.T. The Boeing Company
LO, W. The Boeing Company
FOWLER, S.B. XP01
TOWNER, R. Jacobs Sverdrup
Evaluation of Thermal Protection Tile Transmissibility for Ground Vibration Test—Final Paper. For presentation at the 23rd International Modal Analysis Conference, Orlando, FL, January 31–February 3, 2005.

CLINTON, R.G. XD40
SZOFRAN, F.R. XD40
BASSLER, J.A. XD40
SCHLAGHECK, R.A. XD40
COOK, M.B. XD40
Research Opportunities Supporting the Vision for Space Exploration From the Transformation of the Former Microgravity Materials Science Program—Abstract Only. For presentation at the American Institute of Aeronautics and Astronautics Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

COFFEY, V.N. XD12
CHANDLER, M.O. XD12
SINGH, N. UAH
AVANOV, L.A. XD12
End-to-End Study of the Transfer of Energy From Magnetosheath Ion Precipitation to the Cusp—Abstract Only. For publication in the Journal of Atmospheric and Solar-Terrestrial Physics.

COFFEY, V.N. XD12
SINGH, N. UAH
MILLER, J. UAH
CHANDLER, M.O. XD12
Modeled and Observed Relationship Between Ion Energization and the Broadband ELF Spectrum—Abstract Only. For presentation at and conference proceedings of

the American Geophysical Union 2005 Fall Meeting, San Francisco, CA, December 5–9, 2005.

COLE, J.W. XD20
Metallic Hydrogen and Nontube Magnets—Abstract Only. For presentation at the Army's National Ground Intelligence Center Workshop (MAD Scientist 2004), Charlottesville, VA, November 3–5, 2004.

COLE, J.W. XD20
Beamed Energy and Other Concepts for Aerospace Propulsion Applications—Abstract Only. For presentation at the Advanced Power and Energy Conference, Quantico, VA, August 3–5, 2005.

COMARAZAMY, D.E. University of Puerto Rico
GONZALEZ, J.E. Santa Clara University
LUVALL, J.C. XD11
RICKMAN, D.L. XD11
A Validation Study of the Urban Heat Island in the Tropical Coastal City of San Juan, Puerto Rico—Abstract Only. For presentation at the Sixth Symposium on the Urban Environment, Atlanta, GA, January 29–February 02, 2006.

COOK, S. NP01
TYSON, R. NP01
Next Generation Launch Technology Program Lessons Learned—Final Paper. For presentation at the 1st Space Exploration Conference: Continuing the Voyage of Discovery, Orlando, FL, January 30–February 1, 2005.

COOKE, W.J. EV13
MOSER, D. Morgan Research Corp.
An Evaluation of the Accuracy of Meteor Shower Forecasts—Abstract Only. For presentation at the Fourth European Conference on Space Debris, Darnstadt, Germany, April 18–20, 2005.

COOKE, W.J. EV13
SWIFT, W.R. Raytheon/EV13
SUGGS, R.M. EV13
Determining Bolide Luminous Efficiency Through Optical Observations of the Genesis Atmospheric Entry—Abstract Only. For presentation at the 2005 Division of Planetary Sciences Meeting American Astronomical Society, Cambridge, UK, September 4–9, 2005.

COOKE, W.J. EV13
MCNAMARA, H.A. EV13
A Search for Meteor Shower Signatures in the LDEF IDE Data—Abstract Only. For presentation at the Dust in Planetary Systems/NASA/ ESA/Lunar and Planetary Institute, Lihue, HI, September 26–30, 2005.

COSMO, M.L. Harvard-Smithsonian Center for Astrophysics
LORENZINI, E.C. Harvard-Smithsonian Center for Astrophysics
GRAMER, D.J. Orbital Technologies Corp.
HOFFMAN, J.H. The University of Texas
MAZZOLENI, A.P. North Carolina State University
TESSX: A Mission for Space Exploration with Tethers—Final Paper. For presentation at the 41st AIAA/ ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

COX, M.C. Vanderbilt University
ANILKUMAR, A.V. Vanderbilt University
GRUGEL, R.N. XD41
HOFMEISTER, W.H. XD41
Wormhole Growth and Evolution During Directional Solidification in Small Cylindrical Channels—Abstract Only. For presentation at the 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 9–12, 2006.

CRAVEN, P.O. XD12
LIEMOHN, M. XD12
CHANDLER, M.O. XD12
MOORE, T. XD12
A Study of the Low Energy Magnetospheric Lobal Wind and Possible Controlling Factors—Abstract Only. For presentation at and publication in the Proceedings of the American Geophysical Union Spring Meeting, New Orleans, LA, May 23–27, 2005.

CRAVENS, T.E. University of Kansas
CLARK, J. University of Kansas
BHARDWAJ, A. NRC
ELSNER, R.F. XD12
WAITE, JR., J.H. University of Michigan
ACTON, L.W. Montana State University
MAURELLIS, A.N. Space Research Organization Netherlands
GLADSTONE, G.R. SWRI
Scattering of Solar X-Rays by Jupiter and Saturn—Abstract Only. For presentation at and publication in the proceedings of the 2005 Joint Assembly, New Orleans, LA, May 23–27, 2005.

CROSSON, W.L. XD11
ESTES, M.E. XD11
KAHN, M. XD11
LAPENTA, W.M. XD11
QUATTROCHI, D.A. XD11
Mesoscale Modeling of Atlanta, GA Utilizing a New High-Resolution Landcover Data Set—Abstract Only. For

presentation at the 86th Annual AMS Meeting, Atlanta, GA, January 29–February 02, 2006.

CROSSON, W.L. XD11
LIMAYE, A. XD11
LAYMON, C.A. ISO4
Parameter Sensitivity of Soil Moisture Retrievals from Airborne C- and X-band Radiometer Measurements in SMEX02—Abstract Only. For publication in the Transactions of Geoscience and Remote Sensing/ IEEE Journal.

CRUZEN, C.A. EO03
DYER, S.V. EO03
GIBBS III, R.E. The Boeing Company
CECH, J.G. Teledyne Brown Engineering
Expanding Remote Science Operations Capabilities Onboard the International Space Station—Final Paper. For presentation at the 2005 IEEE Aerospace Conference, Big Sky, MT, March 5–12, 2005.

CURRERI, P.A. XD40
Space Resource Utilization and Extending Human Presence Across the Solar System—Abstract Only. For presentation at the 1st Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

CURRERI, P.A. XD40
In Situ Resources in Space—Abstract Only. For presentation at the National Space and Missile Materials Symposium, Summerlin, NV, June 27–July 1, 2005.

DARDEN, C. National Weather Service Forecast Office
GATLIN, P. National Weather Service Forecast Office
BURKS, J. National Weather Service Forecast Office
GOODMAN, S.J. XD11
BUECHLER, D. The Global Hydrology and Climate Center
HALL, J. The Global Hydrology and Climate Center
Total Lightning in the Warning Decision Making Process—Two Years of Case Studies—Abstract Only. For presentation at the 86th Annual AMS Meeting, Second Conference on Meteorological Applications of Lightning Data, Atlanta, GA, January 29–February 2, 2006.

DARROUZET, F. Belgian Institute for Space Aeronomy
DE KEYSER, J. Belgian Institute for Space Aeronomy
DECREAU, P. Laboratoire de Physique et Chimie de IEvironnement
GALLAGHER, D.L. XD12
PIERRARD, V. Belgian Institute for Space Aeronomy
LEMAIRE, J. Belgian Institute for Space Aeronomy
DANDOURAS, I. Centre d'Etude Spatiale des Rayonnements
MATSUI, H. Space Science Center
DUNLOP, M. Rutherford Appleton Laboratory
ANDRE, M. Swedish Institute of Space Physics
Analysis of Plasmaspheric Plumes: CLUSTER and IMAGE Observations and Numerical Simulations—Abstract Only. For presentation at and publication in proceedings of the Session C5 of the General Congress of the French Physical Society (SFP) and Belgian Physical Society (BPS), Lille, France, August 29–September 2, 2005.

DAVIS, J.M. XD12
WEST, E.A. XD12
MOORE, R.L. XD12
GARY, G.A. XD12
KOBAYASHI, K. XD12
OBERRIGHT, J.E. GSFC
EVANS, D.C. GSFC
WOOD, H.J. GSFC
SABA, J. LMSAL, GSFC
ALEXANDER, D. Rice University
MTRAP: The Magnetic Region Probe—Abstract Only—Final Paper. For presentation at and Proceedings of the SPIE Optics and Photonics, San Diego, CA, July 31–August 4, 2005.

DAVIS, J.M. XD12
WEST. E.A. XD12
MOORE, R.L. XD12
GARY, G.A. XD12
KOBAYASHI, K. XD12
OBERRIGHT, J.E. GSFC
EVANS, D.C. GSFC
SABA, J. LMSAL, GSFC
ALEXANDER, D. Rice University
MTRAP: The Magnetic Transition Region Probe—Abstract Only. For presentation at the Solar and Space Physics and the Vision for Space Exploration NASA GSFC, Charlottesville, VA, October 16–20, 2005.

DAVIS, S.E. EM10
HERALD, S.D. ICRC Aerospace Services
STOLZFUS, J.M. NASA White Sands Test Facility
ENGEL, C.D. Qualis Corp.
BOHLEN, J.W. Northrop Grumman Integrated Systems
PALM, T. Northrop Grumman Integrated Systems
ROBINSON, J.J. The Boeing Company Phantom Works
Potential of Organic Matrix Composites for Liquid Oxygen Tanks—Abstract Only. For presentation at the 2005 National Space and Missile Materials Symposium, Summerlin, NV, June 27–July 1, 2005.

DECKER, R. EV13
LEACH, R. Morgan Research Corp.
Assessment of Atmospheric Winds Aloft During NASA Space Shuttle Program Day-of-Launch Operations—Final Paper. For presentation at the 43rd AIAA Aerospace Sciences Meeting, Reno, NV, January 10–13, 2005.

DECKER, R. EV13
PRICKETT, T. EV13
ROBERTS, B. EV13
Defining and Applying Atmospheric Environments for Space Shuttle External Tank Ice Formation Chamber Testing—Abstract Only. For presentation at the 44th AIAA Aerospace Sciences Meeting, Reno, NV, January 9–12, 2006.

DELAY, T. EM40
Composite Tank Technologies Development—Presentation. For presentation at the SAMPE Conference, Long Beach, CA, May 2–6, 2005.

DICKERSON, T. XD21
MYRABO, L.N. Rensselaer Polytechnic Institute
Mission Analysis for LEO Microwave Power-Beaming Station in Orbital Launch of Microwave Lightcraft—Abstract Only. For presentation at the 4th International Symposium on Beamed Energy Propulsion (ISBEP4), Nara, Japan, November 15–18, 2005.

DING, J. EM30
Licensing and Development Opportunities for Solid State Welding at Marshall Space Flight Center—Abstract Only. For presentation at the National Design and Engineering Show, Chicago, IL, March 7-–10, 2005.

DISCHINGER, JR., H.C. EV11
MULLINS, J.B. EV11
A Robotics Systems Design Need: A Design Standard to Provide the Systems Focus that is Required for Long-Term Exploration Efforts—Final Paper. For presentation at the International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

DISCHINGER, P. IS05
CORE IT Services—Presentation. For presentation at the NASA Small Business Conference, New York, NY, August 31–September 2, 2005.

DISCHINGER, P. IS05
Common Badging and Access Control System (CBACS)—Abstract and Conference Presentation. For presentation at the 7th Annual Redstone Arsenal and NASA Marshall Information Technology (IT) Security and Assurance Conference and Exposition, Huntsville, AL, October 4–5, 2005.

DOMINIAK, P. XD42
CISZAK, E.M. XD42
Conservation of Fold and Topology of Functional Elements in the Thiamin Pyrophosphate Enzymes—Abstract Only. For publication in the BMC Journal of Structural Biology.

DORNEY, D.J. TD64
SONDAK, D.L. Boston University
MARCU, B. The Boeing Company
Application of a Real-Time Turbomachinery Analysis to Rocket Turbopump Geometrics—Final Paper. For presentation at the AIAA 43rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10–13, 2005.

DORNEY, S.M. ER43
HAIMES, B. MIT
Automated Extraction of Secondary Flow Features—Final Paper. For presentation at the 43rd Aerospace Sciences Meeting and Exhibit Conference, Reno, NV, January 10–13, 2005.

DOYLE, M. SAIC
O'NEIL, D.A. SP20
CHRISTENSEN, C.B. The Tauri Group
Advanced Technology Lifecycle Analysis System (ATLAS) Technology Tool Box (TTB)—Presentation. For presentation at the Space Technology and Applications International Forum, Albuquerque, NM, February 13–17, 2005.

DRAKE, G.W. XD22
KAPLAN, G. ERC, INC./AFRL/PRSP
HALL, L. AFRL/PRSP
HAWKINGS, T. AFRL/PRSP
LARUE, J. AFRL/PRSP
A New Family of Ionic Liquids 1-Amino-3-Alkyl-1,2,3-Triazolium Nitrates—Abstract Only. For publication in the Journal of Chemical Crystallography.

