# 1987 Journal of Propulsion and Power Index

# How to Use the Index

In the Subject Index, pages 569-572, each technical paper is listed under a maximum of three appropriate headings. Note the number in boldface type following each paper title, and use that number to locate the paper in the Chronological Index. The Author Index, page 573, lists all authors associated with a given technical paper. The locating numbers are identical to those in the Subject Index. The Chronological Index, pages 574-576, lists all papers by their unique code 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, as well as the "CP" or conference volume number if the paper was published in a bound collection of meetings papers. 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 1987, 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

Explicit Multigrid Algorithms for Quasi-Three-Dimensional Viscous Flows in Turbomachinery B87-062 Boundary-Layer Effects on the Flowfield about Isolated Flow-Through Nacelles

## Aeroelasticity

Experimental Study of the Aerodynamics of Incipient Torsional Stall Flutter B87-027

#### Fuels and Fuel Systems

Pollutant Formation in Heterogeneous Mixtures of Fuel Drops and Air B87-001

#### Noise

Ring-Shaped Discharge Structures in a Closed Cycle MHD Disk Generator B87-039

#### **Powerplant Design**

Results of NASA's Energy Efficient Engine
Program B87-082
Data Analysis of Diagonally Connected
Magnetohydrodynamic Power Generator
Experiments B87-022

#### **Propeller and Rotor Systems**

Comparison of Theory and Experiment for Propfan Inlets B87-079

Euler Analysis of Transonic Propeller Flows
B87-043

Experimental Study of the Aerodynamics of Incipient Torsional Stall Flutter B87-027

Off-Design Analysis of Counter-Rotating

Propeller Configurations

# Simulation

Ring-Shaped Discharge Structures in a Closed Cycle MHD Disk Generator

#### Vibration

Proximity Transducer Technique for Bearing Health Monitoring B87-012

## Energy

# Alternate Fuels

Fuel Thermal Stability Effects on Spray
Characteristics B87-075
Role of Fuel Chemical Properties on Combustor Radiactive Heat Load B87-074
Characteristic Times for Lean Blowoff in
Turbine Combustors B87-059
Effects of Alternative Fuels on Ignition
Limits of the J85 Annular Combustors
B87-044
Electrostatic Spray Modification in Gas
Turbine Combustion B87-030

Pollutant Formation in Heterogeneous Mix-

tures of Fuel Drops and Air

B87-001

# Combustion

Liquid-Fueled Supersonic Combustion Ramjets: A Research Perspective B87-077 Fuel Thermal Stability Effects on Spray Characteristics B87-075

#### Magnetohydrodynamics

Superconducting Magnet for a Helium-Driven Disk MHD Generator B87-081
Methods and Results of Diagnosis in a Closed-Cycle MHD Blowdown Generator B87-080

High-Intensity Point Perturbation in a Two-Temperature MHD Plasma B87-072 Ring-Shaped Discharge Structures in a Closed Cycle MHD Disk Generator

Magnetogasdynamic Effects on Acoustic Waves in MHD Generators B87-028
Data Analysis of Diagonally Connected Magnetohydrodynamic Power Generator Experiments B87-022
Numerical Simulation of Nonequilibrium Plasma in an MHD Generator B87-010

