

# 2008 *Journal of Spacecraft and Rockets* Index

## How to Use the Index

In the Subject Index, pages 1331–1336, each technical paper is listed under a maximum of three appropriate headings. Note the locating number in boldface type preceding each paper title, and use that number to find the paper in the Chronological Index. The Author Index, pages 1337–1338, lists all authors associated with a given technical paper. The locating numbers are identical to those in the Subject Index. The Chronological Index, pages 1339–1343, also lists all papers by their locating numbers. This listing contains titles, authors and their affiliations, and volume, issue number, and page where the paper appeared. It also gives the AIAA paper number, if any, on which the article was based. Comments, Replies, and Errata are listed directly beneath the paper to which they refer. If the paper to which they refer was published prior to 2008, that paper also will appear in both the Subject and Chronological Indexes. Authors of Comments also are listed in the Author Index.

## Subject Index

### AIRCRAFT TECHNOLOGY, CONVENTIONAL, STOL/VTOL

#### *Aerodynamics*

- A08-102** Time-Accurate Numerical Prediction of Free-Flight Aerodynamics of a Finned Projectile  
**A08-042** Design, Analysis and Testing of Mars Tumbleweed Rover Concepts  
**A08-057** Integration of Actuator Performance for Guiding Supersonic Projectiles  
**A08-054** X-43A Flight-Test-Determined Aerodynamic Force and Moment Characteristics at Mach 7.0  
**A08-047** Quasi-One-Dimensional Numerical Analysis of Payload Venting of Satellite Launch Vehicle  
**A08-055** Separation Motion of Strap-On Boosters with Base Flow and Turbulence Effects  
**A08-034** Numerical Aerodynamic Investigations on Missile Yawing Control Using Nose-Mounted Flow Effectors

#### *Aerospace Plane*

- A08-079** Simulation of a Flush Air-Data System for Transatmospheric Vehicles  
**A08-023** Hypersonic Boundary-Layer Transition: Application to High-Speed Vehicle Design

#### *Configuration Design*

- A08-105** Knowledge Discovery for Flyback-Booster Aerodynamic Wing Using Data Mining

#### *Deceleration Systems*

- A08-086** Static Aeroelastic Analysis of Thin-Film Clamped Ballute for Titan Aerocapture

#### *Flight Mechanics*

- A08-102** Time-Accurate Numerical Prediction of Free-Flight Aerodynamics of a Finned Projectile  
**A08-054** X-43A Flight-Test-Determined Aerodynamic Force and Moment Characteristics at Mach 7.0

#### *Flow Control*

- A08-099** Bow Shock Wave Mitigation by Laser-Plasma Energy Addition in Hypersonic Flow  
**A08-057** Integration of Actuator Performance for Guiding Supersonic Projectiles

- A08-130** Surface Direct Current Discharge for Hypersonic Flow Control  
**A08-034** Numerical Aerodynamic Investigations on Missile Yawing Control Using Nose-Mounted Flow Effectors

#### *Fuels and Fuel Systems*

- A08-072** Eccentric Drain Port to Prevent Vortexing During Draining from Cylindrical Tanks

#### *Noise*

- A08-066** Adaptive Collocated Feedback for Noise Absorption in Payload Fairings

#### *Testing, Flight and Ground*

- A08-079** Simulation of a Flush Air-Data System for Transatmospheric Vehicles  
**A08-073** Development of Hypersonic Quiet Tunnels

### COMPUTING, INFORMATION, AND COMMUNICATION

#### *Autonomous Systems*

- A08-066** Adaptive Collocated Feedback for Noise Absorption in Payload Fairings

### FLUID DYNAMICS

#### *Boundary Layers and Heat Transfer-Turbulent*

- A08-096** Experimental Study on Aerothermal Heating Caused by Jet-Hypersonic Crossflow Interaction  
**A08-048** Turbulent Aeroheating Testing of Mars Science Laboratory Entry Vehicle

#### *Boundary-Layer Stability and Transition*

- A08-073** Development of Hypersonic Quiet Tunnels  
**A08-126** Nonparallel Flow Effects on Roughness-Induced Perturbations in Boundary Layers  
**A08-123** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 1: Experimental Results  
**A08-022** Influence of Laminar Boundary-Layer Transition on Entry Vehicle Designs  
**A08-023** Hypersonic Boundary-Layer Transition: Application to High-Speed Vehicle Design

- A08-027** Discrete-Roughness Transition for Hypersonic Flight Vehicles

- A08-024** Boundary-Layer Transition and Hypersonic Flight Testing

- A08-025** Effects of Roughness on Hypersonic Boundary-Layer Transition

- A08-026** Transition Experiments on Blunt Bodies with Distributed Roughness in Hypersonic Free Flight

- A08-121** Aerothermodynamic Testing and Boundary-Layer Trip Sizing of the HIFiRE Flight 1 Vehicle

- A08-124** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 2: Computational Analysis

- A08-120** Effect of Freestream Noise on Roughness-Induced Transition for the X-51A Forebody

- A08-028** Boundary-Layer Stability Analysis of the Hypersonic International Flight Research Transition Experiments

