

SPACE, PROPULSION & ENERGY SCIENCES
INTERNATIONAL FORUM SPESIF-2009

SPACE, PROPULSION & ENERGY SCIENCES INTERNATIONAL FORUM SPESIF-2009

13th Conference on Thermophysics Applications in Microgravity
6th Symposium on New Frontiers in Space Propulsion Sciences
1st Symposium on Astrosociology

Workshop on Future Energy Sources
Workshop on High Frequency Gravitational Waves
Workshop on Future Directions in Space Sciences & Technology

Huntsville, Alabama

24 – 26 February 2009

EDITOR

Glen A. Robertson



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SPACE, PROPULSION &
ENERGY SCIENCES
INTERNATIONAL FORUM
SPESIF-2009

Space, Propulsion & Energy Sciences International Forum (SPESIF-2009)

February 24-26, 2009

“Integrating Space, Propulsion & Energy Sciences”

13TH CONFERENCE ON THERMOPHYSICS APPLICATIONS IN
MICROGRAVITY

6TH SYMPOSIUM ON NEW FRONTIERS IN SPACE PROPULSION
SCIENCES

1ST SYMPOSIUM ON ASTROSOCIOLOGY

WORKSHOP ON FUTURE ENERGY SOURCES

WORKSHOP ON HIGH FREQUENCY GRAVITATIONAL WAVES

WORKSHOP ON FUTURE DIRECTIONS IN SPACE SCIENCE &
TECHNOLOGY

In Cooperation with:

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*Institute for Advanced Studies in the
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Madison, Alabama*

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CONTENTS

Introduction	xi
Committees	xv

13TH CONFERENCE ON THERMOPHYSICS APPLICATIONS IN MICROGRAVITY

PROGRESS IN MICROGRAVITY THERMOPHYSICS

Qualitative Evaluation of a Liquid-Vapor Separator Concept in Micro-Gravity Conditions	3
L. J. Elston, K. L. Yerkes, S. K. Thomas, and J. McQuillen	

TWO PHASE THERMAL CONTROL SYSTEMS

Heat Transfer Characteristics of Liquid-Driven Swirl Boiling Liquid/Gas Separator under Reduced Gravity	14
R. Oinuma, N. Nguyen, N. Dickes, R. C. Kurwitz, and F. R. Best	
High Temperature Variable Conductance Heat Pipes for Radioisotope Stirling Systems	22
C. Tarau, K. L. Walker, and W. G. Anderson	
Thermal Management Architecture for Future Responsive Spacecraft	30
D. Bugby, W. Zimbeck, and E. Kroliczek	
Novel Architecture for a Long-Life, Lightweight Venus Lander	39
D. Bugby, S. Seghi, E. Kroliczek, and M. Pauken	

HIGH CAPACITY HEAT REJECTION SYSTEMS

A Thermosyphon Titanium-Water Heat Pipe Design for a Lunar Surface Power System	51
J. Thayer and S. Semenov	

THERMAL CONTROL FOR LUNAR AND DEEP MISSIONS

Variable Conductance Heat Pipe Radiators for Lunar and Martian Environments	57
W. G. Anderson, M. C. Ellis, and K. L. Walker	

ADVANCES IN SPRAY COOLING

Effectiveness of Linear Spray Cooling in Microgravity	67
B. L. Conrad, J. C. Springmann, L. A. McGill, and T. A. Shedd	

ADVANCED HEAT PIPE TECHNOLOGIES

Variable Conductance Heat Pipe Performance after Extended Periods of Freezing	73
M. C. Ellis and W. G. Anderson	
Heat Pipes and Loop Heat Pipes Acceptance Tests for Satellites Applications	82
R. R. Riehl	
Loop Heat Pipe for TacSat-4	91
P. M. Dussinger, D. B. Sarraf, and W. G. Anderson	

SMART MATERIALS

High Performance Variable Emittance Devices for Spacecraft Application Based on Conducting Polymers Coupled with Ionic Liquids	101
P. Chandrasekhar, B. J. Zay, S. Barbolt, R. Werner, G. C. Birur, and A. Paris	

ISRU THERMAL CONTROL TECHNOLOGIES

Heat Pipe Solar Receiver for Oxygen Production of Lunar Regolith	105
J. R. Hartenstine, W. G. Anderson, K. L. Walker, and M. C. Ellis	