#### Microwaves

Microwave Electrothermal Thruster Performance in Helium Gas B87-023

#### Photovoltaic Power

Combination Solar Photovoltaic Heat Engine

**Energy Converter** B87-057 Numerical Analysis of SSE Preburner Injection Research R87\_018 Mean Drop Sizes from Pressure-Swirl Noztor Atomization and Combustion Proc-**Rotating Machinery** B87-002 zles esses Pollutant Formation in Heterogeneous Mix-Calculation of Three-Dimensional Viscous Navier-Stokes Simulations of Rotor/Stator tures of Fuel Drops and Air B87-001 Flows in Turbomachinery with an Implicit Interaction Using Patched and Overlaid Relaxation Method B87-064 Grids B87-061 Cryogenics Characteristics and Evaporation History of Advanced Technology Payoffs for Future Fuel Spray Injected into Crossflowing Small Propulsion Systems B87-050 Superconducting Magnet for a Helium-Driv-Airstreams Numerical Simulation of the Flowfield in a en Disk MHD Generator B87-081 High-Resolution Patternator for the Char-Motored Two-Dimensional Wankel En-Selection of Burn-Resistant Materials for acterization of Fuel Sprays B87-033 B87-042 Oxygen-Driven Turbopumps B87-007 Prediction of the Structure of Fuel Sprays in Proximity Transducer Technique for Bearing Cylindrical Combustion Chambers Euler Solutions for Highly Loaded Turbine Health Monitoring B87-012 B87-019 Selection of Burn-Resistant Materials for Cascades B87-006 Oxygen-Driven Turbopumps B87-007 Nonsteady Aerodynamics Solar Thermal Power Ramjet Diffuser Flowfield Response to Navier-Stokes Simulations of Rotor/Stator Combination Solar Photovoltaic Heat Engine Large-Amplitude Combustor Pressure Os-Energy Converter Interaction Using Patched and Overlaid B87-057 B87-071 cillations Grids Wind Power Experimental Study of the Aerodynamics of **Computational Methods** Incipient Torsional Stall Flutter B87-027 Electric Power From Vertical-Axis Wind Experimental Investigation of Unsteady Fan Comparison of Theory and Experiment for Turbines Propfan Inlets Flow Interaction with Downstream Struts Numerical Simulations of Acoustic Vortex B87-026 Fluid Dynamics Interactions in a Central Dump Ramjet Nozzle and Channel Flow Combustor B87-078 Aeroacoustics Parabolized Navier-Stokes Analysis of Ramjet Diffuser Flowfield Response to **Ducted Supersonic Combustion Problems** Acoustic Mode Determination in Solid Large-Amplitude Combustor Pressure Os-B87-068 Rocket Motor Stability Analysis B87-060 cillations B87-071 Numerical Investigation of Two-Dimension-Experimental Investigation of Unsteady Fan Simple Viscous-Inviscid Aerodynamic Analal H2-Air Flameholding over Ramps and Flow Interaction with Downstream Struts ysis of Two-Dimensional Augmentors Rearward-Facing Steps B87-067 B87-026 B87-070 Evolution and Application of CFD Tech-Analytical Study of Swirler Effects in Anniques for Scramjet Engine Analysis **Boundary Layers and Convective Heat** nular Propulsive Nozzles B87-069 B87-065 Transfer-Laminar Numerical Solutions of Scramjet Nozzle Calculation of Three-Dimensional Viscous B87-066 A Navier-Stokes Nozzle Analysis Technique Flows in Turbomachinery with an Implicit Swirling Supersonic Nozzle Flow B87-054 B87-053 Relaxation Method B87-064 Performance of High-Area-Ratio Nozzle