DUARTE, L.A. EV10
Innovative Safety Panel Approach for the Return-to-Flight of the Space Shuttle Vehicle—Abstract Only. For presentation at the lst International Association for the Advancement of Space Safety (IAASS) Conference, Nice, France, October 25–27, 2005.

ECCLES, W. Vanderbilt University
KASZYNSKI, P. Vanderbilt University
STULGIES, B. Vanderbilt University
GOSTOWSKI, R. XD22
BLEVINS, J.A. XD22
Strained Hydrocarbons at Potential Hypergolic Fuels—Abstract and Presentation. For presentation at the

American Chemical Society Spring 2005 National Meeting, San Diego, CA, March 13–17, 2005.

ECCLES, W. XD20

Chapter 1: The Synthesis and Testing of Highly Strained Cyclic and Polycyclic Molecules as Hypergolic Fuels—Abstract Only. Thesis, Wendy Eccles, Vanderbilt University, Nashville, TN, April 1, 2005.

ELAM, S. ER32
HOLMES, R. ER32
HICKMAN, R. ER32
MCKECHNIE, T. ER32
THOM, G. ER32

VPS Process for Copper Components in Thrust Chamber Assemblies—Abstract Only. For presentation at the Copper for the 21st Century Symposium at the Materials Science and Technology Conference 2005, Pittsburg, PA, September 25–28, 2005.

ELAM, S. ER32
HOLMES, R. ER32
REYNOLDS, D. ER32
MCKECHNIE, T. ER32
THOM, G. ER32

VPS Functional Gradient Coatings for Injector Faceplates—Abstract Only. For presentation at the 53rd JANNAF Propulsion Meeting/2nd Liquid Propulsion Subcommittee/1st Spacecraft Propulsion Joint Meeting, Monterey, CA, December 5–8, 2005.

ELSNER, R.F. XD12
BHARDWAJ, A. XD12/NRC
GLADSTONE, G.R. SWRI
WAITE, JR., J.H. University of Michigan
CRAVENS, T.E. University of Kansas
FORD, P.G. Center for Space Research
BRANDUARDI-RAYMONT, G. UCL, MSSL
RAMSAY, G. UCL, MSSL
RAMSEY, B.O. XD12

Chandra X-Ray Observatory Observations of the Jovian System—Abstract Only. For presentation at the Six Years of Science With Chandra Symposium Chandra X-Ray Center, Cambridge, MA, November 2–4, 2005.

ELSNER, R.F. XD12
BHARDWAJ, A. XD12
GLADSTONE, G.R. SWRI
WAITE, JR., J.H. University of Michigan
CRAVENS, T.E. University of Kansas
FORD, P.G. Center for Space Research
BRANDUARDI-RAYMONT, G. UCL, MSSL

Chandra X-Ray Observatory Observations of the Jovian System—Abstract Only. For presentation at and publication in the proceedings of The 37th Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, Cambridge, England, September 4–9, 2005.

ELSNER, R.F. XD12
RAMSEY, B.D. XD12
SWARTZ, D.A. XD12
REHAK, P. XD12
WAITE, JR., J.H. University of Michigan
COOPER, J.F. XD12
JOHNSON, R.E. XD12

X-Ray Probes of Jupiter's Auroral Zones, Galilean Moons, and the Io Plasma Torus—Abstract Only. For presentation at and publication in the proceedings of the SPIE Optics and Photonics 2005, San Diego, CA, July 31–August 4, 2005.

EMRICH, W. XD21

Microinstabilities in the Gasdynamic Mirror Propulsion System—Abstract Only. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 11–13, 2005.

EMRICH, W. XD21

A Molten Salt Am242m Production Reactor for Space Applications—Abstract Only. For presentation at the 2005 ANS Annual Meeting, San Diego, CA, June 5–9, 2005.

EMRICH, W. XD21

Microinstabilities in the Gasdynamic Mirror Propulsion System—Abstract Only. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

EMRICH, W. XD21

Nonnuclear NTR Environmental Simulator—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16 2006.

ENG, R. XD33
CARPENTER, J. XD33
HAIGHT, H.J. XD33
HOGUE, W.D. XD33
KEGLEY, J.R. XD33
STAHL, H.P. XD33
WRIGHT, E.R. XD33
KANE, D. Trex Advanced Materials
HADAWAY, J. UAH

Cryogenic Performance of a Lightweight Silicon Carbide Mirror—Abstract Only. For presentation at and publication in the proceedings of the SPIE Optics and Photonics Annual Meeting: Optical Materials and Structure Technology, San Diego, CA, July 31–August 4, 2005.

ENG, R. XD33
CARPENTER, J. XD33
HAIGHT, H.J. XD33
HOGUE, W.D. XD33
KEGLEY, T. XD33
KESTER, T.J. XD32
STAHL, H.P. XD30
WRIGHT, E.R. XD33
Cryogenic Performance of Trex SiC Mirror—Abstract Only. For presentation at the Mirror Technology Days, Huntsville, AL, August 16–18, 2005.

ENGBERG, R.C. ET23
LASSITER, J. ET23
Piezoelectric Sensor Evaluation for Structural Health Monitoring of Cryogenic Structures—Presentation. For presentation at the Alabama A&M Workshop, Normal, AL, June 30, 2005.

ENGBERG, R.C. ET23
Structural Health Monitoring of Composite Plates Under Ambient and Cryogenic Conditions—Final Paper. For presentation at the American Institute of Aeronautics and Astronautics Structures, Structural Dynamics and Materials Conference, Austin, TX, April 18–21, 2005.

ENGEL, C.D. Qualis Corp.
HERALD, S.D. ICRC Aerospace Services
DAVIS, S.E. EM10
Heated Promoted Combustion—Initial Test Results—Presentation. For presentation at the National Space and Missiles Materials Symposium, Summerlin, NV, June 27–July 1, 2005.

ENGEL, C.D. Qualis Corp.
HERALD, S.D. ICRC Aerospace Services
DAVIS, S.E. EM10
Mechanical Impact Testing—A Statistical Measurement—Abstract Only. For presentation at the ASTM International 11th International Symposium on Flammability and Sensitivity of Materials in Oxygen-Enriched Atmospheres, Washington, DC, October 18–20, 2006.

ENGEL, C.D. Qualis Corp.
HERALD, S.D. ICRC Aerospace Services
DAVIS, S.E. EM10
Promoted Metals Combustion at Ambient and Elevated Temperatures—Final Paper. For presentation at the ASTM International 11th International Symposium on Flammability and Sensitivity of Materials in Oxygen-Enriched Atmospheres, Washington, DC, October 18–20, 2006.

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HERALD, S.D. ICRC Aerospace Services
DAVIS, S.E. EM10
Mechanical Impact Testing—A Statistical Measurement—Final Paper. For presentation at the ASTM International 11th International Symposium on Flammability and Sensitivity of Materials in Oxygen-Enriched Atmospheres, Washington, DC, October 18–20, 2006.

ESKRIDGE, R.H. XD22
MARTIN, A.K. XD22
LEE, M.H. XD22
FIMOGNARI III, P.J. UAH
Design and Construction of the PT–1 Prototype Plasmoid Thruster—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

ESKRIDGE, R.H. XD22
MARTIN, A.K. XD20
LEE, M.H. XD20
FIMOGNARI III, P.J. UAH
Design and Construction of the PT–1 Prototype Plasmoid Thruster—Final Paper. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

EVANS, S.W. EM50
STELLINGWERF, R.F. Stellingwerf Consulting
STALLWORTH, R. EV32
Comparison Between SPHC Hydrocode Results and Christiansen's Whipple Shield Ballistic Limit Relations—Abstract Only. For presentation at the Hypervelocity Impact Symposium 2005, Lake Tahoe, CA, October 10–14, 2005.

EVANS, S.W. EM50
WILLIAMSEN, J.E. Institute for Defense Analyses
Orbital Debris Shape and Orientation Effects on Ballistic Limits—Final Paper. For presentation at the 46th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Austin, TX, April 18–21, 2005.

FARR, R.A. EV11
SANDERS, T.M. ET11
RS–88 Pad Abort Demonstrator (PAD) Thrust Chamber Assembly (TCA) Testing—Final Paper. For presentation 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AR, July 11–15, 2005.

FARR, R.A. EV11
CHRISTENSEN, D.L. Retired
KEITH, E.L. Retired
The Business Case for Spiral Development in Heavy Launch Vehicle Systems—Final Paper. For presentation

at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 11–15, 2005.

FARR, R.A. EV11
WILET, J.T. EV23
VITARIUS, P. Freel Innovations
Comparison of the Effects of Using Tygon Tubing in Rocket Propulsion Ground Test Pressure Transducer Measurements—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 11–15, 2005.

FENDER, R.D. University of Southampton
MUXLOW, T.W.B. University of Manchester
GARRETT, M. Joint Institute for VLBI in Europe
KOUVELIOTOU, C. XD12
GAENSLER, B.M. Harvard-Smithsonian Center for Astrophysics
GARRINGTON, S.T. University of Manchester
PARAGI, Z. Joint Institute for VLBI in Europe
TUDOSE, V. University of Amsterdam/Astronomical Institute of the Romanian Academy
MILLER-JONES, J.C.A. University of Amsterdam
ET AL.
Structure in the Radio Counterpart to SGR 1806–20—Abstract Only. For publication in the Monthly Notices for the Royal Astronomical Society.

FERGUSON, C.K. EI51
ENGLISH, J.M. UAH
NORDIN, G.P. UAH
ASHLEY, P.R. U.S. Army AMRDEC
ABUSHAGUR, M.A.G. RIT
A MEMS Micro-Translation Stage with Long Linear Translation—Final Paper. For presentation at the NANO and Microsystems Technology and Metrologies Conference, Huntsville, AL, November 17–18, 2004.

FERGUSON, D.C. NP23
VAYNER, B.V. NP23
GALOFARO, J.T. NASA GRC
HILLARD, G.B. NASA GRC
Arching in LEO—Does the Whole Array Discharge?—Abstract Only. For presentation at the 9th Spacecraft Charging Technology Conference, Tsukuba, Japan, April 4–8, 2005.

FERGUSON, D.C. NP23
VAYNER, B.V. Ohio Aerospace Institute
GALOFARO, J.T. NASA GRC
HILLARD, G.B. NASA GRC
VAUGHN, J. NP23
SCHNEIDER, T. NP23
NASA GRC and MSFC Space-Plasma Arc Testing Procedures—Final Paper. For presentation at the 9th Spacecraft Charging Technology Conference, Tsukuba, Japan, April 4–8, 2005.

FERGUSON, D.C. NP23
VAYNER, B.V. Ohio Aerospace Institute
GALOFARO, J.T. NASA GRC
HILLARD, G.B. NASA GRC
Arcing in LEO—Does the Whole Array Discharge?—Final Paper. For presentation at the 9th Spacecraft Charging Technology Conference, Tsukuba, Japan, April 4–8, 2005.

FERNANDEZ, K.R. XD41
ROBOSIM Modeling of NASA and DoD Robotic Concepts—Abstract Only. For presentation at the IEEE Southeastern Software Engineering Conference, Huntsville, AL, March 28–31, 2005.

FERNANDEZ, K.R. XD41
Transition Report for Dr. Ken Fernandez, NASA Marshall Space Flight Center—Abstract Only. For presentation at the NASA Administrator's Fellowship Program 2005 Symposium, San Jose, CA, July 25, 2005.

FINCKENOR, J. EV32
CORDER, J.G. EV32/Jacobs Sverdrup
MEEHAN, J. EV32
OWENS, J. EV32/Qualis Corp.
TIDWELL, P. EV32
Managed Development Environment Successes for MSFC's VIPA Team—Abstract Only. For presentation at The Collaborative Engineering and IT Environments Workshop 2005, Huntsville, AL, March 1–3, 2005.

FINCKENOR, J. EV32
CORDER, J.G. EV32/Jacobs Sverdrup
OWENS, J. EV32/Qualis Corp.
MEEHAN, J. EV32/Qualis Corp.
TIDELL II, P.H. Allied Aerospace
Managed Development Environment Successes for MSFC's VIPA Team—Final Paper. For presentation at The Collaborative Engineering and IT Environments Workshop 2005, Huntsville, AL, March 1–3, 2005.

FINCKENOR, M.M. EM50
Investigations of Space Environment Effects at Marshall Space Flight Center—Abstract Only. For presentation at the 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 9–12, 2006.

FISHMAN, G.J. XD12
GRBs—The Prompt Emission—Abstract Only. For presentation at The 3rd American Association of Variable Star Observers (AAVSO) High Energy Astrophysics Workshop, Las Cruces, NM, March 21, 2005.

FISHMAN, G.J. XD12

Space-Borne Observations of Intense Gamma-Ray Flashes Above Thunderstorms—Abstract Only. For presentation at the Union Radio-Scientifique Internationale (USRI) National Meeting, Boulder, CO, January 5–8, 2005.

FISHMAN, G.J. XD12

Don Clayton and Nuclear Gamma-Ray Astronomy—Abstract Only. For presentation at the Astronomy With Radioactivities V, Clemson, SC, September 5–9, 2005.

FISHMAN, G.J. XD12
PENDLETON, G. Dynetics Corp.