- A08-021** Transition Issues for Atmospheric Entry  
**A08-119** Summary of Hypersonic Boundary-Layer Transition Experiments on Blunt Bodies with Roughness

- A08-125** Receptivity of a Hypersonic Flat-Plate Boundary Layer to Three-Dimensional Surface Roughness

- A08-122** Boundary-Layer Stability Calculations for the Hypersonic International Flight Research Experimentation Transition Experiment

#### *Computational Fluid Dynamics*

- A08-086** Static Aeroelastic Analysis of Thin-Film Clamped Ballute for Titan Aerocapture

- A08-031** Flow Control over a Backward-Facing Step with Application of a Magnetic Field

- A08-102** Time-Accurate Numerical Prediction of Free-Flight Aerodynamics of a Finned Projectile

- A08-048** Turbulent Aeroheating Testing of Mars Science Laboratory Entry Vehicle

- A08-053** Numerical Investigation of a Spiked Blunt Nose Cone at Hypersonic Speeds

- A08-077** Transient Modeling of High-Altitude Rocket-Stage Separation

- A08-115** Damping Behavior of Sloshing Liquid in Laterally Excited Cylindrical Propellant Vessels

**A08-124** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 2: Computational Analysis

**A08-047** Quasi-One-Dimensional Numerical Analysis of Payload Venting of Satellite Launch Vehicle

**A08-028** Boundary-Layer Stability Analysis of the Hypersonic International Flight Research Transition Experiments

**A08-055** Separation Motion of Strap-On Boosters with Base Flow and Turbulence Effects

**A08-034** Numerical Aerodynamic Investigations on Missile Yawing Control Using Nose-Mounted Flow Effectors

**A08-101** Detached Eddy Simulations and Reynolds-Averaged Navier-Stokes Calculations of a Spinning Projectile

**A08-125** Receptivity of a Hypersonic Flat-Plate Boundary Layer to Three-Dimensional Surface Roughness

**A08-076** Forebody Strake Effects on Rocket Aerodynamic Characteristics at High Angles of Attack

### ***Hypersonic Flow***

**A08-123** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 1: Experimental Results

**A08-074** Evaluation of Kinetic/Continuum Solver for Hypersonic Nozzle-Plume Flow

**A08-073** Development of Hypersonic Quiet Tunnels

**A08-131** Analysis of an Electromagnetic Mitigation Scheme for Reentry Telemetry Through Plasma

**A08-087** Mechanical Actuators for Guidance of a Supersonic Projectile

**A08-023** Hypersonic Boundary-Layer Transition: Application to High-Speed Vehicle Design

**A08-027** Discrete-Roughness Transition for Hypersonic Flight Vehicles

**A08-053** Numerical Investigation of a Spiked Blunt Nose Cone at Hypersonic Speeds

**A08-022** Influence of Laminar Boundary-Layer Transition on Entry Vehicle Designs

**A08-054** X-43A Flight-Test-Determined Aerodynamic Force and Moment Characteristics at Mach 7.0

**A08-051** Electromagnetic Reduction of Plasma Density During Atmospheric Reentry and Hypersonic Flights

**A08-026** Transition Experiments on Blunt Bodies with Distributed Roughness in Hypersonic Free Flight

**A08-049** Evolutionary Algorithm Shape Optimization of a Hypersonic Flight Experiment Nose Cone

**A08-050** Magnetohydrodynamics Interaction Over an Axisymmetric Body in a Hypersonic Flow

**A08-024** Boundary-Layer Transition and Hypersonic Flight Testing

**A08-025** Effects of Roughness on Hypersonic Boundary-Layer Transition

**A08-070** Locating Sudden Changes in Heat Flux Using Higher Temporal Derivatives of Temperature

**A08-121** Aerothermodynamic Testing and Boundary-Layer Trip Sizing of the HIFiRE Flight 1 Vehicle

**A08-124** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 2: Computational Analysis

**A08-120** Effect of Freestream Noise on Roughness-Induced Transition for the X-51A Forebody

**A08-028** Boundary-Layer Stability Analysis of the Hypersonic International Flight Research Transition Experiments

**A08-021** Transition Issues for Atmospheric Entry

**A08-129** Stability Analysis of Beagle2 in the Free-Molecular and Transition Regimes

**A08-130** Surface Direct Current Discharge for Hypersonic Flow Control

**A08-125** Receptivity of a Hypersonic Flat-Plate Boundary Layer to Three-Dimensional Surface Roughness

**A08-119** Summary of Hypersonic Boundary-Layer Transition Experiments on Blunt Bodies with Roughness

**A08-128** Multiscale Particle-Continuum Simulations of Hypersonic Flow over a Planetary Probe

**A08-096** Experimental Study on Aerothermal Heating Caused by Jet-Hypersonic Crossflow Interaction

### ***Inlet, Nozzle, Diffuser, and Channel Flows***

**A08-078** Viscous Effects on Performance of Two-Dimensional Supersonic Linear Micronozzles