6TH SYMPOSIUM ON NEW FRONTIERS IN SPACE PROPULSION SCIENCES

ADVANCES IN SPACE PROPULSION

Metallic Hydrogen Propelled Launch Vehicles for Lunar Missions	117
J. W. Cole and I. F. Silvera	
Electrodeless Experimental Thruster	126
J. J. Brainerd and A. Reisz	
ECR-GDM Thruster for Fusion Propulsion	133
J. J. Brainerd and A. Reisz	
Ion Emissive Membranes for Propulsion Applications	141
J. D. Williams, P. J. Wilbur, Co. C. Farnell, Ca. C. Farnell, M. Wilson, and K. Hutchings	

ADVANCED IN-SPACE PROPULSION & POWER

Near-Millimeter Wave Issues for a Space Power Grid	149
N. Komerath, V. Venkat, and J. Fernandez	
Advanced NaBH₄/H₂O₂ Fuel Cell for Space Applications	157
G. H. Miley, K.-J. Kim, N. Luo, and P. J. Shrestha	
IEC Thrusters for Space Probe Applications and Propulsion	164
G. H. Miley, H. Momota, L. Wu, M. P. Reilly, V. L. Teofilo, R. Burton, R. Dell, D. Dell, and W. A. Hargus	
Propulsion Utilizing Laser-Driven Ponderomotive Fields for Deep-Space Missions	175
G. J. Williams, Jr. and J. H. Gilland	

THEORIES, MODELS AND CONCEPTS

The Beginnings of a Quantum GEM Gravity Theory Based on Path Integrals	185
J. Brandenburg	
Possibility of the Space Propulsion System Utilizing the ZPF Field	194
T. Musha	
Specially Conditioned EM Fields for Propellant-Less Impulsion within Higher Dimensional Spacetimes	202
H. D. Froning	
Preliminary Theoretical Interpretation of the Tajmar Frame Dragging Effect through the GEM Theory	210
J. Brandenburg	
Fluidic Electrodynamics: Approach to Electromagnetic Propulsion	216
A. Martins and M. J. Pinheiro	
Field Theory Model of the Flyby Anomaly	226
R. A. Lewis	

39 Questionable Assumptions in Modern Physics	235
G. Volk	
The Nature of the Fifth Dimension in Classical Relativity	243
L. L. Williams	

EXPERIMENTAL RESULTS

Investigation of Propulsive Aspects of Mach Effects	252
J. F. Woodward	
Interaction of Superconducting $YBa_2Cu_{3-x}Zn_xO_{7-y}$ with MeV Radiation	260
R. A. Lewis and T. Robertson	

NEW DIRECTIONS IN ASTROPHYSICS PARTICLE PHYSICS

Gravity with Spin: Quantum Spin Coherence as an <i>Ab Initio</i> Generator of Gravitational Attraction	267
P. G. Burton	
Hypothetical Dark Matter/Axion Rockets: What Can be Said About Dark Matter in Terms of Space Physics Propulsion	276
A. Beckwith	
An Alternative Explanation of the Binary Pulsar PSR 1913+16	285
P. A. Murad	
Recurrent Holonomy - Anomalous Gyro Couplings and Possible Drives	294
B. Binder	

UNCONVENTIONAL PHYSICAL PRINCIPLES AND GRAVITATIONAL MODELS

Revisiting Gravitational Anomalies and a Potential Solution	302
P. A. Murad	
Maxwell Formulation of Gravity in the Hyperspace	311
G. Fontana	
An Approach to Gravity Modification as a Propulsion Technology	317
B. T. Solomon	
Fluidic Spacetime and Representation of Fields in the Tri-Space Model of the Universe	326
G. V. Meholic	

NEW DIRECTIONS IN COMMUNICATIONS

Signaling with a Single-Particle System	337
R. W. Jensen	

FAR TERM SPACE TRANSPORT AND ENVIRONMENT MODELS AND THEORIES

Analogue of Lenz's Rule in Phenomenological Gravitation	345
A. L. Dmitriev	
Superluminal Space Craft	352
P. E. Williams	