BATSE Observations of TGFs—Further Analysis and Atmospheric Propagation Studies—Abstract Only. For presentation at and Conference Proceedings of the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005.

FLACHBART, R.H. ER23
HASTINGS, L.J. ER23
HEDAYAT, A. ER23
NELSON, S.L. ER23
TUCKER, S.P. Alpha Technology Inc.

Testing of a Spray-Bar Thermodynamic Vent System in Liquid Nitrogen—Final Paper. For presentation at the Cryogenic Engineering Conference and International Cryogenic Materials Conference, Keystone, CO, August 29–September 2, 2005.

FLYNN, K. NP60
GUBERT, M. NP60

Lightweight Nonmetallic Thermal Protection Materials Technology (LNTPMT) Project—Presentation. For presentation at the ARC–JET Technology Workshop, Houston, TX, July 26–28, 2005.

FOOTE, J.P. XD21
LITCHFORD, R.J. XD21

Experimental Investigation of Magnesium Powder Combustion with CO_2 for Mars Ascent Applications—Abstract Only. For presentation at the Joint Propulsion Conference, Tucson, AZ, July 11–13, 2005.

FOOTE, J.P. XD21
LITCHFORD, R.J. XD21

Powdered Magnesium-Carbon Dioxide Combustion for Mars Propulsion—Abstract Only. For presentation at the 41st AIA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

FORD, P.G. MIT Kavli Institute for Astrophysics and Space Research
ELSNER, R.F. XD12

X-Ray Spectroscopy of Optically Bright Planets Using the Chandra Observatory—Abstract Only. For presentation at and publication in the proceedings of the 2005 Joint Assembly, New Orleans, LA, May 23–27, 2005.

FRADY, G. ER41

The Role of Structural Dynamics and Testing in the Shuttle Flowliner Crack Investigation—Final Paper. For presentation at the AIAA Structures, Structural Dynamics, and Materials Conference, Austin, TX, April 18–21, 2005.

FRAZIER, D.O. SD40
PALEY, M.S. SD40/AZ Tech
STRONG, J.D. Morgan Research Corp.

Thin Films and Inflatable Applications in Exploration Habitat Structures—Abstract Only. For presentation at the 1st Space Exploration Conference: Continuing the Voyage of Discovery, Orlando, FL, January 30–February 2, 2005.

FRENDI, A. EV33
NESMAN, T. EV33
CANABAL, F. EV33

Control of Combustion-Instabilities Through Various Passive Devices—Final Paper. For presentation at the 11th AIAA/CEAS Aeroacoustic Conference, Monterey, CA, May 23–25, 2005.

FREUNDLICH, A. University of Houston
IGNATIEV, A. University of Houston
HORTON, C. University of Houston
DUKE, M. Colorado School of Mines
CURRERI, P.A. XD40
SIBILLE, L. BAE Systems

Manufacture of Solar Cells on the Moon—Final Paper. For publication in the IEEE Journal.

GAENSLER, B.M. Harvard-Smithsonian Center for Astrophysics
KOUVELIOTOU, C. XD12
GELFAND, J.D. Harvard-Smithsonian Center for Astrophysic
TAYLOR, G.B. Stanford University/National Radio Astronomy Observatory
EICHLER, D. Ben Gurion University
WIJERS, R.A.M.J. University of Amsterdam
GRANOT, J. Stanford University
RAMIREZ-RUIZ, E. Institute for Advanced Study
LYUBARSKY, Y.E. Ben Gurion University
ET AL.

An Expanding Radio Nebula Produced by a Giant Flare from the Magnetar SGR 1806–20—Abstract Only. For publication in Nature.

GALLAGHER, D.L. XD12
ADRIAN, M.L. SD50
LIEMOHN, M. SD50
The Origin and Evolution of Deep Plasmapheric Notches—Abstract Only. For publication in The Journal of Geophysical Research.

GALLAGHER, D.L. XD12
GREEN, J.L. XD12
New Evidence for Equatorially Trapped Thermal Plasma During Early Post-Storm Recovery—Abstract Only. For presentation at the Geospace Environment Modeling (GEM) Workshop, Santa Fe, NM, June 27–29, 2005.

GALLAGHER, D.L. XD12
HORWITZ, J.L. University of Texas in Arlington
PEREZ, J.D. Auburn University
QUENBY, J.J. Blackett Laboratory
Introduction to Particle Acceleration in the Cosmos—Abstract Only. For publication in the Acceleration in Astrophysical Plasma in Geospace and Beyond.

GALLAGHER, D.L. XD12
GREEN, J.L. XD12
SMITH, Z. XD12
Field-Aligned Density Structure in the Outer Plasmasphere—Abstract Only. For presentation at the American Geophysical Union 2005 Fall Meeting, San Francisco, CA, December 5–9, 2005.

GAMAYUNOV, K.V. USRA
KHAZANOV, G.V. XD12
Strong Pitch-Angle diffusion of the Ring Current Ions Induced by Electromagnetic Ion Cyclotron Waves—Abstract Only. For presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005.

GANGOPADHYAY, A.K. Washington University
LEE, G.W. Washington University
KELTON, K.F. Washington University
ROGERS, J.R. XD42
GOLDMAN, A.I. Ames Lab/USDOE/Iowa State University
ROBINSON, D.S. Ames Lab/USDOE/Iowa State University
RATHZ, T.J. UAH
HYERS, R.W. University of Massachusetts
Beamline Electrostatic Levitator (BESL) for In Situ High-Energy X-Ray Diffraction Studies of Levitated Solids and Liquids at High Temperatures—Abstract Only. For publication in the Review of Scientific Instruments.

GARY, G. A. XD12
DEMOLIN, P. Observatoire de Paris
Reduction, Analysis, and Properties of Electric Current Systems in Solar Active Regions—Abstract Only. For presentation at the Ambiguity Workshop, Boulder, CO, September 26–27, 2005.

GARY, G.A. XD12
CIV VUV FPI Interferometer for Transition Region Magnetography—Abstract Only. For presentation at the 4th Solar Polarization Workshop, Boulder, CO, September 19–23, 2005.

GATLIN, P. XD11
GOODMAN, S.J. XD11
Total Lightning Signatures in Tennessee Valley Thunderstorms—Abstract Only. For presentation at the 86th Annual AMS Meeting, Atlanta, GA, January 29–February 02, 2006.

GATTIS, G.B. ED21
SHEPARD, W.S. University of Alabama
Smart Structures for Vibration Control on Long-Term Space Exploration and Habitation Missions—Abstract Only. For presentation at the AIAA 1st Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

GAVRIIL, F. McGill University
KASPI, V.M. McGill University
WOODS, P.M. XD12
LYUTIKOV, M. University of British Columbia
Burst and Simultaneous Short-Term Pulsed Flux Enhancement From the Magnetar Candidate IE 1048.1–5937—Abstract Only. For publication in The Astrophysical Journal.

GELFAND, J.D. Harvard-Smithsonian Center for Astrophysics
LYUBARSKY, Y.E. Department of Physics
EICHLER, D. Department of Physics
GAENSLER, B.M. Harvard-Smithsonian Center for Astrophysics
TAYLOR, G.B. Stanford University
GRANOT, J. Stanford University
NEWTON-MCGEE, K.J. University of Sydney/CSIRO
RAMIREZ-RUIZ, E. Institute for Advanced Study
KOUVELIOTOU, C. XD12
WIJERS, R.A.M.J. University of Amsterdam
A Re-Brightening of the Radio Nebula Associated with the 2004 Dec. 27 Flare from SGR 1806–20—Abstract Only. For publication in the Astrophysical Journal Letters.

GHOSH, K.K. Universities Space Research Association (USRA)
SWARTZ, D.A. SD50
TENNANT, A.F. SD50

WU, K. SD50
SARIPALLI, L. SD50
A Multi-Wavelength Study of the X-Ray Sources in NGC 5018—Abstract Only. For publication in The Astrophysical Journal.

GHOSH, K.K. USRA
FINGER, M.H. XD12
SWARTZ, D.A. XD12
TENNANT, A.F. XD12
WU, K. UCL, MSSL
On the Nature of the Ultraluminous X-Ray Transient in Cen A (NGC 5128)—Abstract Only. For publication in The Astrophysical Journal.

GILL, P.S. ED03
GARCIA, D. ED03
VAUGHAN, W.W. UAH
Engineering Lessons Learned and Systems Engineering Applications—Final Paper. For presentation at the 43rd American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting and Exhibit, Reno, NV, January 8–13, 2005.

GITTEMEIR, K.A. UAH
HAWK, C.W. UAH
FINCKENOR, M.M. EM50
WATTS, E. Qualis Corp.
Low Earth Orbit Environmental Effects on Space Tether Materials—Final Paper. For publication in American Institute of Aeronautics and Astronautics Journal of Spacecraft and Rockets.

GITTEMEIR, K.A. UAH
HAWK, C.W. UAH
FINCKENOR, M.M. EM50
WATTS, E. Qualis Corp.
Atomic Oxygen Effects on Coated Tether Materials—Final Paper. For presentation at the 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10–13, 2005.

GITTEMEIR, K.A. UAH
HAWK, C.W. UAH
FINCKENOR, M.M. EM50
WATTS, E. Qualis Corp.
Space Environmental Effects on Coated Tether Materials—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

GLUCH, R. Brigham Young University
QUATTROCHI, D.A. XD11
A Multiscale Approach to Urban Thermal Analysis—Abstract Only. For publication in Remote Sensing of Environment Journal.

GODFROY, T.J. ER11
GARBER, A. ER11
Lithium Circuit Test Section Design and Fabrication—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16,2006.

GODFROY, T.J. ER11
Lithium Circuit Test Section Design and Fabrication—Abstract Only. For presentation at the Space Technology and Applications International Forum, (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

GOGUS, E. XD12
PATEL, S.K. XD12
WILSON, C.A. XD12
WOODS, P.M. XD12
FINGER, M.H. XD12/USRA
KOUVELIOTOU, C. XD12
Discovery of X-Ray and Optical/ Infrared Counterpart of XTE J1906+09—Abstract Only. For publication in the Astrophysical Journal.

GOODMAN, S.J. XD11
DARDEN, C. National Weather Service Forecast Office
BURKS, J. National Weather Service Forecast Office
Lightning Mapping and the Nowcasting of Severe Storms—Abstract Only. For presentation at and publication in the Proceedings of the 2005 European Geophysical Union Meeting, Vienna, Austria, April 24–29, 2005.

GOODMAN, S.J. XD11
LAPENTA, W.M. XD11
LA CASSE, K. UAH
MCCAUL, E. Universities Research Association
PETERSEN, W.A. UAH
Storm Scale Forecasts and Observations of a North Alabama Hailstorm on December 10, 2004—Abstract Only. For presentation at the 86th Annual AMS Meeting, Symposium on the Challenges of Severe Convective Storms, AMS, Atlanta, GA, January 29–February 2, 2006.

GOODMAN, S.J. XD11
BLAKESLEE, R.J. XD11
BOCCIPPIO, D.J. XD11
CHRISTIAN, H.J. XD11
KOSHAK, W.J. XD11
PETERSEN, W.A. UAH
Pre-Launch Goes-R Risk Reduction Activities for the Geostationary Lightning Mapper—Abstract Only. For

presentation at and publication in the Proceedings of the WWRP International Symposium on Nowcasting and Very Short Range Forecasting, September 5–9, 2005.

GOODMAN, S.J. XD11
BLAKESLEE, R.J. XD11
BOCCIPPIO, D.J. XD11
CHRISTIAN, H.J. XD11
KOSHAK, W.J. XD11
PETERSEN, W.A. UAH

GOES-R Lightning Mapper (GLM) Research and Applications Risk Reduction—Abstract Only. For presentation at the 86th Annual AMS Meeting, Second Symposium: Toward a Global Earth Observation System of Systems—Future National Operational Environmental Satellite System, Atlanta, GA, January 29–February 2, 2006.

GORTI, S. SD46
FORSYTHE, E.L. SD46/BAE Systems
PUSEY, M.L. SD46

Kinetic Roughening and Energetics of Tetragonal Lysozyme Crystal Growth: A Preliminary Atomic Force Microscopy Investigation—Abstract Only. For publication in ACTA Crystallographica D.

GRADL, P.R. ER32
STEPHENS, W. MP21

Space Shuttle Main Engine Debris Testing Methodology and Impact Tolerances—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

GRANOT, J. KIPAC, Stanford University
RAMIREZ-RUIZ, E. Institute for Advanced Study
TAYLOR, G.B. KIPAC, Stanford University/ National Radio Astronomy Observatory
EICHLER, D. Ben Gurion University
LYUBARSKY, Y.E. Ben Gurion University
WIJERS, R.A.M.J. University of Amsterdam
GAENSLER, B.M. Harvard-Smithsonian Center for Astrophysics
GELFAND, J.D. Harvard-Smithsonian Center for Astrophysics
KOUVELIOTOU, C. XD12

Diagnosing the Outflow from the SGR–1806–20 Giant Flare With Radio Observations—Abstract Only. For publication in The Astophysical Journal.