for Cascade Viscous Flow Analysis Using the a Small Rocket Thruster **Boundary Layers and Convective Heat** Navier-Stokes Equations B87-063 Concept and Technique for Probing Channel Transfer-Turbulent Explicit Multigrid Algorithms for Quasi-Flows with Abrupt Perturbations B87-032 Three-Dimensional Viscous Flows in A Navier-Stokes Nozzle Analysis Technique Consideration of Two-Dimensional Flow B87-062 Turbomachinery Effects on Nozzleless Rocket Performance Navier-Stokes Simulations of Rotor/Stator B87-031 Interaction Using Patched and Overlaid Boundary-Layer Stability and Transition Electrostatic Spray Modification in Gas Grids B87-061 Turbine Combustion Euler Solutions for Highly Loaded Turbine A Method for Calculating Axisymmetric Design of Compressed Truncated Perfect Cascades Afterbody Flows B87-056 Nozzles B87-025 A Navier-Stokes Nozzle Analysis Technique Hydrodynamics Theory of Onset in Magnetoplasmadynamic B87-053 Thrusters B87-021 Numerical Studies of Recirculating Ducted Small Centifugal Pumps for Low-Thrust Flow Generated by Ramp Tabs in a Rocket Flows B87-045 Rockets B87-038 Nozzle Exhaust Euler Analysis of Transonic Propeller Flows Study of an Asymmetric Flap Nozzle as a Jets, Wakes, and Viscid-Inviscid Flow B87-043 Thrust-Vectoring Device B85-046 Numerical Study of Laser Sustained Hydro-Interactions gen Plasmas in a Forced Convective Flow Plasmadynamics and MHD Simple Viscous-Inviscid Aerodynamic Anal-B87-040 ysis of Two-Dimensional Augmentors Methods and Results of Diagnosis in a Role of Fuel Chemical Properties on Com-B87-070 Closed-Cycle MHD Blowdown Generator bustor Radiactive Heat Load B87-074 Calculation of Three-Dimensional Viscous B87-080 Parabolized Navier-Stokes Analysis of Flows in Turbomachinery with an Implicit High-Intensity Point Perturbation in a Two-**Ducted Supersonic Combustion Problems** Relaxation Method B87-064 Temperature MHD Plasma B87-072 B87-068 Cascade Viscous Flow Analysis Using the Magnetogasdynamic Effects on Acoustic Experimental Investigation of Erosive Burn-Navier-Stokes Equations B87-063 Waves in MHD Generators B87-028 ing Solid Propellants B87-058 Method for Calculating Axisymmetric Theory of Onset in Magnetoplasmadynamic Combustion of Magnesium/Polytetrafluor-Afterbody Flows B87-056 **Thrusters** B87-021 oethylene B87-048 Scalar Field Measurements in Reciprocating Numerical Studies of Recirculating Ducted **Engines** B87-055 Reactive Flows Flows B87-045 Computation of Confined Turbulent Coaxial Numerical Analysis of SSE Preburner Injec-Characteristics and Evaporation History of Jet Flows B87-041 Fuel Spray Injected into Crossflowing tor Atomization and Combustion Proc-Effects of Multiple Rows and Noncircular Airstreams B87-036 Orifices on Dilution Jet Mixing B87-035 Development of Test Facility and Optical Application of Spatially Precise Laser Di-Boundary-Layer Effects on the Flowfield agnostics to Fundamental and Applied Instrumentation for Turbulent Combusabout Isolated Flow-Through Nacelles tion Research B87-018 Combustion Research B87-034 Prediction of the Structure of Fuel Sprays in Afterbody Flowfield Computations at Tran-Subsonic Flow Cylindrical Combustion Chambers sonic and Supersonic Mach Numbers