### ***Jets, Wakes, and Viscid-Inviscid Flow Interactions***

**A08-077** Transient Modeling of High-Altitude Rocket-Stage Separation

### ***Plasmadynamics and MHD***

**A08-131** Analysis of an Electromagnetic Mitigation Scheme for Reentry Telemetry Through Plasma

**A08-051** Electromagnetic Reduction of Plasma Density During Atmospheric Reentry and Hypersonic Flights

**A08-031** Flow Control over a Backward-Facing Step with Application of a Magnetic Field

**A08-030** Kinetic and Continuum Simulations of Electromagnetic Control of a Simulated Reentry Flow

**A08-130** Surface Direct Current Discharge for Hypersonic Flow Control

**A08-098** Numerical Analysis of Reentry Trajectory Coupled with Magnetohydrodynamics Flow Control

**A08-050** Magnetohydrodynamics Interaction Over an Axisymmetric Body in a Hypersonic Flow

### ***Rarefied Flows***

**A08-074** Evaluation of Kinetic/Continuum Solver for Hypersonic Nozzle-Plume Flow

**A08-077** Transient Modeling of High-Altitude Rocket-Stage Separation

**A08-030** Kinetic and Continuum Simulations of Electromagnetic Control of a Simulated Reentry Flow

**A08-104** Improved Atomic Oxygen Quantification Within the Earth's Upper Atmosphere Through Numerical Corrections

**A08-128** Multiscale Particle-Continuum Simulations of Hypersonic Flow over a Planetary Probe

**A08-129** Stability Analysis of Beagle2 in the Free-Molecular and Transition Regimes

**A08-032** Free-Molecule-Microresistojets Performance Using Water Propellant for Nanosatellite Applications

### ***Supersonic Flow***

**A08-045** Reducing the Numerical Viscosity in Nonstructured Three-Dimensional Finite Volumes Computations

**A08-078** Viscous Effects on Performance of Two-Dimensional Supersonic Linear Micronozzles

**A08-031** Flow Control over a Backward-Facing Step with Application of a Magnetic Field

**A08-008** Improvement of High Heat Flux Measurement Using a Null-Point Calorimeter

### ***Unsteady Flows***

**A08-101** Detached Eddy Simulations and Reynolds-Averaged Navier-Stokes Calculations of a Spinning Projectile

**A08-107** Sensitivity Analysis for the Dynamic Aeroelasticity of a Launch Vehicle

### ***Vortices***

**A08-072** Eccentric Drain Port to Prevent Vortexing During Draining from Cylindrical Tanks

**A08-076** Forebody Strake Effects on Rocket Aerodynamic Characteristics at High Angles of Attack

### ***Wave Motion and Sloshing***

**A08-088** Low-Gravity Slosh Analysis for Cylindrical Tanks with Hemielipsoidal Top and Bottom

**A08-115** Damping Behavior of Sloshing Liquid in Laterally Excited Cylindrical Propellant Vessels

**A08-112** Slosh Analysis for Teardrop Tank

## **GUIDANCE, CONTROL, AND DYNAMICS TECHNOLOGY**

### ***Astrodynamics***

**A08-092** Satellite Constellation Design for Complex Coverage

**A08-005** Deep Impact Navigation System Performance

**A08-061** Autonomous Orbit Determination from Lunar Halo Orbits Using Crosslink Range

**A08-038** Orbital Dynamics of Solar Sails for Geomagnetic Tail Exploration

**A08-039** Optimal Deployment/Retrieval of Tethered Satellites

### ***Autonomous Vehicles***

**A08-005** Deep Impact Navigation System Performance

**A08-042** Design, Analysis and Testing of Mars Tumbleweed Rover Concepts

**A08-061** Autonomous Orbit Determination from Lunar Halo Orbits Using Crosslink Range

### ***Control System Design***

**A08-139** Electric Propulsion and Controller Design for Drag-Free Spacecraft Operation

**A08-114** Fault-Tolerant Stabilization of a Tethered Satellite System Using Offset Control

### ***Control System Effectors***

**A08-087** Mechanical Actuators for Guidance of a Supersonic Projectile

**Dynamics**

**A08-038** Orbital Dynamics of Solar Sails for Geomagnetic Tail Exploration

**Flight Mechanics**

**A08-037** Improving Lunar Return Entry Range Capability Using Enhanced Skip Trajectory Guidance

**A08-135** Entry, Descent, and Landing Operations Analysis for the Stardust Entry Capsule

**Launch Vehicle Dynamics**

**A08-033** Improved Aerodynamics for Configurations with Boattails

**A08-137** Active Vibroacoustic Device for Noise Reduction in Launch Vehicles

**Missile Dynamics**

**A08-087** Mechanical Actuators for Guidance of a Supersonic Projectile

**A08-103** New Method to Predict Nonlinear Roll Damping Moments

**A08-056** New Methods to Predict Nonlinear Pitch Damping Moments

**A08-075** 2009 Version of the Aeroprediction Code: AP09

**Missile Guidance and Control**

**A08-033** Improved Aerodynamics for Configurations with Boattails

**Navigation**

**A08-035** Autonomous Optical Navigation