GRANT, J. XD31

Distributed Sensing of Composite Over-Wrapped Pressure Vessel Using Fiber-Bragg Gratings at Ambient and Cryogenic—Abstract Only. For presentation at the SPIE Smart Materials, Nano- and Micro-Smart Systems 2004, Sydney, Australia, December 12–15, 2004.

GRANT, J. XD31

Distributed Sensing of Composite Over-Wrapped Pressure Vessel Using Fiber-Bragg Gratings at Ambient and Cryogenic Temperatures—Abstract Only. For presentation at the 12th SPIE Annual International Symposium: Smart Structures and Materials, San Diego, CA, March 6–10, 2005.

GRANT, J. XD31

Distributed Sensing of Composite Over-Wrapped Pressure Vessels Using Fiber-Bragg Gratings—Abstract Only. For presentation at the National Space and Missile Materials Symposium, Las Vegas, NV, June 27–July 1, 2005.

GRANT, J. XD31

Optical Sensing Using Fiber Bragg Gratings for Monitoring Structural Damage in Composite Over-Wrapped Vessels—Abstract Only. For presentation at and publication in the Proceedings of the Optics and Photonics SPIE Conference, San Diego, CA, July 31–August 4, 2005.

GREENWOOD, T. MP31
TWICHELL, W. Lockheed Martin
FERRARI, D. Lockheed Martin
KUCK, F. Boeing-Rocketdyne

Shuttle Derived In-Line Heavy Lift Vehicle. For presentation at the 41st AIAA/ASME/SAE/ASEE, Tucson, AZ, July 11–13, 2005.

GREGORY, D.A. UAH
HERREN, K.A. XD31

Ion Milling of Sapphire—Abstract Only. For publication in Electrochemical and Solid-State Letters and American Institute of Physics.

GRIFFEY, A.M. IS04

Enterprise Architecture Discussion for the Redstone Arsenal Information Assurance Conference—Conference Paper and Abstract. For presentation at the 7th Annual Redstone Arsenal and NASA Marshall Information Technology (IT) Security and Assurance Conference and Exposition, Huntsville, AL, October 4–5, 2005.

GRIFFEY, K. IS01

Overview of NASA Enterprise Architecture—Presentation. For presentation at the Inaugural NASA Small Business Solutions 2005, New York, NY, August 31–September 2, 2005.

GRUGEL, R.N. SD46

High Tensile Strength Amalgams for In-Space Repair and Fabrication—Abstract Only. For presentation at the Continuing the Voyage of Discovery—1st Space Exploration Conference, Orlando, FL, February 2–4, 2005.

GRUGEL, R.N. SD46
LUZ, P. SD46
SMITH, G.A. UAH
SPIVEY, R. Tec-Masters
MINGO, C. Applied Data Trends
JETER, L. SD46
VOLZ, M.P. Applied Data Trends

The Pore Formation and Mobility Investigation: A Case Study for Conducting Research on the International Space Station in Support of Exploration—Abstract Only. For presentation at the Continuing the Voyage of Discovery—1st Space Exploration Conference, Orlando, FL, February 2-4, 2005.

GRUGEL, R.N. SD46
FINCKE, M. Johnson Space Center
SEGRE, P.N. Emory University
OGLE, J.A. Jacobs Sverdrup
FUNKHOUSER, G. Morgan Research Corp.
PARRIS, F. Jacobs Svedrup
MURPHY, L. SD46
GILLIES, D.C. SD46
HUA, F. Intel Corp.

The In-Space Soldering Investigation: Research Conducted on the International Space Station in Support of NASA's Exploration Initiative—Abstract Only. For presentation at the Continuing the Voyage of Discovery—1st Space Exploration Conference, Orlando, FL, February 2–4, 2005.

GRUGEL, R.N. SD46
TOUTANJI, H. XD41

Viability of Sulfur "Concrete" on the Moon: Environmental Considerations—Abstract Only. For presentation at the 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 9–12, 2006.

GRUGEL, R.N. SD46
COTTON, L.J. Boeing
SEGRE, P.N. Emory University
OGLE, J.A. Jacobs Sverdrup
FUNKHOUSER, G. Morgan Research Corp.
PARRIS, F. Jacobs Sverdrup
MURPHY, L. XD41
GILLIES, D.C. XD41
HUA, F. Intel Corp.
ANILKUMAR, A.V. Vanderbilt University

The In-Space Soldering Investigation (ISSI): Melting and Solidification Experiments Aboard the International Space Station—Abstract Only. For presentation at the 44th AIAA Aerospaces Sciences Meeting and Exhibit, Reno, NV, January 9–12, 2006.

GUBAREV, M. XD12
RAMSEY, B.D. XD12

Alignment, Assembly, and Testing of High-Energy X-Ray Optics—Abstract Only. For presentation at the SPIE Optics and Photonics, San Diego, CA, July 31–August 4, 2005.

GUBAREV, M. XD30
RAMSEY, B.D. XD12
ENGELHAUPT, D. UAH
SPEEGLE, C. Raytheon ITSS

Metrology for the Development of High-Energy X-Ray Optics—Abstract Only. For presentation at the SPIE Optics and Photonics, San Diego, CA, July 31–August 4, 2005.

GUDIMENKO, Y. ITL Inc.
NG, R. ITL Inc.
ISKANDEROVA, Z. ITL Inc.
KLEIMAN, J. ITL Inc.
GRIGOREVSKY, A. Komposit Institute
KISELEVA, L. Komposit Institute
FINCKENOR, M.M. EM50
EDWARDS, D.L. EM50

Protection of Conductive and Non-Conductive Advanced Polymer-Based Paints From Highly Aggressive Oxidative Environments—Abstract Only. For presentation at the 5th International Symposium on Polymer Surface Modification, Toronto, Canada, June 20–22, 2005.

GUGGILLA , P. Alabama A&M University
BATRA, A.K. Alabama A&M University
CURRIE, J.R. EI21
AGGARWAL, M.D. XD40
PENN, B. XD40
LAL, R.B. XD40

Pyroelectric Ceramics for Infrared Detection Applications—Final Paper. For publication in Materials Science.

GULYAEVA, T. Moscow Region/PAS
GALLAGHER, D.L. XD12

Comparison of Two IRI Plasmasphere Extensions With GPS–TEC Observations—Abstract Only. For presentation at and publication in the proceedings of the IRI 2005 Workshop, Roquetes, Spain, June 27–July 1, 2005.

GWALTNEY, D.A. EI22
DUTTON, K. Jacobs Sverdrup

A VHDL Core for Intrinsic Evolution of Discrete Time Filters with Signal Feedback—Final Paper. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
FERGUSON, M.I. JPL

Enabling the On-Line Intrinsic Evolution of Analog Controllers—Final Paper. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
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Enabling the On-Line Intrinsic Evolution of Analog Controllers—Presentation. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
FERGUSON, M.I. JPL
Enabling the On-Line Intrinsic Evolution of Analog Controllers—Final Paper. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
DUTTON, K. Jacobs Sverdrup
A VHDL Core for Intrinsic Evolution of Discrete Time Filters With Signal Feedback—Final Paper. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
BRISCOE, J.M. EI21
The Integrated Safety-Critical Advanced Avionics Communication and Control (ISACC) System Concept: Infrastructure for ISHM—Abstract Only. For presentation at the 2005 Integrated Systems Health Management (ISHM) Conference, Cincinnati, OH, August 8–11, 2005.

GWALTNEY, D.A. EI22
DUTTON, K. Jacobs Sverdrup
A VHDL Core for Intrinsic Evolution of Discrete Time Filters with Signal Feedback—Presentation. For presentation at the 2005 NASA/DoD Conference on Evolvable Hardware, Washington, DC, June 29–July 1, 2005.

GWALTNEY, D.A. EI22
BRISCOE, J.M. EI20
The Integrated Safety-Critical Advanced Avionics Communication and Control (ISAACC) System Concept: Infrastructure for ISHM—Presentation. For presentation at the ISHM Conference, Air Force Research Laboratory, Cincinnati, OH, August 8–11, 2005.

HAINES, S. UAH
JEDLOVEC, G.J. XD02
LAZURUS, S. Florida Institute of Technology
An AQUA/MODIS SST Composite Products—Abstract Only. For presentation at the 86th Annual AMS Meeting; 14th Satellite Meteorology and Oceanography Conference, Atlanta, GA, January 29–February 2, 2006.

HAMILTON, G. EV12
ADAMS, C. Raytheon
We Have the Spaceship; But Where's the Start Button: Human Engineering Issues in the Age of Long Duration Space Exploration—Presentation and Final Paper. For presentation at the 2005 International Conference on Environmental Systems, Rome, Italy, July 11–15, 2005.

HAMILTON, J.T. ET01
Test Laboratory Facilities and Capabilities—Abstract Only. For presentation at the NASA Capability Roadmap Public Workshop, Washington, DC, November 30, 2004.

HAMILTON, J.T. ET01
ASM Student Technology and Career Night—Presentation. For presentation at the American Society of Materials Student Career Night, Huntsville, AL, March 29, 2005.

HAMILTON, J.T. ET01
Marshall Space Flight Center Test Capabilities—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 11–15, 2005.

HAMILTON, J.T. ET01
Test Laboratory 2005. For presentation at the Test Week 2005, Huntsville, AL, June 6–9, 2005.

HARMSEN, E. XD11
LUVALL, J.C. XD11
GONZALEZ, J. XD11
Application of the Combination Approach for Estimating Evapotranspiration in Puerto Rico—Abstract Only. For presentation at and publication in the proceedings of the World Water and Environmental Resources Congress 2005, Anchorage, AK, May 15–20, 2005.

HATHAWAY, D.H. XD12
WILSON, R.M. XD12
Determining the Sun's Deep Meridional Flow Speed Using Active Latitude Drift Rates Since 1874—Abstract Only. For presentation at the American Geophysical Union General Assembly, New Orleans, LA, May 23–27, 2005.

HATHAWAY, D.H. XD12
How Large-Scale Flows May Influence Solar Activity—Abstract Only. For presentation at the Astronomical Society of the Pacific Conference Series, Sunspot, NM, October 18–22, 2004, and publication in the Proceedings of the NSO Workshop #22 Large Scale Structures and Their Role in Solar Activity, Sunspot, NM, October 18–22, 2004.

HATHAWAY, D.H. XD12
Maunder's Butterfly Diagram in the 21st Century—Abstract Only. For presentation at the 2nd Asia Oceania Geosciences Society Annual Meeting 2005, Singapore, Singapore, June 20–24, 2005.

HATHAWAY, D.H. XD12
CHOUDHARY, D. California State University
Decay of Solar Active Regions—Abstract Only. For publication in The Astrophysical Journal.

HATHAWAY, D.H. XD12
WILLIAMS, P.E. University of Texas
CUNTZ, M. University of Texas
Supergranule Superrotation Identified as a Projection Effect—Abstract Only. For publication in The Astrophysical Journal.

HEATON, A.F. EV40
Solar Sail Roadmap Mission GN&C Challenges—Final Paper. For presentation at the AIAA/GN&C Conference, San Francisco, CA, August 15–19, 2005.

HEDAYAT, A. ER23
NELSON, S.L. ER23
HASTINGS, L.J. Alpha Technology, Inc.
FLACHBART, R.H. ER23
TUCKER, S.P. ER23
Liquid Nitrogen (Oxygen Simulant) Thermodynamic Venting System Test Data Analysis—Abstract Only. For presentation at the Cryogenic Engineering Conference and International Cryogenic Materials Conference, Keystone, CO, August 29–September 2, 2005.

HEDAYAT, A. ER23
NELSON, S.L. ER23
HASTINGS, L.J. Alpha Technology Inc.
Liquid Nitrogen (Oxygen Simulant) Thermodynamic Venting System Test Data Analysis—Final Paper. For presentation at the Cryogenic Engineering Conference and International Cryogenic Materials Conference, Keystone, CO, August 29–September 2, 2005.

HERALD, S.D. ICRC Aerospace Services
ENGEL, C.D. Qualis Corp.
DAVIS, S.E. EM10
An Evaluation of Current Test Methodologies for Elevated Temperature Promoted Combustion Testing of Metals—Abstract Only. For presentation at the ASTM International 11th International Symposium on Flammability and Sensitivity of Materials in Oxygen-Enriched Atmospheres, Washington, DC, October 18–20, 2006.

HERMILLER, J. Cornerstone Research Group, Inc.
STAHL, H.P. XD30
Synlam (TM) Composite Mirror for Cryogenic Applications—Presentation. For presentation at the Mirror Technology Days 2005, Huntsville, AL, and to be posted at <http//optics.nasa.gov>.

HICKMAN, R. ER11
MIRELES, O. ER11
HOUTS, M. ER11
Thermal Aging Effects on Nuclear Space Power Materials in a Simulated Mars Environment—Abstract Only. For presentation at the Space Technology and Applications International Forum, (STAIF 2006), Conference, Albuquerque, NM, February 12–16, 2006.

HISSAM, D.A. ER34
LEBERMAN, M. ER34
MCLEROY, R. ERC
Testing and Comparative Evaluation of Space Shuttle Main Engine Flowmeter Bearings—Final Paper. For presentation at the World Tribology Conference III, Washington, DC, September 12–16, 2005.