Multiphase Flows

Development of Test Facility and Optical

Instrumentation for Turbulent Combus-

Numerical Simulations of Acoustic Vortex

Combustor

Interactions in a Central Dump Ramjet

B87-078

Numerical	Studies of	f Recircu	lating Du	ıcted
Flows			B8	7-045
Numerical	Simulation	n of the l	Flowfield	in a
Motored	Two-Din	nensional	Wankel	En-
gine			B8	7-042
Computation of Confined Turbulent Coaxial				

Computation of Confined Turbulent Coaxial

Jet Flows

B87-041

### Supersonic and Hypersonic Flow

Numerical Investigation of Two-Dimensional H<sub>2</sub>-Air Flameholding over Ramps and Rearward-Facing Steps B87-067
Numerical Solutions of Scramjet Nozzle Flows B87-066
Evolution and Application of CFD Techniques for Scramjet Engine Analysis

B87-065

Swirling Supersonic Nozzle Flow B87-054

#### Transonic Flow

Analytical Study of Swirler Effects in Annular Propulsive Nozzles

A Method for Calculating Axisymmetric Afterbody Flows

B87-056

Afterbody Flowfield Computations at Transonic and Supersonic Mach Numbers

B87-008

Flows

## Viscous Nonboundary-Layer Flows

Numerical Simulation of the Flowfield in a Motored Two-Dimensional Wankel Engine B87-042

# **Interdisciplinary Topics**

#### **Analytical and Numerical Methods**

Off-Design Analysis of Counter-Rotating Propeller Configurations B87-014

#### Lasers and Laser Applications

Numerical Study of Laser Sustained Hydrogen Plasmas in a Forced Convective Flow 887-040

#### **Numerical Analysis**

Numerical Simulation of Nonequilibrium Plasma in an MHD Generator B87-010

#### Research Facilities and Instrumentation

Application of Spatially Precise Laser Diagnostics to Fundamental and Applied Combustion Research

High-Resolution Patternator for the Characterization of Fuel Sprays

B87-033

#### Safety

Selection of Burn-Resistant Materials for Oxygen-Driven Turbopumps B87-007

# Launch Vehicle and Missile (LV/M) Technology

# Missile Systems

Duel-Interupted-Thrust Pulse Motor

B87-049

#### **Propulsion and Propellant Systems**

Experimental Investigation of Erosive Burning Solid Propellants

B87-058

Duel-Interupted-Thrust Pulse Motor

Small Centifugal Pumps for Low-Thrust Rockets B87-038

#### **Propulsion**

### Airbreathing Propulsion

Results of NASA's Energy Efficient Engine Program Comparison of Theory and Experiment for Propfan Inlets Numerical Simulations of Acoustic Vortex Interactions in a Central Dump Ramjet Combustor B87-078 Liquid-Fueled Supersonic Combustion Ramiets: A Research Perspective B87-077 Ramjet Diffuser Flowfield Response to Large-Amplitude Combustor Pressure Oscillations Simple Viscous-Inviscid Aerodynamic Analysis of Two-Dimensional Augmentors Numerical Investigation of Two-Dimensional H<sub>2</sub>-Air Flameholding over Ramps and Rearward-Facing Steps Numerical Solutions of Scramjet Nozzle

Evolution and Application of CFD Techniques for Scramjet Engine Analysis

B87-065
Cascade Viscous Flow Analysis Using the Navier-Stokes Equations
Explicit Multigrid Algorithms for Quasi-Three-Dimensional Viscous Flows in Turbomachinery
B87-062
Scalar Field Measurements in Reciprocating Engines
B87-055
Swirling Supersonic Nozzle Flow
B87-054

B87-066

Advanced Technology Payoffs for Future Small Propulsion Systems B87-050 Concept and Technique for Probing Channel Flows with Abrupt Perturbations B87-032 Experimental Investigation of Unsteady Fan Flow Interaction with Downstream Struts B87-026

Enhancement of Mixing in Reacting Fuel-Rich Plumes Issued from Elliptical Nozzles

Temperature and Concentration Measurements in a Solid Fuel Ramjet Combustion Chamber B87-020

Development of Test Facility and Optical Instrumentation for Turbulent Combustion Research B87-018 Off-Design Analysis of Counter-Rotating

Propeller Configurations

Boundary-Layer Effects on the Flowfield about Isolated Flow-Through Nacelles

B87-009

Euler Solutions for Highly Loaded Turbine
Cascades B87-006
Experiment on Multiple Fuel Supplies to Air
Breathing Rocket Combustors B87-004
Mean Drop Sizes from Pressure-Swirl Nozzles B87-002