at Jupiter: A Linear Covariance Analysis

**A08-036** In Situ Navigation of Spacecraft Formations in High-Altitude and Extraterrestrial Orbits

**A08-059** Real-Time Navigation for Mars Missions Using the Mars Network

**A08-005** Deep Impact Navigation System Performance

**Optimization Techniques**

**A08-018** Optimized Low-Thrust Orbit Transfer for Space Tugs

**A08-105** Knowledge Discovery for Flyback-Booster Aerodynamic Wing Using Data Mining

**Redundancy Management**

**A08-044** Spacecraft Reliability-Based Design Optimization Under Uncertainty Including Discrete Variables

**Signal Processing**

**A08-079** Simulation of a Flush Air-Data System for Transatmospheric Vehicles

**A08-041** Parametric Processing for Two-Dimensional Digital Sun Sensors: Algorithms, Modeling, and Testing

**Spacecraft Dynamics**

**A08-114** Fault-Tolerant Stabilization of a Tethered Satellite System Using Offset Control

**A08-007** Slosasat Spacecraft Calibration at Stationary Spin Rates

**A08-062** Space Event Detection Method

**Spacecraft Guidance and Control**

**A08-046** Expected Maneuver and Maneuver Covariance Models

**A08-036** In Situ Navigation of Spacecraft Formations in High-Altitude and Extraterrestrial Orbits

**A08-074** Evaluation of Kinetic/Continuum Solver for Hypersonic Nozzle-Plume Flow

**A08-037** Improving Lunar Return Entry Range Capability Using Enhanced Skip Trajectory Guidance

**A08-013** Navigation Solutions for the Repeated-Intercept Mission with Constrained Maneuver Time

**A08-039** Optimal Deployment/Retrieval of Tethered Satellites

**State Estimation**

**A08-061** Autonomous Orbit Determination from Lunar Halo Orbits Using Crosslink Range

**A08-035** Autonomous Optical Navigation at Jupiter: A Linear Covariance Analysis

**Structural Control**

**A08-064** Active Vibration Control of a Deployable Optical Telescope

**System Identification**

**A08-064** Active Vibration Control of a Deployable Optical Telescope

**Trajectory Optimization**

**A08-039** Optimal Deployment/Retrieval of Tethered Satellites

**A08-018** Optimized Low-Thrust Orbit Transfer for Space Tugs

**A08-014** Electric Sail Performance Analysis

**INTERDISCIPLINARY TOPICS****Aerospace Management**

**A08-091** Technology Readiness Level, Schedule Risk, and Slippage in Spacecraft Design

**Aerospace Technology Utilization**

**A08-067** Utilization of Space Stations: 1971-2006

**A08-091** Technology Readiness Level, Schedule Risk, and Slippage in Spacecraft Design

**Analytical and Numerical Methods**

**A08-062** Space Event Detection Method

**A08-110** Hazard Analysis for Uncontrolled Space Vehicle Reentry

**Atmospheric and Space Sciences**

**A08-062** Space Event Detection Method

**A08-138** Mission Results from FORMOSAT-3/COSMIC Constellation System

**A08-058** Atmospheric Modeling Using Accelerometer Data During Mars Reconnaissance Orbiter Aerobraking Operations

**Lasers and Laser Applications**

**A08-099** Bow Shock Wave Mitigation by Laser-Plasma Energy Addition in Hypersonic Flow

**Multidisciplinary Design Optimization**

**A08-049** Evolutionary Algorithm Shape Optimization of a Hypersonic Flight Experiment Nose Cone

**A08-065** Evaluating Technology Projections and Weight Prediction Method Uncertainty of Future Launch Vehicles

**A08-044** Spacecraft Reliability-Based Design Optimization Under Uncertainty Including Discrete Variables

**A08-080** Design Optimization of a Space Launch Vehicle Using a Genetic Algorithm

**A08-081** Optimal Design of Hypersonic Turbojet Engines for Two-Stage-to-Orbit Spaceplane

**Reliability, Maintainability, and Logistics Support**

**A08-044** Spacecraft Reliability-Based Design Optimization Under Uncertainty Including Discrete Variables

**A08-068** Egalitarian Peer-to-Peer Satellite Refueling Strategy

**Safety**

**A08-110** Hazard Analysis for Uncontrolled Space Vehicle Reentry

**Sensor Systems**

**A08-083** Engineering Model of Temperature-Induced Pneumatic Sensor Pressure Gradients for Rarefied Flow Conditions

**A08-070** Locating Sudden Changes in Heat Flux Using Higher Temporal Derivatives of Temperature

**LAUNCH VEHICLE AND MISSILE (LV/M) TECHNOLOGY****Aerodynamics**

**A08-053** Numerical Investigation of a Spiked Blunt Nose Cone at Hypersonic Speeds

**A08-132** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 1: Steady-State Simulations

**A08-133** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 2: Unsteady Simulation

**A08-047** Quasi-One-Dimensional Numerical Analysis of Payload Venting of Satellite Launch Vehicle