HJORTH, J. University of Copenhagen
SOLLERMAN, J. University of Copenhagen/ Stockholm University
GOROSABEL, J. Instituto de Astrofisica de Andalucia
GRANOT, J. Kavli Institute
KLOSE, S. Thuringer Landessternwarte
KOUVELIOTOU, C. XD12
MELINDER, J. Stockholm University
RAMIREZ-RUIZ, E. Institute for Advanced Study
STARLING, R. University of Amsterdam
ET AL.
Constraints on Short Gamma-Ray Burst Models With Optical Limits of GRB 050509b—Abstract Only. For publication in the Astrophysical Journal Letters.

HJORTH, J. University of Copenhagen
WATSON, D. University of Copenhagen
FYNBO, J.P. University of Copenhagen
PRICE, P.A. University of Hawaii
JENSEN, B.L. University of Copenhagen
JORGENSEN, U.G. University of Copenhagen
KUBAS, D. ESO Santiago
GOROSABEL, J. Instituto de Astrofisica de Andalucia
KOUVELIOTOU, C. XD12
The Optical Afterglow of a Short Y-Ray Burst—Abstract Only. For publication in Nature.

HOLDER, D. EV50
FORT, J. Hamilton Sundstrand
BARONE, M. Hamilton Sundstrand
MURDOCH, K. Hamilton Sundstrand
Rotary Drum Separator and Pump for the Sabitier Carbon Dioxide Reduction System—Final Paper. For presentation at the 34th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

HOLLINGER, G.A. Swarthmore College
BRISCOE, J.M. EI21

Genetic Optimization and Simulation of a Piezoelectric Pipe-Crawling Inspection Robot—Final Paper. For presentation at the IEEE International Conference on Robotics and Automation, Barcelona, Spain, April 18–22, 2005.

HOOVER, R.B. XD12

Mineralized Remains of Morphotypes of Filamentous Cyanobacteria in Carbonaceous Meteorites—Abstract Only. For presentation at and publication in the proceedings of The International Symposium of Optical Science and Technology 50th Annual Meeting—Instruments, Methods, and Missions for Astrobiology IX, San Diego, CA, July 31–August 4, 2005.

HOOVER, R.B. XD12

Comets, Carbonaceous Meteorites, and the Origin of the Biosphere—Abstract Only. For publication in Biogeosciences.

HOUTS, M.G. NP50
BRAGG-SITTON, S.M. ER11
MIRELES, O. ER11
ET AL.

Planetary Surface Reactor Radiation Shielding—Abstract Only. For presentation at the Space Technology and Applications International Forum, (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

HOUTS, M.G. NP50

Integration and Utilization of Nuclear Systems on the Moon and Mars—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

HOUTS, M.G. NP50
SCHMIDT, G.R. NP50
BRAGG-SITTON, S.M. NP50
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SWINT, M.S. NP60

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CURRERI, P.A. XD40
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BODIFORD, M.P. SY10
BURKS, K.H. EI52
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Thermophysical Properties of Liquid Te: Density, Electrical Conductivity, and Viscosity—Abstract Only. For publication in Journal of Applied Physics.

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LIN, B. UAB
LI, C. SD46
SU, C-H. XD42
BAN, H. UAB
SCRIPA, R.N. UAB
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WEST, J.S. ER43
WILLIAMS, R.W. ER43
TUCKER, P.K. ER43
CFD Code Validation of Wall Heat Fluxes for a GO_2/GH_2 Single Element Combustor—Abstract Only. For presentation at the 41st AIAA/ASME/ SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

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CHENOWETH, J.D. CRAFT-Tech
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LIN, Z-W. UAH
BARGHOUTY, A.F. XD41
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BARGHOUTY, A.F. XD41
Effects of Nuclear Interactions on Accuracy of Space Radiation Transport—Abstract Only. For presentation at and publication in the proceedings of the Space Nuclear Conference 2005, San Diego, CA, June 5–9, 2005.

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Determining Important Nuclear Fragmentation Processes for Human Space Explorations—Abstract Only. Mini-Workshop: Nuclear Equation of State for Nuclei, Neutron

Stars, and Supernovae, Little Rock, AR, April 14–15, 2005.

LIN, Z-W. UAH
ADAMS, J.H. XD12
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LUVALL, J.C. XD11
RICKMAN, D.L. XD11
QUATTROCHI, D.A. XD11
ESTES, M.E. XD11
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MAASHA, R. EV31
GRADL, P.R. ER32
KINNEY, T. Qualis Corp.
LAVEDE, B. ERC Inc.
PECK, J. EV31
Space Shuttle Main Engine Testing and Analysis Approach to External Debris Environments—Abstract Only. For presentation at the 53rd JPM/2nd LPS/SP Joint Meeting—JANNAF, Monterey, CA, December 5–8, 2005.

MACLEOD, T.C. EI51
PHILLIPS, T.A. EI51
HO, F.D. UAH
Characteristics of Ferroelectric Logic Gates Using a Spice-Based Model—Abstract Only. For presentation at the International Meeting on Ferroelectricity, Foz do Igacu, Brazil, September 5–9, 2005, and publication in the Ferroelectrics Journal.

MAJUMDAR, A. ER43
COLE, H. ER43
CHEN, C.P. UAH
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MANDELL, M.J. SAIC
KUHARSKI, R.A. SAIC
GARDNER, B.M. SAIC
KATZ, I. Jet Propulsion Laboratory
RANDOLPH, T. Jet Propulsion Laboratory
DOUGHERTY, R. Jet Propulsion Laboratory
FERGUSON, D.C. NP23
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MARCU, B. The Boeing Company
HADID, A. The Boeing Company
LIN, P. The Boeing Company
BALCAZAR, D. The Boeing Company
RAI, M.M. Ames Research Center
DORNEY, D.J. TD64
Towards Rocket Engine Components with Increased Strength and Robust Operating Characteristics—Final Paper. For presentation at the AIAA/ASME/SAE/ASEE 41st Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

MARKUSIC, T.E. XD21
POLZIN, K.A. XD21
Electromagnetic Pumps for Conductive-Propellant Feed Systems—Abstract Only. For presentation at the Joint Propulsion Conference, Tucson, AZ, July 11–13, 2005.

MARTIN, A.K. XD22
ESKRIDGE, R.H. XD22
FIMOGNARI III, P.H. UAH
KOELFGEN, S.J. UAH
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Progress on the Plasmoid Thruster Experiment (PTX)—Abstract Only. For presentation at the Joint Propulsion Conference, Tucson, AZ, July 11–13, 2005.

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Division of Plasma Physics, Savannah, GA, November 15–19, 2004.

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ESKRIDGE, R.H. XD22
FIMOGNARI III, P.J. UAH
Fusion Ignition Rocket Engine With Ballistic Ablative Lithium Liner—Abstract Only. For presentation at the NASA/JPL/MSFC 16th Annual Event Propulsion Workshop at UAH, Huntsville, AL, April 4–8, 2005.

MARTIN, A.K. XD22
ESKRIDGE, R.H. XD22
Electrical Coupling Efficiency of Inductive Plasma Accelerators—Abstract Only. For publication in the Journal of Physics D: Applied Physics.

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Life Testing Approach for Refractory Metal/Sodium Heat Pipes—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

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MATLIK, J.F. Rolls Royce Corp.
FARRIS, T.N. Purdue University
HAYNES, J. United Technologies Corp.
SWANSON, G.R. EM20
HAM-BATTISTA, G. Jacobs Sverdrup
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New York City College of Technology
JOHNSON, L. NP40
Applications of the Electrodynamic Tether to Interstellar Travel—Final Paper. For publication in the Journal of the British Interplanetary Society.

MCCARTY, W. UAH
JEDLOVEC, G.J. XD02
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MCGHEE, D.S. ED21
Vehicle Integrated Performance Analysis: The VIPA Experience—Reconnecting With Technical Integration—Abstract Only. For presentation at the AIAA Continuing the Voyage of Discovery, 1st Space Exploration Conference, Orlando, FL, February 2–4, 2005.

MCGRATH, M.A. XD01
Jupiter's Galilean Satellites—Abstract Only. For presentation at the Asia Oceania Geosciences Society's 2nd Annual Meeting, Singapore, Singapore, June 20–24, 2005.

MCNAMARA, H.A. EV13
JONES, J. University of Western Ontario
KAUFFMAN, B. ED44
SUGGS, R.M. EV13
COOKE, W.J. EV13
SMITH, S. ED44/Morgan Research Corp.
Meteoroid Engineering Model (MEM): A Meteoroid Model for the Inner Solar System—Final Paper. For publication in Earth, Moon, and Planets.

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MCNEAL, C. ER22
EELV Booster Assist Options for CEV—Presentation. For presentation at the 41st AIAA/ ASME/ASEE/SAE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

MCRIGHT, P.S. ER23
POPP, C. ER23
PIERCE, C. ER23
TURPIN, A.A. ER23
URBANCHOCK, W. Aerojet
WILSON, M. Aerojet
Confidence Testing of Shell 405 and S–405 Catalysts in a Monopropellant Hydrazine Thruster—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Tucson, AZ, July 10–13, 2005.

MCRIGHT, P.S. ER23
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MEDLEY, S. ER41
BROWN, A. ER41
FRADY, G. ER41
SMALLEY, K. ER41
Identification of Cyclically Symmetric Resonance in Experimental Data for Engine Failure Analysis—Final Paper. For presentation at the 46th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Austin, TX, April 18–21, 2005.

MIERNIK, J.H. ERC, Inc.
OWENS, J.E. EV32/Qualis Corp.
FLOYD, B.A. Allied Aerospace
STRONG, J.O. Morgan Research Corp.
SANFORD, J. EI12
Reuse of International Space Station (ISS) Modules as Lunar Habitat—Abstract Only. For presentation at the 1st Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

MILTON, M.E. SX10
CHRISTL, M. SX10
Deep Space Test Bed—Abstract Only. For presentation at the National Space and Missle Material Symposium, Summerlin, NV, June 27–July 1, 2005.

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MINOR, J.L. ED03
NEWTON, R. NP60
An Overview of Program Developments for NASA's Space Environments and Effects (SEE) Program—Final Paper. For presentation at the 43rd AIAA Aerospace Sciences Meetings and Exhibit, Reno, NV, January 13, 2005.

MINOW, J.I. EV13
ALSTATT, R.L. ED44/Jacobs Sverdrup
PARKER, L.N. ED44/Jacobs Sverdrup
Interplanetary Radiation and Internal Charging Environment Models for Solar Sails—Presentation. For presentation at the Solar Sail Technology and Applications Conference, Greenbelt, MD, September 28–29, 2004.

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ALSTATT, R.L. ED44/Jacobs Sverdrup
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SKIPWORTH, W. EV13/Jacobs Sverdrup
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MIZUNO, Y. XD12
YAMADA, S. Waseda University
KOIDER, S. Toyama University
SHIPATA, K. Kyoto University
General Relativistic Magnetohydrodynamic Simulations of Collapsars—Abstract Only. For presentation at the Ultra-Relativistic Jets in Astrophysics Observations, Theory, Simulations, Banff, Alberta, Canada, July 11–15, 2005.

MONTGOMERY, IV, E.E. TD05
In-Space Propulsion Solar Sail Propulsion Technology Development—Final Paper. For presentation at the 36th Annual Division for Planetary Science, Louisville, KY, November 8–10, 2004.

MOONEY, J.T. UAH
STAHL, H.P. XD30

Introduction to the Sub-Pixel Spatial Resolution Interferometry Process—Abstract Only. For presentation at the Opti Fab Conference, Rochester, NY, May 2–5, 2005.

MOONEY, J.T. UAH
STAHL, H.P. XD30

Sub-Pixel Spatial Resolution Micro-Roughness Measurements With Interlaced Stitching—Abstract Only. For presentation at the SPIE Optics and Photonics 2005 Conference, San Diego, CA, July 31–August 2, 2005.

MOORE, R.L. XD12
STERLING, A.C. XD12

Origin of the Sheared Magnetic Fields That Erupt in Flares and Coronal Mass Ejections—Abstract Only. For presentation at the 6th Solar-B Science Meeting, Kyoto, Japan, November 8–11, 2005.

MOORE, R.L. XD12
STERLING, A.C. XD12
FALCONER, D.A. XD12
DAVIS, J.M. XD12

Initiation of Coronal Mass Ejections: Implications for Forecasting Solar Energetic Particle Storms—Abstract Only. For presentation at the Solar and Space Physics and the Vision for Space Exploration, Charlottesville, VA, October 15–20, 2005, and publication in the Conference Proceedings Initiation of Coronal Mass Ejections: Implications for Forecasting Solar Energetic Particle Storms October 16–20, 2005.

MOORE, R.E. EM10
SCOTT, J.P. EM10
WISE, H. EM10

Considerations for Storage of High-Test Hydrogen Peroxide (HTP) Utilizing Non-Metal Containers—Abstract Only. For presentation at the 8th International Hydrogen Peroxide Propulsion Conference, West Layfayette, IN, September 18–22, 2005.