#### Combustion and Combustor Designs

Role of Fuel Chemical Properties on Combustor Radiactive Heat Load B87-074 Characteristic Times for Lean Blowoff in Turbine Combustors B87-059 Computation of Confined Turbulent Coaxial Jet Flows R87-041 Effects of Multiple Rows and Noncircular Orifices on Dilution Jet Mixing B87-035 High-Resolution Patternator for the Characterization of Fuel Sprays B87-033 Electrostatic Spray Modification in Gas Turbine Combustion B87-030 Technology for the Design of High Temperature Rise Combustors Enhancement of Mixing in Reacting Fuel-Rich Plumes Issued from Elliptical Nozzles Temperature and Concentration Measurements in a Solid Fuel Ramjet Combustion Chamber B87-020 Experiment on Multiple Fuel Supplies to Air Breathing Rocket Combustors B87-004 Mean Drop Sizes from Pressure-Swirl Nozzles B87-002

# Combustion Stability, Ignition, and Detonation

Acoustic Mode Determination in Solid Rocket Motor Stability Analysis B87-060 Characteristic Times for Lean Blowoff in Turbine Combustors B87-059 Direct Measurement of High Frequency, Solid Propellant, Pressure-Coupled Admittances B87-047 Suppression of Oscillations in Confined Disk-Stabilized Flames B87-046 Different Modes of Crack Propagation in Burning Solid Propellants B87-003

#### **Electric and Advanced Space Propulsion**

Generalized Theory of Rocket Propulsion for Future Space Travel B87-051

Microwave Electrothermal Thruster Performance in Helium Gas B87-023

Theory of Onset in Magnetoplasmadynamic Thrusters B87-021

Reduction of Plasma Loss to Discharge
Chamber Walls in a Ring-Cusp Ion
Thruster B87-013
Measurement of MPD Thruster Erosion
Using Surface Layer Activation B87-005

#### **Engine Performance**

Results of NASA's Energy Efficient Engine
Program B87-082
Analytical Study of Swirler Effects in Annular Propulsive Nozzles B87-069
Performance of High-Area-Ratio Nozzle for a Small Rocket Thruster B87-052
Proximity Transducer Technique for Bearing Health Monitoring B87-012
Afterbody Flowfield Computations at Transonic and Supersonic Mach Numbers
B87-008

#### Fuels and Propellants, Properties of

Direct Measurement of High Frequency, Solid Propellant, Pressure-Coupled Admittances B87-047 Modified Maximum Principal Stress Criterion for Propellent Liner Bond Failures 1827-037

#### Liquid Rocket Engines and Missile Systems

Numerical Analysis of SSE Preburner Injector Atomization and Combustion Processes

B87-076

Performance of High-Area-Ratio Nozzle for a Small Rocket Thruster

B87-052

Small Centifugal Pumps for Low-Thrust Rockets

B87-038

Design of Compressed Truncated Perfect Nozzles

B87-025

#### Solid and Hybrid Rocket Engines

Acoustic Mode Determination in Solid Rocket Motor Stability Analysis B87-060 Duel-Interupted-Thrust Pulse Motor

Direct Measurement of High Frequency, Solid Propellant, Pressure-Coupled Admittances B87-047 Consideration of Two-Dimensional Flow Effects on Nozzleless Rocket Performance 887-031 Design of Compressed Truncated Perfect

Nozzles B87-025
Temperature and Concentration Measurements in a Solid Fuel Ramjet Combustion
Chamber B87-020

#### Structural Mechanics and Materials

#### Materials, Properties of

Modified Maximum Principal Stress Crite-

rion for Propellent Liner Bond Failures
B87-037

#### Structural Design

Fatigue Criterion to System Design, Life, and Reliability B87-011

# Structural Durability (including Fatigue and Fracture)

Modified Maximum Principal Stress Criterion for Propellent Liner Bond Failures
887-037

Fatigue Criterion to System Design, Life, and

Reliability B87-011

Different Modes of Crack Propagation in Burning Solid Propellants B87-003

#### Structural Dynamics

Electric Power From Vertical-Axis Wind Turbines B87-073

# Thermophysics and Thermochemistry

## **Experimental Methods of Diagnostics**

Methods and Results of Diagnosis in a Closed-Cycle MHD Blowdown Generator B87-080