**A08-105** Knowledge Discovery for Flyback-Booster Aerodynamic Wing Using Data Mining

**A08-049** Evolutionary Algorithm Shape Optimization of a Hypersonic Flight Experiment Nose Cone

**A08-104** Improved Atomic Oxygen Quantification Within the Earth's Upper Atmosphere Through Numerical Corrections

**A08-075** 2009 Version of the Aeroprediction Code: AP09

**A08-103** New Method to Predict Nonlinear Roll Damping Moments

**A08-107** Sensitivity Analysis for the Dynamic Aeroelasticity of a Launch Vehicle

**A08-134** Projectile Aerodynamics Overtaking a Shock Wave

**A08-076** Forebody Strake Effects on Rocket Aerodynamic Characteristics at High Angles of Attack

**Configuration Design**

**A08-010** Low Recurring Cost, Partially Reusable Heavy Lift Launch Vehicle

**A08-056** New Methods to Predict Nonlinear Pitch Damping Moments

**A08-075** 2009 Version of the Aeroprediction Code: AP09

**Launch Vehicle and Sounding Rocket Systems**

**A08-133** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 2: Unsteady Simulation



**A08-066** Adaptive Collocated Feedback for Noise Absorption in Payload Fairings  
**A08-065** Evaluating Technology Projections and Weight Prediction Method Uncertainty of Future Launch Vehicles  
**A08-132** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 1: Steady-State Simulations  
**A08-010** Low Recurring Cost, Partially Reusable Heavy Lift Launch Vehicle  
**A08-009** Determination of Allowable Hydrogen Permeation Rates for Launch Vehicle Propellant Tanks  
**A08-056** New Methods to Predict Nonlinear Pitch Damping Moments  
**A08-103** New Method to Predict Nonlinear Roll Damping Moments  
**A08-137** Active Vibroacoustic Device for Noise Reduction in Launch Vehicles  
**A08-055** Separation Motion of Strap-On Boosters with Base Flow and Turbulence Effects  
**A08-080** Design Optimization of a Space Launch Vehicle Using a Genetic Algorithm

### **Missile Systems**

**A08-033** Improved Aerodynamics for Configurations with Boattails

### **Mission Studies and Economics**

**A08-010** Low Recurring Cost, Partially Reusable Heavy Lift Launch Vehicle

### **Propulsion and Propellant Systems**

**A08-085** Comparative Assessment of Lunar Propellant Options  
**A08-108** Correlation of Hybrid Rocket Propellant Regression Measurements with Enthalpy-Balance Model Predictions  
**A08-009** Determination of Allowable Hydrogen Permeation Rates for Launch Vehicle Propellant Tanks  
**A08-019** Photonic Laser Propulsion: Proof-of-Concept Demonstration

### **Simulation**

**A08-132** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 1: Steady-State Simulations  
**A08-133** Stage-Separation Aerodynamics of Two-Stage Space Transport Systems Part 2: Unsteady Simulation  
**A08-108** Correlation of Hybrid Rocket Propellant Regression Measurements with Enthalpy-Balance Model Predictions  
**A08-089** Method for Crew-Escape Risk-Envelope Assessment During Ascent  
**A08-090** Explosive-Hazard Analysis for Reusable Launch Vehicles in On-Pad Environments  
**A08-101** Detached Eddy Simulations and Reynolds-Averaged Navier-Stokes Calculations of a Spinning Projectile

### **Testing, Flight and Ground**

**A08-096** Experimental Study on Aerothermal Heating Caused by Jet-Hypersonic Crossflow Interaction  
**A08-024** Boundary-Layer Transition and Hypersonic Flight Testing  
**A08-020** Enthalpy Measurement of Inductively Heated Airflow

### **Thermal Protection Systems**

**A08-052** Influence of Particles on Radiative Base Heating from the Rocket Exhaust Plume  
**A08-111** Dynamic Impact Tolerance of Shuttle Orbiter Wing Leading-Edge Panels  
**A08-127** Nonequilibrium Stagnation-Line Radiative Heating for Fire II

## **PROPULSION**

### **Advanced Space Propulsion**

**A08-038** Orbital Dynamics of Solar Sails for Geomagnetic Tail Exploration  
**A08-019** Photonic Laser Propulsion: Proof-of-Concept Demonstration

### **Detonation**

**A08-089** Method for Crew-Escape Risk-Envelope Assessment During Ascent  
**A08-090** Explosive-Hazard Analysis for Reusable Launch Vehicles in On-Pad Environments

### **Electric Propulsion**

**A08-018** Optimized Low-Thrust Orbit Transfer for Space Tugs  
**A08-084** Hall Thruster Plume Model for Spacecraft Impingement Torque: Development and Validation  
**A08-100** Solar Array Plasma Interaction: Influence of Interconnect Shape on Primary Arc Parameters  
**A08-139** Electric Propulsion and Controller Design for Drag-Free Spacecraft Operation  
**A08-032** Free-Molecule-Microresistojet Performance Using Water Propellant for Nanosatellite Applications