MOORE, R.L. XD12
STERLING, A.C. XD12
FALCONER, D.A. XD12
GARY, G.A. XD12

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STERLING, A.C. XD12

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MORRIS, C.I. XD22

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MORRISON, R.H. The Boeing Company
HOLT, J.M. EV34

ISS Internal Active Thermal Control System (IATCS) Coolant Remediation Project—Final Paper. For presentation at the 2005 International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

MOUSHON, B. Jacobs Sverdrup
MCDUFFEE, P. ED03

Overview of NASA MSFC IEC Multi-CAD Collaboration Capability—Abstract Only. For presentation at the Collaborative Engineering and IT Environments Workshop, Redstone Arsenal, AL, March 2–3, 2005.

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MULDER, A.D. ER42
SUBBARAMAN, M.R. Boeing-Rocketdyne
LARIVIERE, B.W. Boeing-Rocketdyne

Effect of Shuttle Flow Liner Angulation on Dynamic Response: Water Flow Study—Abstract Only. For presentation at the 53rd JANNAF Propulsion Meeting/2nd Liquid Propulsion Subcommittee/Space Propulsion Joint Meeting, Monterey, CA, December 5–8, 2005.

MURDOCH, K. Hamilton Sundstrand Space Systems International, Inc.
GOLDBLATT, L. Hamilton Sundstrand Space Systems International, Inc.
CARRASQUILLO, R.L. EV50
HARRIS, D. SV10

Sabatier Methanation Reactor for Space Exploration—Abstract Only. For presentation at the Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

NALETTE, T. Hamilton Sundstrand
REISS, J. Hamilton Sundstrand
FILBURN, T. University of Hartford
SEERY, T. University of Connecticut
WEISS, B. University of Connecticut
SMITH, F. EV51
PERRY, J. EV51

Development of an Amine-Based System for Combined Carbon Dioxide, Humidity, and Trace Contaminant Control—Final Paper. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

NALL, M. SR10
Strategic Research Partnerships for Exploration—Abstract Only. For presentation at the 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10–13, 2005.

NERNEY, S. SD50
SUESS, S.T. SD50
Stagnation Flow in Thin Streamer Boundaries—Abstract Only. For publication in the Astrophysical Journal.

NEUMANN, B. HQS
MCMILLAN, V. EDO3
Down-To-Earth Benefits of Space Exploration: Past, Present, Future—Abstract and Presentation. For presentation at the 56th International Astronautical Congress, Fukuoka, Japan, October 15–21, 2005.

NGUYEN, H. The Boeing Company
CHANDLER, F. The Boeing Company
MAZURKIVICH, P. NP60
Pressurization System Modeling for a Generic Bimese Two-Stage-to-Orbit Reusable Launch Vehicle—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

NIELSEN, D. ATK Thiokol Inc.
TOWNSEND, J. ED21
KAPPUS, K. ED21
DRISKILL, T. ED21
TORRES, I. ED21
PARKS, R. ED21
Modal Survey of ETM–3, A 5-Segment Derivative of the Space Shuttle Solid Rocket Booster—Final Paper. For presentation at the International Modal Analysis Conference XXIII, Orlando, FL, January 31–February 3, 2005.

NISHIKAWA, K.I. University of Alabama/Tuscaloosa
HARDEE, P. University of Alabama/Tuscaloosa
RICHARDSON, G. UAH
PREECE, R. UAH
SOL, H. LUTH
FISHMAN, G.J. XD12
Particle Acceleration and Magnetic Field Generation in Electron-Positron Relativistic Shocks—Abstract Only. <http//arxiv.org> (to be published in the Astrophysical Journal).

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NISHIKAWA, K.I. University of Alabama/Tuscaloosa
HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C.B. Niels Bohr Institute/Department of Astrophysics
RICHARDSON, G. UAH
SOL, H. LUTH
PREECE, R. UAH
FISHMAN, G.J. XD12
Particle Acceleration Magnetic Field Generation, and Emission in Relativistic Pair Jets—Final Paper. For publication in the Conference Proceedings of the Gamma Ray Burst in the Afterglow Era: 4th Workshop, Rome, Italy, October 18–22, 2004.

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HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C.B. Niels Bohr Institute/Department of Astrophysics
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SOL, H. LUTH
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FISHMAN, G.J. XD12
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NISHIKAWA, K.I. University of Alabama/Tuscaloosa
RAMIREZ-RUIZ, E. Institute for Advanced Study
HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C.B. Niels Bohr Institute/Department of Astrophysics
KOUVELIOTOU, C. XD12
FISHMAN, G.J. XD12
Particle Acceleration, Magnetic Field Generation, and Emission in Relativistic Pair Jets—Abstract Only. For presentation at and publication in the proceedings of the Astrophysical Sources of High-Energy Particles and Radiation, Torun, Poland, June 20–24, 2005.

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RAMIREZ-RUIZ, E. Institute for Advanced Study
HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C. Niels Bohr Institute/Department of Astrophysics
KOUVELIOTOU, C. XD12
FISHMAN, G.J. XD12
MIZUNO, Y. NRC

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RAMIREZ-RUIZ, E. Institute for Advanced Study
HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C. Niels Bohr Institute/Department of Astrophysics
KOUVELIOTOU, C. XD12
FISHMAN, G.J. XD12
MIZUNO, Y. NRC

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RAMIREZ-RUIZ, E. Institute for Advanced Study
HARDEE, P. University of Alabama/Tuscaloosa
HEDEDAL, C. Niels Bohr Institute/Department of Astrophysics
KOUVELIOTOU, C. XD12
FISHMAN, G.J. XD12
MIZUNO, Y. NRC

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NOUSEK, J.A. Pennsylvania State University
KOUVELIOTOU, C. XD12
GRUPE, D. Pennsylvania State University
PAGE, K. University of Leicester
GRANOT, J. Stanford University
RAMIREZ-RUIZ, E. Institute for Advanced Study
PATEL, S.K. IPA with NASA/XD12
BURROWS, D.N. Pennsylvania State University
MANGANO, V. INAF
BARTHELMY, S.D. GSFC

Evidence for a Canonical GRB Afterglow Light Curve in the Swift/XRT Data—Abstract Only. For publication in The Astrophysical Journal.

NUNES, A.R EM30
MCCLURE, J. University of Texas El Paso
AVILA, R. University of Texas El Paso

The Plunge Phase of Friction Stir Welding—Abstract Only. For presentation at the Trends in Welding Conference, Pine Mountain, GA, May 16, 2005.

O'DELL, S.L. XD12
SWARTZ, D.A. XD12
ANDERSON, S.K. XD12
CHEN, K.C. XD12
GIORDANO, R.J. XD12
KNOLLENBERG, P.J. XD12
MORRIS, P.A. XD12
PLUCINSKY, P.P. XD12
TICE, N.W. XD12
TRAN, H. XD12

Modeling Contamination Migration on the Chandra X-Ray Observatory—Abstract Only. For presentation at and publication in the proceedings of the 2005 SPIE Meeting, San Diego, CA, July 31–August 4, 2005.

O'DELL, S.L. XD12
ALDCROFT, T.L. XD12
BISSELL, B.A. XD12
BLACKWELL, W.C. XD12
CAMERON, R.A. XD12
CHAPPELL, J.H. XD12
DEPASQUALE, J.M. XD12
GAGE, K.R. XD12
GRANT, C.E. XD12
ET AL.

Managing Radiation Degradation of CCDs on the Chandra X-Ray Observatory II—Abstract Only. For presentation at and publication in the proceedings of the 2005 SPIE Meeting, San Diego, CA, July 31–August 4, 2005.

O'NEIL, D.A. FD02
MANKINS, J.C. NASA Headquarters

The Advanced Technology Lifecycle Analysis System (ATLAS)—Final Paper. For presentation at the 55th International Congress, Vancouver, Canada, October 4–8, 2004.

O'NEIL, M. Enech, Inc.
HOWELL, J. SP20
LOLLAR, L. SP20
CARRINGTON, C. EV21
SUZUKI, N. NASA Headquarters
PISZCZOR, M. GRC
HOPPE, D. EM50
ESKENAZI, M. ATK Space, USA
AIKEN, D. EMCORE, USA
FULTON, M. Ion Beam Optics, USA
ET AL.

Stretched Lens Array Square Rigger (SLASR): A Unique High-Power Solar Array for Exploration Missions—Abstract Only. For presentation at the 56th International Astronautical Congress 2005, Fukukoa, Japan, October 17–21, 2005.

OELGOETZ, P. Boeing Rocketdyne Propulsion and Power
GRADL, P.R. ER32
BRYANT, M. Madison Research Corp.
DANIEL, R. Boeing Rocketdyne
WOFFORD, S. MP21
Systematic Improvements in Leak Detection and Repair Techniques of the Space Shuttle Main Engine Nozzle—Abstract Only. For presentation at the 53rd JPM/2nd LPS/SP Joint Meeting—JANNAF, Monterey, CA, December 5–8, 2005.

OLIVER, S.T. EV31
Analysis of a Circular Composite Disk Subjected to Edge Rotations and Hydrostatic Pressure—Final Paper. Thesis to be presented to the Department of Mechanical and Aerospace Engineering, UAH, Huntsville, AL, October 2004.

OSTROGORSKY, A. Rensselaer Polytechnic Institute
MARIN, C. Rensselaer Polytechnic Institute
VOLZ, M.P. XD42
BONNER, W.A. Crystallod, Inc.
Reproducible Crystal Growth Experiments in Microgravity Science Glovebox at the International Space Station (SUBSA Investigation)—Abstract Only. For presentation at the 43rd American Institute of Aeronautics and Astronautics (AIAA) Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 10-13, 2005.

OVERBEY, B.G. Raytheon
ROBERTS, B.C. ED44
A Summary of Meteorological Parameters During Space Shuttle Pad Exposure Periods—Final Paper. For presentation at the 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10–13, 2005.

PALOSZ, W. SD42/BAE Systems
VOLZ, M.P. SD46
COBB, S. SD46
MOTAKEF, S. Cape Simulations, Inc.
SZOFRAN, F.R. SD46
Detached Growth of Germanium by Directional Solidification—Abstract Only. For presentation in the Journal of Crystal Growth.

PALOSZ, W. SD42/BAE Systems
Comments to the paper "Study of the ZnO Crystal Growth by Vapour Transport Methods"—Abstract Only. For publication in the Journal of Crystal Growth.

PALOSZ, W. SD42/BAE Systems
Vapor Transport of ZnO in Closed Ampoules—Abstract Only. For publication in the Journal of Crystal Growth.

PARIS, D. NAFP—Clark Atlanta
TREVINO, L.C. EV23
WATSON, M.D. EV23
IVHM Framework for Intelligent Integration for Vehicle Health Management—Final Report. For publication in the Journal of Aerospace Engineering.

PARIS, D.E. EV23
TREVINO, L.C. EV23
WATSON, M.D. EV23
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PARKER, L.N. ED44/Jacobs Sverdrup
DAVIS, V.A. SAIC
GARDNER, B.M. SAIC
MANDELL, M.J. SAIC
MINOW, J.I. EV13
Analysis of Surface Charging for a Candidate Solar Sail Mission Using NASCAP–2k—Presentation. For presentation at the Solar Sail Technology and Applications Conference, Greenbelt, MD, September 28–29, 2004.

PARKER, L.N. ED44/Jacobs Sverdrup
MINOW, J.I. EV13
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Analysis of Surface Charging for a Candidate Solar Sail Mission Using NASCAP–2K—Abstract Only. For presentation at the 9th Spacecraft Charging Technology Conference, Tsukuba, Japan, April 4–8, 2005.

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PATRICK, M.P. ED12
COOPER, A.E. ED12
POWERS. W.T. ED12

Concept for Inclusion of Analytical and Computational Capability in Optical Plume Anomaly Detection (OPAD) for Measurement of Neutron Flux—Final Paper. For presentation at the IEEE Aerospace Conference, Big Sky, MT, March 5–12, 2005.

PEARSON, J.B. XD21
LEWIS, R.A. R Lewis Company

RF Stabilization for Storage of Antiprotons—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2005), Albuquerque, NM, February 13–17, 2005.

PEARSON, J.B. XD21
LEWIS, R.A. R Lewis Company

Initial Testing of New Components and Diagnostics in the High Performance Antiproton Trap (HiPAT)—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), Albuquerque, NM, February 12–16, 2006.

PERRY, J.L. EV51

Formaldehyde Concentration Dynamics of the International Space Station Cabin Atmosphere—Final Paper. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

PERRY, J.L. EV51
TOMES, K.M. EV51
ROYCHOUDHURY, S. Precision Combustion, Inc.
TATARA, J.D. Qualis Corp.

Performance Characterization of a Prototype Ultra-Short Channel Monolith Catalytic Reactor for Air Quality Control Applications—Final Paper. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

PETERSEN, W.A. XD11
KNUPP, K. XD11
WALTERS, J. XD11
DEIERLING, W. XD11
GAUTHIER, M. XD11
DOLAN, B. XD11
DICE, J.P. XD11
SATTERFIELD, D. XD11
DAVIS, C. XD11
ET AL.

The UAH–NSSTC/WHNT ARMOR C-Band Dual-Polarimetric Radar: A Unique Collaboration in Research, Education, and Technology Transfer—Abstract Only. For presentation at the 32nd Radar Meteorology Conference, American Meteorological Society, Albuquerque, NM, October 23–29, 2005.