### **Gas Turbine Engines**

**A08-011** Numerical Investigation of Jet Interaction in a Supersonic Freestream

### **Hybrid Rocket Engines**

**A08-108** Correlation of Hybrid Rocket Propellant Regression Measurements with Enthalpy-Balance Model Predictions

### **Hypersonic Propulsion**

**A08-099** Bow Shock Wave Mitigation by Laser-Plasma Energy Addition in Hypersonic Flow  
**A08-081** Optimal Design of Hypersonic Turbojet Engines for Two-Stage-to-Orbit Spaceplane  
**A08-011** Numerical Investigation of Jet Interaction in a Supersonic Freestream

### **Liquid Rocket Engines**

**A08-043** Lunar Lander Concepts for Human Exploration  
**A08-072** Eccentric Drain Port to Prevent Vortexing During Draining from Cylindrical Tanks

### **Micro Propulsion and Power**

**A08-019** Photonic Laser Propulsion: Proof-of-Concept Demonstration  
**A08-078** Viscous Effects on Performance of Two-Dimensional Supersonic Linear Micronozzles  
**A08-032** Free-Molecule-Microresistojet Performance Using Water Propellant for Nanosatellite Applications

### **Propulsion Hazards**

**A08-089** Method for Crew-Escape Risk-Envelope Assessment During Ascent

**A08-090** Explosive-Hazard Analysis for Reusable Launch Vehicles in On-Pad Environments

### **Solar Power**

**A08-093** Prediction of Center of Pressure for Deformed Solar Sails

### **Solid Rocket Motors**

**A08-109** Radiative Heat Transfer Analysis with Molten Al<sub>2</sub>O<sub>3</sub> Dispersion in Solid Rocket Motors  
**A08-080** Design Optimization of a Space Launch Vehicle Using a Genetic Algorithm  
**A08-052** Influence of Particles on Radiative Base Heating from the Rocket Exhaust Plume

### **Supersonic Combustion**

**A08-011** Numerical Investigation of Jet Interaction in a Supersonic Freestream

## **SPACE TECHNOLOGY**

### **Aerobraking Configurations/ Aerothermodynamics**

**A08-086** Static Aeroelastic Analysis of Thin-Film Clamped Ballute for Titan Aerocapture  
**A08-030** Kinetic and Continuum Simulations of Electromagnetic Control of a Simulated Reentry Flow  
**A08-069** Ballute Entry Systems for Lunar Return and Low-Earth-Orbit Return Missions  
**A08-083** Engineering Model of Temperature-Induced Pneumatic Sensor Pressure Gradients for Rarefied Flow Conditions  
**A08-058** Atmospheric Modeling Using Accelerometer Data During Mars Reconnaissance Orbiter Aerobraking Operations

### **Aerobraking Flight Mechanics**

**A08-071** Enceladus Mission Architecture Using Titan Aerogravity Assist for Orbital Capture About Saturn  
**A08-058** Atmospheric Modeling Using Accelerometer Data During Mars Reconnaissance Orbiter Aerobraking Operations

### **Global Positioning System**

**A08-036** In Situ Navigation of Spacecraft Formations in High-Altitude and Extraterrestrial Orbits

### **Humans in Space/Life Support Systems, EVA**

**A08-097** Review of Seal Designs on the Apollo Spacecraft

### **International Space Station**

**A08-113** Systems Analysis and Structural Design of an Unpressurized Cargo Delivery Vehicle  
**A08-067** Utilization of Space Stations: 1971-2006

### **Landers**

**A08-060** Entry, Descent, and Landing Communications for the 2007 Phoenix Mars Lander  
**A08-135** Entry, Descent, and Landing Operations Analysis for the Stardust Entry Capsule  
**A08-003** Entry, Descent, and Landing Operations Analysis for the Genesis Entry Capsule  
**A08-004** Reconstruction of the Genesis Entry  
**A08-043** Lunar Lander Concepts for Human Exploration

***Mission Design and Analysis***

- A08-135** Entry, Descent, and Landing Operations Analysis for the Stardust Entry Capsule  
**A08-035** Autonomous Optical Navigation at Jupiter: A Linear Covariance Analysis  
**A08-015** Extension of Traditional Entry, Descent, and Landing Technologies for Human Mars Exploration  
**A08-060** Entry, Descent, and Landing Communications for the 2007 Phoenix Mars Lander  
**A08-040** Multibody Orbit Architectures for Lunar South Pole Coverage  
**A08-043** Lunar Lander Concepts for Human Exploration  
**A08-014** Electric Sail Performance Analysis  
**A08-069** Ballute Entry Systems for Lunar Return and Low-Earth-Orbit Return Missions  
**A08-071** Enceladus Mission Architecture Using Titan Aerogravity Assist for Orbital Capture About Saturn  
**A08-092** Satellite Constellation Design for Complex Coverage  
**A08-003** Entry, Descent, and Landing Operations Analysis for the Genesis Entry Capsule  
**A08-004** Reconstruction of the Genesis Entry  
**A08-037** Improving Lunar Return Entry Range Capability Using Enhanced Skip Trajectory Guidance  
**A08-140** Preliminary Design of Superorbital Earth Entry Flight Experiment Using the Volna Launcher  
**A08-139** Electric Propulsion and Controller Design for Drag-Free Spacecraft Operation  
**A08-136** Modeling a Low-Energy Ballistic Lunar Transfer Using Dynamical Systems Theory

***Mission Trajectories (Earth and Interplanetary)***

- A08-071** Enceladus Mission Architecture Using Titan Aerogravity Assist for Orbital Capture About Saturn  
**A08-040** Multibody Orbit Architectures for Lunar South Pole Coverage  
**A08-014** Electric Sail Performance Analysis  
**A08-046** Expected Maneuver and Maneuver Covariance Models  
**A08-129** Stability Analysis of Beagle2 in the Free-Molecular and Transition Regimes  
**A08-136** Modeling a Low-Energy Ballistic Lunar Transfer Using Dynamical Systems Theory  
**A08-013** Navigation Solutions for the Repeated-Intercept Mission with Constrained Maneuver Time

***Space Experiments***

- A08-067** Utilization of Space Stations: 1971-2006  
**A08-016** Analysis of the UNISAT-3 Solar Array In-Orbit Performance  
**A08-007** Sloshtat Spacecraft Calibration at Stationary Spin Rates  
**A08-006** Thruster Plumes: Sources for High Pressure and Contamination at the Payload Location  
**A08-138** Mission Results from FORMOSAT-3/COSMIC Constellation System

***Space Systems***

- A08-068** Egalitarian Peer-to-Peer Satellite Refueling Strategy

- A08-085** Comparative Assessment of Lunar Propellant Options  
**A08-110** Hazard Analysis for Uncontrolled Space Vehicle Reentry  
**A08-015** Extension of Traditional Entry, Descent, and Landing Technologies for Human Mars Exploration  
**A08-016** Analysis of the UNISAT-3 Solar Array In-Orbit Performance  
**A08-069** Ballute Entry Systems for Lunar Return and Low-Earth-Orbit Return Missions  
**A08-092** Satellite Constellation Design for Complex Coverage  
**A08-114** Fault-Tolerant Stabilization of a Tethered Satellite System Using Offset Control  
**A08-091** Technology Readiness Level, Schedule Risk, and Slippage in Spacecraft Design  
**A08-138** Mission Results from FORMOSAT-3/COSMIC Constellation System  
**A08-113** Systems Analysis and Structural Design of an Unpressurized Cargo Delivery Vehicle

***Spacecraft Attitude Determination***

- A08-083** Engineering Model of Temperature-Induced Pneumatic Sensor Pressure Gradients for Rarefied Flow Conditions  
**A08-041** Parametric Processing for Two-Dimensional Digital Sun Sensors: Algorithms, Modeling, and Testing  
**A08-093** Prediction of Center of Pressure for Deformed Solar Sails

***Spacecraft Communication***

- A08-060** Entry, Descent, and Landing Communications for the 2007 Phoenix Mars Lander  
**A08-131** Analysis of an Electromagnetic Mitigation Scheme for Reentry Telemetry Through Plasma

***Spacecraft Contamination/Sterilization***

- A08-006** Thruster Plumes: Sources for High Pressure and Contamination at the Payload Location

***Spacecraft Power***

- A08-100** Solar Array Plasma Interaction: Influence of Interconnect Shape on Primary Arc Parameters  
**A08-016** Analysis of the UNISAT-3 Solar Array In-Orbit Performance

***Spacecraft Propulsion System Integration***

- A08-100** Solar Array Plasma Interaction: Influence of Interconnect Shape on Primary Arc Parameters  
**A08-085** Comparative Assessment of Lunar Propellant Options

***Spacecraft Sensor Systems***

- A08-041** Parametric Processing for Two-Dimensional Digital Sun Sensors: Algorithms, Modeling, and Testing

***Spacecraft Structural Configuration, Design, and Analysis***

- A08-111** Dynamic Impact Tolerance of Shuttle Orbiter Wing Leading-Edge Panels  
**A08-012** Qualification of Spacecraft Equipment: Random-Vibration Response Based on Impedance/Mobility Techniques  
**A08-093** Prediction of Center of Pressure for Deformed Solar Sails

- A08-097** Review of Seal Designs on the Apollo Spacecraft  
**A08-113** Systems Analysis and Structural Design of an Unpressurized Cargo Delivery Vehicle  
**A08-017** Accuracy Analysis of the Reflective Surface of the Umbrella-Type Antenna

***Spacecraft Test and Evaluation***

- A08-012** Qualification of Spacecraft Equipment: Random-Vibration Response Based on Impedance/Mobility Techniques  
**A08-084** Hall Thruster Plume Model for Spacecraft Impingement Torque: Development and Validation  
**A08-141** Global Static Testing and Model Validation of Stiffened Thin-Film Polyimide Panels  
**A08-106** Aeroelastic Response and Protection of Space Shuttle External Tank Cable Trays  
**A08-007** Sloshtat Spacecraft Calibration at Stationary Spin Rates

***Spacecraft Thermal Management***

- A08-082** Enhancement of Emissive Properties for In-Space High-Temperature Radiator Materials