PETERSEN, W.A. XD11
CHRISTIAN, H.J. XD11
RUTLEDGE, S.A. XD11

Exploring the Relationship Between Lightning, Liquid, and Frozen Water Phases Using TRMM Precipitation Radar and Lightning Imaging Sensor Data—Abstract Only. For presentation at the 32nd Radar Meteorology Conference, American Meteorological Society, Albuquerque, NM, October 23–29, 2005.

PHILLIPS, T.A. EI52
MACLEOD, T.C. EI52
HO, F.D. UAH

Modeling of a Metal-Ferroelectric-Semiconductor Field-Effect Transistor Nand Gate—Abstract Only. For presentation at the 11th International Meeting on Ferroelectricity, Foz do Iguacu, Brazil, September 5–9, 2005, and to be published in the Ferroelectrics Journal.

PICON, A.J. UPRM
VASQUEZ, R. UPRM
GONZALEZ, J.E. Santa Clara University
LUVALL, J.C. XD11
RICKMAN, D.L. XD11

MODIS Land Surface Temperature Retrieval in San Juan, Puerto Rico During the ATLAS Field Campaign—Abstract Only. For presentation at the Sixth Symposium on the Urban Environment, Atlanta, GA, January 29–February 2, 2006.

PIKUTA, E.V. XD12
ITOH, T. RIKEN BioResource Center
HOOVER, R.B. XD12

Anaerobic Decomposition of Cellulose by Alkaliphilic Mircrobial Community of Owens Lake, California—

Abstract Only. For presentation at and publication in the proceedings of The International Symposium of Optical Science and Technology 50th Annual Meeting—Instruments, Methods, and Missions for Astrobiology IX, San Diego, CA, July 31–August 4, 2005.

PITTMAN, J.V. XD11/USRA
FUEGLISTALER, S. University of Washington
MILLER, T.L. XD11
WEINSTOCK, E.M. Harvard University
Mechanisms Controlling the Humidity of the Tropical Tropopause Layer Over the Eastern Tropical Pacific—Abstract Only. For presentation at the 2005 AGU Fall Meeting, San Francisco, CA, December 5–9, 2005.

PITTMAN, J.V. XD11/USRA
ROBERTSON, F.R. XD11
MILLER, T.L. XD11
Multisensor Perspectives on the Convective and Radiative Properties of the Tropopause Layer Over the Tropical Americas—Abstract Only. For presentation at the 86th Annual AMS meeting, Atlanta, GA, January 29–February 2, 2006.

POLZIN, K.A. XD20
MARKUSIC, T.E. XD20
Galium Electromagnetic (GEM) Thruster Concept and Design—Final Paper. For presentation at the Joint Propulsion Conference, Tucson, AZ, July 11–13, 2005.

POLZIN, K.A. XD20
MARKUSIC, T.E. XD20
RAITSES, Y. Princeton University
SMIRNOV, A. Princeton University
FISCH, N.J. Princeton University
Performance of a Miniaturized Cylindrical Hall Thruster—Abstract Only. For International Electric Propulsion Conference, Princeton New Jersey, October 31, 2005–November 4, 2005.

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MARKUSIC, T.E. XD20
Galium Electromagnetic (GEM) Thruster Concept and Design—Abstract Only. For presentation at the 53rd JANNAF Propulsion Meeting/2nd Liquid Propulsion Subcommittee/1st Spacecraft Propulsion Joint Meeting, Monterey, CA, December 5–8, 2005.

POLZIN, K.A. XD20
MARKUSIC, T.E. XD20
STANOJEV, B.J. ER11
DEHOYOS, A. ER11
RAITSES, Y. Princeton University
SMIRNOV, A. Princeton University
FISCH, N.J. Princeton University
Performance of a Low-Power Cylindrical Hall Thruster—Abstract Only. For presentation at the 29th International Electric Propulsion Conference (IEPC), Princeton University, NJ, October 31–November 04, 2005.

POOLE, E. XD21
MYRABO, L.N. Rensselaer Polytechnic Institute
Structural Assessment of the 20-m Microwave Lightcraft Conceptual Design—Abstract Only. For presentation at the 4th International Symposium on Beamed Energy Propulsion (ISBEP4), Nara, Japan, November 15–18, 2005.

PUSEY, M.L. XD42
The Nucleation and Growth of Protein Crystals—Abstract Only. For presentation at the Invited Speaker at the Fall Seminar Series at the University of Toledo, Toledo, OH, November 4–6, 2004.

PUSEY, M.L. XD42
FORSYTHE, E. BAE Systems
Fluorescent Approaches to High-Throughput Crystallography—Abstract Only. For presentation at the 2004 International Conference on Structural Genomics, Washington, DC, November 17–21, 2004.

PUSEY, M.L. XD42
FORSYTHE, E. BAE Systems
Fluorescent Approaches to High-Throughput Crystallography—Abstract Only. For presentation at the Protein Production and Crystallization Workshop, Bethesda, MD, February 1–3, 2005.

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FORSYTHE, E. BAE Systems
ACHAN, A. Raytheon
Fluorescent Approaches to High-Throughput Crystallography—Abstract Only. For presentation at the American Crystallographic Association (ACA) Conference, Orlando, FL, May 27, 2005–June 2, 2005.

PUSEY, M.L. XD42
FORSYTHE, E. BAE Systems
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Fluorescent Approaches to High-Throughput Crystallography—Abstract Only. For presentation at the American Institute of Chemical Engineers, Cincinnati, OH, October 30–November 4, 2005.

QUATTROCHI, D.A. XD11
ESTES, JR., M.G. USRA
CROSSON, W.L. XD11
KHAN, M. Georgia Environmental Protection Divison
Remote Sensing Characteristic of the Urban Landscape for Improvement of Air Quality Modeling. For presentation

at the URBAN 2005/ URS 2005, Tempe, Arizona, March 14–16, 2005 and publication in Conference Proceedings of the URBAN 2005/URS 2005, Tempe, Arizona, March 14–16, 2005.

QUATTROCHI, D.A. XD11
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KHAN, M. Georgia Environmental Protection Division
Urban Landscape Characterization Using Remote Sensing Data for Input Air Quality Modeling—Abstract Only. For presentation at The 2005 Annual Meeting of the Association of American Geographers (AAG) Professional and Scholarly Meeting, Denver, CO, April 5–9, 2005.

QUATTROCHI, D.A. XD11
NISKAR, A.S. Centers for Disease Control and Prevention
Environmental Public Health Tracking: Health and Environment Linked for Information Exchange-Atlanta (HELIX-Atlanta): A Cooperative Program Between CDC and NASA for Development of an Environmental Public Health Tracking Network in the Atlanta Metropolitan Area—Abstract Only. For presentation at the NASA Ecological Modeling Workshop, Monterey, CA, March 29–April 1, 2005.

RAMACHANDRAN, N. XD42
Terrestrial Microgravity Model and Threshold Gravity Simulation Using Magnetic Levitation—Abstract Only. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

RAMACHANDRAN, N. XD42
Space Laboratory on a Table Top—A Next Generation ECLSS Design and Diagnostic Tool—Abstract Only. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

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Terrestrial Microgravity Model and Threshold Gravity Simulation Using Magnetic Levitation—Abstract Only. For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

RAMACHANDRAN, N. XD42
Novel Applications of Magnetic Fields for Fluid Flow Control and for Simulating Variable Gravity Conditions—Abstract Only. For presentation at the Mechanical Engineering Seminar, University of Illinois, Chicago, IL, March 9, 2005.

RAMACHANDRAN, N. XD42
LESLIE, F.W. XD42
Threshold Gravity Determination and Artificial Gravity Studies Using Magnetic Levitation—Abstract Only. For presentation at the Interdisciplinary Transport Phenomena in Microgravity and Space Sciences IV, Tomar, Portugal, August 7–12, 2005.

RAMPINI, R. Alenia Spazio S.p.A.
LOBASCIO, C. Alenia Spazio S.p.A.
PERRY, J.L. EV51
HINDERER, S. EADS Space Transportation GmgH
Offgassing Characterization of the Columbus Laboratory Module—Final Paper. 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

RAMSEY, B.D. XD12
Replicated Nickel Optics for the Hard-Ray Region—Abstract Only. For presentation at and publication in the proceedings of the Focusing Telescopes in Nuclear Astrophysics, Corsica, France, September 12–15, 2005.

RAMSEY, B.D. XD12
The Development of Focusing Telescopes for the Hard-X-Ray Region—Abstract Only. For presentation at and publication in the proceedings of COSPAR, Spectra and Timing of Compact X-Ray Binaries, Mumbai, India, January 17–21, 2005.

RAO, S. Intelligent Optical Systems
MALAK, H. American Environmental Systems, Inc.
BISHOP, A. UAH
CISZAK, E. UAH
RICHMOND, R.C. XD42
Prospective Individual Risk-Assessment Using Repetitive Large Datasets—Abstract Only. For presentation at the Photonic NanoSystems 2005 and Micro-Electro-Mechanical and Biological Systems (MEMS and BioMEMS) Conference, San Francisco, CA, November 7–9, 2005.

RAY, C.S. XD42
REIS, S.T. University of Missouri-Rolla
BROW, R.K. University of Missouri-Rolla
HOLAND, W. Ivoclar Vivadent AG
RHEINERGER, V. Ivoclar Vivadent AG
A New DTA Method for Measuring Critical Cooling Rate for Glass Formation—Abstract Only. For publication in the Journal of Non-Crystalline Solids.

RAY, C.S. XD42
SEN, S. XD42/BAE Systems
REIS, S.T. University of Missouri-Rolla
KIM, C.W. University of Missouri-Rolla

Glass and Glass-Ceramic Materials From Simulated Composition of Lunar and Martian Soils: Selected Properties and Potential Applications—Abstract Only. For presentation at the 1st Space Exploration Conference Continuing the Voyage of Discovery, Orlando, FL, January 30–February 1, 2005.

RAY, C.S. XD42
REIS, S.T. University of Missouri-Rolla
SENE, F.F. Energy and Nuclear Research Institute
YANG, J.B. University of Missouri-Rolla
PONTUSCHKA, W.M. Physics Institute
GIEHL, J.M. Physics Institute
KIM, C.W. University of Missouri-Rolla
SEN, S. XD42/BAE Systems
Mossbauer and EPR Spectra for Glasses and Glass-Ceramics Prepared From Simulated Compositions of Lunar and Martian Soils—Abstract Only. For presentation at and publication in the proceedings of the 3rd International Symposium on Non-Crystallization Solids and the 7th Brazilian Symposium on Glass Related Materials, Sao Paulo, Brazil, November 13–16, 2005.

RICHARDSON, E.H. NP40
MUNK, M.M. NP40
JAMES, B.F. NP40
MOON, S.A. Gray Research
Review of NASA In-Space Propulsion Technology Program Inflatable Decelerator Investments—Final paper. For presentation at the 18th AIAA Aerodynamic Decelerator Technology Conference and Seminar, Munich, Germany, May 23–26, 2005.

RICHMOND, R.C. XD42
Resolving Risks in Individual Astronauts: A New Paradigm for Critical Path Exposures—Abstract Only. For presentation at the Environmental Sentinels (ES) 2005, Houston, Texas, June 1–2, 2005.

RISON, W. New Mexico Institute of Mining and Technology
KREHBIEL, P.R. New Mexico Institute of Mining and Technology
GOODMAN, S.J. XD11
MACGORMAN, D.R. New Mexico Institute of Mining and Technology
Real Time Processing and Display of Lightning Mapping Data—Abstract Only. For presentation at the 86 Annual AMS Meeting, Atlanta, GA, January 29–February 02, 2006.

ROBERTS, L. MP01
Space Shuttle—Presentation. 2005 National Space and Missile Materials Symposium, Las Vegas, NV, June 27–July 1, 2005.

ROBERTSON, B. EI31
WILKERSON, D. EI31
Multilevel Simulation of a Real Time Vibration Monitoring System Component—Abstract and Presentation. For presentation at the 2005 Mil/Aerospace Applications of Programmable Logic Devices International Conference, Washington, DC, September 7–9, 2005.

ROBERTSON, B. EI31
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Multilevel Simulation of a Real Time Vibration Monitoring System Component—Final Paper. For presentation at the 2005 Mil/Aerospace Applications of Programmable Logic Devices International Conference, Washington, DC, September 7–9, 2005.

ROBERTSON, F.R. XD11
WICK, G. NOAA/Environmental Technology Laboratory
BOSILOVICH, M.G. NASA Goddard Space Flight Center
Interannual Variability of Tropical Ocean Evaporation: A Comparison of Mircrowave Satellite and Assimilation Results—Abstract Only. For presentation at and publication in the proceedings of the 2005 Joint Assembly, New Orleans, LA, May 23–27, 2005.

ROBERTSON, F.R. XD11
LU, H.-I. USRA
Interannual Variability in Surface LW Fluxes Over the Tropical Oceans as Seen in ISCCP–FD and GEWEX SRB Data Sets—Abstract Only. For presentation at and publication in the proceedings of the 5th International Scientific Conference on the Global Energy and Water Cycle, Orange County, CA, June 18–24, 2005.