**STRUCTURAL MECHANICS AND MATERIALS*****Aeroelasticity and Control***

- A08-107** Sensitivity Analysis for the Dynamic Aeroelasticity of a Launch Vehicle  
**A08-106** Aeroelastic Response and Protection of Space Shuttle External Tank Cable Trays

***Flexible and Active Structures***

- A08-042** Design, Analysis and Testing of Mars Tumbleweed Rover Concepts  
**A08-064** Active Vibration Control of a Deployable Optical Telescope  
**A08-001** Systematically Creased Thin-Film Membrane Structures  
**A08-141** Global Static Testing and Model Validation of Stiffened Thin-Film Polyimide Panels  
**A08-063** Folding Large Antenna Tape Spring

***Structural Composite Materials***

- A08-063** Folding Large Antenna Tape Spring  
**A08-009** Determination of Allowable Hydrogen Permeation Rates for Launch Vehicle Propellant Tanks

***Structural Design***

- A08-063** Folding Large Antenna Tape Spring

***Structural Dynamics and Characterization***

- A08-106** Aeroelastic Response and Protection of Space Shuttle External Tank Cable Trays  
**A08-111** Dynamic Impact Tolerance of Shuttle Orbiter Wing Leading-Edge Panels

***Structural Finite Elements***

- A08-141** Global Static Testing and Model Validation of Stiffened Thin-Film Polyimide Panels  
**A08-002** Effective Modulus of Creased Thin Membranes

**Structural Modeling**

**A08-012** Qualification of Spacecraft Equipment: Random-Vibration Response Based on Impedance/Mobility Techniques

**A08-001** Systematically Creased Thin-Film Membrane Structures

**Structural Stability**

**A08-001** Systematically Creased Thin-Film Membrane Structures

## THERMOPHYSICS AND HEAT TRANSFER

**Ablation, Pyrolysis, Thermal Decomposition and Degradation**

**A08-029** Performance of a Low Density Ablative Heat Shield Material

**Aerothermodynamics/Thermal Protection**

**A08-027** Discrete-Roughness Transition for Hypersonic Flight Vehicles

**A08-022** Influence of Laminar Boundary-Layer Transition on Entry Vehicle Designs

**A08-020** Enthalpy Measurement of Inductively Heated Airflow

**A08-008** Improvement of High Heat Flux Measurement Using a Null-Point Calorimeter

**A08-029** Performance of a Low Density Ablative Heat Shield Material

**A08-025** Effects of Roughness on Hypersonic Boundary-Layer Transition

**A08-026** Transition Experiments on Blunt Bodies with Distributed Roughness in Hypersonic Free Flight

**A08-098** Numerical Analysis of Reentry Trajectory Coupled with Magnetohydrodynamics Flow Control

**A08-121** Aerothermodynamic Testing and Boundary-Layer Trip Sizing of the HIFiRE Flight 1 Vehicle

**A08-048** Turbulent Aeroheating Testing of Mars Science Laboratory Entry Vehicle

**A08-128** Multiscale Particle-Continuum Simulations of Hypersonic Flow over a Planetary Probe

**A08-095** Non-Boltzmann Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**A08-127** Nonequilibrium Stagnation-Line Radiative Heating for Fire II

**A08-119** Summary of Hypersonic Boundary-Layer Transition Experiments on Blunt Bodies with Roughness

**A08-140** Preliminary Design of Superorbital Earth Entry Flight Experiment Using the Volna Launcher

**A08-097** Review of Seal Designs on the Apollo Spacecraft

**Computational Heat Transfer**

**A08-095** Non-Boltzmann Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**A08-127** Nonequilibrium Stagnation-Line Radiative Heating for Fire II

**Heat Conduction**

**A08-070** Locating Sudden Changes in Heat Flux Using Higher Temporal Derivatives of Temperature

**A08-008** Improvement of High Heat Flux Measurement Using a Null-Point Calorimeter

**Nonintrusive Diagnostics**

**A08-020** Enthalpy Measurement of Inductively Heated Airflow

**Radiation in Participating Media**

**A08-109** Radiative Heat Transfer Analysis with Molten Al<sub>2</sub>O<sub>3</sub> Dispersion in Solid Rocket Motors

**A08-094** Spectrum Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**A08-052** Influence of Particles on Radiative Base Heating from the Rocket Exhaust Plume

**Radiation Interchange Between Surfaces**

**A08-082** Enhancement of Emissive Properties for In-Space High-Temperature Radiator Materials

**Thermal Control**

**A08-082** Enhancement of Emissive Properties for In-Space High-Temperature Radiator Materials

**Thermal Modeling and Analysis**

**A08-029** Performance of a Low Density Ablative Heat Shield Material

**Thermochemistry and Chemical Kinetics**

**A08-095** Non-Boltzmann Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**A08-094** Spectrum Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**Thermophysical Properties**

**A08-094** Spectrum Modeling for Air Shock-Layer Radiation at Lunar-Return Conditions

**A08-123** Ground Test Studies of the HIFiRE-1 Transition Experiment Part 1: Experimental Results