ROBERTSON, F.R. XD11
Interannual Variability of Tropical Rainfall as Seen from TRMM—Abstract Only. For presentation at and publication in the proceedings of the 5th International Scientific Conference on the Global Energy and Water Cycle, Orange County, CA, June 18–24, 2005.

ROBERTSON, F.R. XD11
Interannual Variability of Tropical Rainfall as Seen from TRMM—Abstract Only. For presentation at the 86th AMS Annual Meeting, 14th Conference on Satellite Meteorology and Oceanography, Atlanta, GA, January 29–February 2, 2006.

ROBERTSON, F.R. XD11
WICK, G. NOAA/Environmental Technology Laboratory
JACKSON, D. NOAA/Environmental Technology Laboratory
BOSILOVICH, M.G. NASA Goddard Space Flight Center

Interannual Variability of Tropical Ocean Evaporation: A Comparison of Microwave Satellite and Assimilation Results—Abstract Only. For presentation at the 86th AMS Annual Meeting, 14th Conference on Satellite Meteorology and Oceanography, Atlanta, GA, January 29–February 2, 2006.

ROBERTSON, G.A. XD21
Engineering Propellantless EM Propulsion From A Dx B System—Abstract Only. For presentation at the Space Technology and Applications International Forum (STAIF 2006), February 12–16, 2005.

ROBINSON, P.J. Aerojet
VEITH, E.M. Aerojet
TURPIN, A.A. ER23
Test Results for a Non-Toxic Dual Thrust Reaction Control Engine—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

ROCKER, M. ER43
Steady-State CFD Simulations of the Modular Combustor Test Article—Abstract Only. For presentation at the 53rd JANNAF Propulsion Meeting/2nd Liquid Propulsion Subcommittee/Space Propulsion Joint Meeting, Monterey, CA, December 5–8, 2005.

RODRIGUEZ, H. The Boeing Company
POPP, C. ER23
REHAGEN, R.J. The Boeing Company
X–37 Storable Propulsion System Design and Operations—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

RODRIGUEZ, H. The Boeing Company
POPP, C. ER23
Certification Testing Approach for Propulsion System Design—Final Paper. For presentation at the 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Tucson, AZ, July 10–13, 2005.

ROLIN, T.D. EI42
HAMMOND, M. SY10
In Situ Fabrication Technologies—Abstract and Presentation. For presentation at the UC Berkeley, University of California, Berkely, CA, May 17, 2005.

ROMAN, J.M. NP22
MEACHAM, S.B. NP23
KRUPP, D.R. EV12
THREET, G.E. NP12
BEST, J. EO04

DAVIS, S.R. NASA Headquarters
CRUMBLY, C. NP01
OLSEN, R.A. Morgan Research Corp.
ENGLER, L.M. Morgan Research Corp.
ET AL.
Evaluation of a Shuttle Derived Vehicle (SDV) for Cargo Transportation—Final Paper. For presentation at the AIAA 1st Exploration Conference, Orlando, FL, January 30–February 1, 2005.

ROMAN, M.C. EV51
WIELAND, P.O. Wieland Service
Microbiological Characterization and Concerns of the International Space Station Internal Active Thermal Control System—Final Paper. For presentation at the International Conference on Environmental Systems (ICES), Rome, Italy, July 11–15, 2005.

ROMAN, M.C. EV51
MACUCH, P. Altran Corp.
MCKRELL, T. Altran Corp.
VAN DER SCHIJFF, O.J. CorrConsult
MITCHELL, R. Harvard University
Assessment of Microbiologically Influenced Corrosion Potential in the International Space Station Internal Active Thermal Control System Heat Exchanger Materials: A 6-Month Study—Final Paper. For presentation at the International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

ROSSIGNOL-STRICK, M. Musee National d'Histoire Naturelle, Paris
HOOVER, R.B. XD12
JERMAN, G. XD12
The Hollow Spheres of the Orgueil Metorite: A Reexamination—Abstract Only. For presentation at and publication in the proceedings of The International Symposium of Optical Science and Technology 50th Annual Meeting–Instruments, Methods, and Missions for Astrobiology IX; San Diego, CA, July 31–August 4, 2005.

ROTHSCHILD, W.J. Boeing
BAILEY, D.A. Boeing
HENDERSON, E.M. NASA Johnson Space Center
CRUMBLY, C. NP70
Shuttle-Derived Launch Vehicles' Capabilities: An Overview—Final Paper. For presentation at the Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

ROYCHOUDHURY, S. Precision Combustion, Inc.
WALSH, D. Precision Combustion, Inc.
PERRY, J.L. EV51
Resistively Heated Microlith-Based Adsorber for Carbon Dioxide and Trace Contaminant Removal—Final Paper.

For presentation at the 35th International Conference on Environmental Systems (ICES), Rome, Italy, July 11–14, 2005.

RUSSELL, C.K. EM30
NUNES, JR., A.C. EM30
ZIMMERMAN, F.R. ED33
Welding in Space—Lessons Learned for Future In Space Repair Development—Abstract Only. For presentation at the National Space and Missile Materials Symposium, Summerlin, NV, June 27–July 1, 2005.

SAFIE, F.M. MP31
NGUYEN, S.C. Lockheed Martin
BURLESON, K.W. MP31
Role of Process Control in Improving Space Vehicle Safety A Space Shuttle External Tank Example—Abstract Only. For presentation at the 1st IAASS Conference, Nice, France, October 25–27, 2005.

SANDERS, J. Mississippi State University
SCHNEIDER, J. Mississippi State University
NUNES, JR., A.C. ED33
Tracing Material Flow Paths in Friction Stir Welds—Abstract Only. For presentation at the 2005 Materials Science and Technology Conference, Pittsburg, PA, September 25–28, 2005.

SANSOUCIE, M.P. EV11
HULL, P.V. EV11
IRWIN, R.W. Purdue University
TINKER, M.L. EV11
PATTON, B.W. EV11
Trade Studies for a Manned High-Power Nuclear Electric Propulsion Vehicle—Final Paper. For presentation at the 1st Space Exploration Conference, Orlando, FL, January 30–February 1, 2005.

SANSOUCIE, M.P. EV11
HULL, P.V. EV11
TINKER, M.L. EV11
Habitat Design Optimization and Analysis—Abstract Only. For presentation at the Habitation 2006 AIAA, Orlando, FL, February 5–8, 2006.

SANSOUCIE, M.P. EV11
TINKER, M.L. EV11
HYERS, R.W. University of Massachusetts
HULL, P.V. EV11
KITTREDGE, K. EV34
Trade Study of Advanced Lightweight Radiator Concepts—Final Paper. For presentation at the Space Technology and Applications International Forum, Albuquerque, NM, February 12–16, 2006.

SCHLAGHECK, R.A. XD40
SIBILLE, L. BAE Systems Analytical Systems
SACKSTEDER, K. GRC
OWENS, C. Teledyne Brown Engineering
In Situ Resource Utilization Technology Research and Facilities Supporting the NASA's Human Systems Research and Technology Life Support Program—Abstract Only. For presentation at the Northern Centre for Advanced Technology, Inc., Planetary and Terrestrial Mining Sciences Symposium, Sudbury, Canada, June 5–8, 2005.

SCHNEIDER, J. Mississippi State University
NUNES, JR., A.C. ED33
Quantifying the Material Processing Conditions for an Optimized FSW Process—Abstract Only. For presentation at the American Society for Metals 7th International Trends in Welding Research Conference, Pine Mountain, GA, May 16–20, 2005.

SCHNEIDER, J. Mississippi State University
NUNES, JR., A.C. ED33
Unraveling the Material Processing Conditions for Optimizing the FSW Process—Abstract Only. For presentation at The Minerals, Metals and Materials Society (TMS) Annual Meeting, San Francisco, CA, February 13–16, 2005.

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NUNES, JR., A.C. ED33
Unraveling the Processing Parameters in Friction Stir Welding—Abstract Only. For presentation at the AeroMat 2005, Orlando, FL, June 6–9, 2005.

SCHNEIDER, J. Mississippi State University
BESHEARS, R. ED32
NUNES, JR., A.C. ED33
Computer Tomography 3-D Imaging of the Metal Deformation Flow Path in Friction Stir Welding—Final Paper. For publication in Materials Science and Engineering.

SCHRAMM, F. ED03
Technologies on the Horizon for Product Identification—Presentation. For presentation at the Automation Identification and Data Capture Technical Institute, Ohio, IL, July 28–29, 2005.

SCOTT, J.P. ICRC
WHITFIELD,S. EM10
DAVIS, S.E. EM10
WISE, H. ICRC
MOORE, R.L. XD12
The Role of Toxicity Testing in NASA's Future Missions—Abstract Only. For presentation at the National Space and Missiles Materials Symposium, Summerlin, NV, June 27–July 1, 2005.

SEN, S. XD42/BAE Systems
SCHOFIELD, E. Plasma Processes, Inc.
O'DELL, S. Plasma Processes, Inc.
RAY, C.S. XD42
A Viable Scheme for Elemental Extraction and Purification Using In Situ Planetary Resources—Abstract Only. For presentation at the 1st Space Exploration Conference: Continuing the Voyage of Discovery, Orlando, FL, January 30–February 1, 2005.

SEN, S. XD42/BAE Systems
RAY, C.S. XD42
RAMACHANDRAN, N. XD42/BAE Systems
Processing of Lunar Soil Simulant for Space Exploration Applications—Abstract Only. For presentation at the International Conference on Advances in Solidification Science, Stockholm, Sweden, June 7–10, 2005.

SEN, S. XD42/BAE Systems
RAY, C.S. XD42
REDDY, R. University of Alabama/Tuscaloosa
Processing of Lunar Soil Simulant for Space Exploration Applications—Abstract Only. For publication in the Journal of Material Science and Engineering A.

SEVER, T.L. SD60
SATURNO, W. SD60
Putting Us on the Map: Remote Sensing Investigation of the Ancient Maya Landscape—Abstract Only. For presentation at the American Anthropological Association, San Francisco, CA, November 17–21, 2004.

SHAH, S. EM30
Application of Electron Microscopy Techniques to the Investigation of Space Shuttle Columbia Accident—Presentation. For presentation at the Southeastern Microscopy Society Meeting 2005, Pensacola, FL, May 18–20, 2005.

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JERMAN, G. EM30
The Application of Electron Microscopy Techniques to the Space Shuttle Columbia Accident Investigation—Final Paper. For presentation at Microscopy Today, Microscopy Society of America, September 2005.

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ILA, D. Alabama A&M University
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KO, Y.-K. Harvard-Smithsonian Center for Astrophysics
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GELFAND, J.D. Harvard-Smithsonian Center for Astrophysics
GAENSLER, B.M. Harvard-Smithsonian Center for Astrophysics
GRANOT, J. Kavli Institute of Particle Astrophysics and Cosmology
KOUVELIOTOU, C. XD12
FENDER, R.P. University of Southampton
RAMIREZ-RUIZ, E. Institute for Advanced Study
EICHLER, D. BGU
LYUBARSKY, Y.E. BGU
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ZHAO, Y. Embry-Riddle Aeronautical University
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MOLLER, P. European Southern Observatory
SEGURA-GARCIA, G. Instituto de Astronomia
GOROSABEL, J. Instituto de Astrofisica de Andalucia
PEREZ, E. Instituto de Astrofisica
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SOLANO, E. Laboratorio de Arofisica
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PAL, S. Pennsylvania State University
SANTORO, R. Pennsylvania State University
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RAGHOTHAMACHAR, B. State University of New York at Stony
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SMETTE, A. Institut d'Astrophysique et de Geophysique/Chercheur qualifie
FRUTCHER, A.S. Space Telescope Science Institute
PALAZZI, E. Istituto TeSRE/CNR
ROL, E. European Southern Observatory
WIJERS, A.M.J. SUNY/European Southern Observatory
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PIAN, E. Istituto TeSRE/CNR/Astronomical Observatory
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STRICKLAND, M. EI42
BLANCHE, J. EI42/Allied Aerospace
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ASHLEY, P.R. U.S. Army AMRDEC
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CHANG, J. Max Plank Institute fur Aeronomie
CHRISTL, M. XD12
FAZELY, A.R. Southern University
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AHN, H.S. University of Maryland
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CHANG, J. Max Plank Institute for Solar System Research/Purple Mountain Observatory
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GARY, G.A. XD12
KOBAYASHI, K. XD12
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COOK, M.B. XD41
CLINTON, R.G. XD40

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WILLIAMS, E. Massachusetts Institute of Technology
MUSHTAK, V. Massachusetts Institute of Technology
ROSENFELD, D. Hebrew University
GOODMAN, S.J. XD11
BOCCIPPIO, D.J. XD11

Thermodynamic Conditions Favorable to Superlative Thunderstorm Updraft, Mixed Phase Microphysics, and Lightning Flash Rate—Abstract Only. For publication in the Atmospheric Research Special Issue.

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EVANS, S.W. EM50

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WEISSKOPF, M.C. XD12
FINGER, M.H. XD12/USRA
COE, M.J. School of Physics and Astronomy
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