1ST SYMPOSIUM ON ASTROSOCIOLOGY

THE DEFINITION, SCOPE AND RELEVANCE OF ASTROSOCIOLOGY

Impacts of Terrestrial and Astronautical Sociology on the Evolution of Spaceflight by Spacefaring Civilizations	361
H. D. Froning, Jr.	
Overcoming Challenges: Creating an Astrosociology Curriculum	369
M. S. Marsh	
Pioneers on the Astrosociological Frontier: Introduction to the First Symposium on Astrosociology	375
J. Pass	

THE RELATIONSHIP BETWEEN ASTROSOCIOLOGY AND ASTROBIOLOGY

Did God Break the Sabbath? Astrosociology and Christian Fundamentalism in the United States	384
E. McAdamis	

PLANETARY DEFENSE AND SOCIETAL PROTECTION

Initial Assessment of Recent NEO Response Strategies for the United Nations	393
A. C. Charania	

SPACE SOCIETIES-THE SETTLEMENT OF SPACE ENVIRONMENTS

Embodied Space: A Sensorial Approach to Spatial Experience	399
M. J. Durão	
Space Exploration and the Greenland Norse; a Comparative Study on the Application of Technology for Exploration	407
T. D. Swanson	

TECHNOLOGY TRANSFERS AND SPINOFFS

International Collaboration on Satellite-Enabled Projects in Developing Countries	414
D. Wood and A. Weigel	
Dual Space Technology Transfer	423
W. Kowbel and R. Loutfy	

SPACE FARING SOCIETIES

Theater of Memory against a Background of Stars: A Generation Starship Concept between Fiction and Reality	429
S. Caroti	

WORKSHOP ON FUTURE ENERGY SOURCES

ADVANCED ENERGY SOURCES

Antimatter as an Energy Source	441
G. P. Jackson	

Condensed Matter Cluster Reactions in LENR Power Cells for a Radical New Type of Space Power Source	450
X. Yang, G. H. Miley, and H. Hora	

INNOVATIVE TECHNIQUES IN FUSION ENERGY

Fusion for Earth and Space	459
P. E. Williams	
Radiation Shielding Options for the Affordable Fission Surface Power System	466
A. E. Craft and J. C. King	

INNOVATIVE TECHNIQUES IN NUCLEAR ENERGY

Neutron and Proton Radiation Damage and Isothermal Annealing of Irradiated SiC Schottky Power Diodes	478
J. A. Kulisek and T. E. Blue	
Design of a Simplified Closed Brayton Cycle for a Space Reactor Application	486
L. N. F. Guimarães, G. P. Camillo, and G. M. Placco	
An Assessment of Nuclear Isomers as an Energy Storage Medium	492
E. P. Hartouni	

FUTURE ENERGY SOURCES

Proposed Use of Zero Bias Diode Arrays as Thermal Electric Noise Rectifiers and Non-Thermal Energy Harvesters	501
T. F. Valone	

WORKSHOP ON HIGH-FREQUENCY GRAVITATIONAL WAVES

HIGH FREQUENCY GRAVITY WAVE DETECTION

Generalized Generators of Very-High-Frequency Gravitational Waves Including Ring Devices	515
R. C. Woods and R. M. L. Baker, Jr.	
Electromagnetic to Gravitational Wave Conversion via Nuclear Holonomy	524
G. Fontana and B. Binder	
Lessons for Energy Resonance HFGW Detector Designs from Mass Resonance and Interferometric LFGW Detectors	532
G. V. Stephenson	
The Standard Quantum Limit for the Li-Baker HFGW Detector	542
G. V. Stephenson	
The Peoples Republic of China High-Frequency Gravitational Wave Research Program	548
R. M. L. Baker, Jr.	
Towards a New Era in Gravitational Wave Detection: High Frequency Gravitational Wave Research	553
G. Garcia-Cuadrado	

THEORIES ON HIGH FREQUENCY GRAVITY WAVES

Relic High Frequency Gravitational Waves, Neutrino Physics, and Icecube	564
A. Beckwith	
Relic High Frequency Gravitational Waves from the Big Bang and How to Detect Them	571
A. Beckwith	

HIGH FREQUENCY GRAVITY WAVE GENERATORS

Radiation Pattern for a Multiple-Element HFGW Generator	582
R. M. L. Baker, Jr. and C. S. Black	
Input Power Requirements for High-Frequency Gravitational Wave Generators	591
R. M. L. Baker, Jr.	

WORKSHOP ON FUTURE DIRECTIONS IN SPACE SCIENCE AND TECHNOLOGY

ENABLING TECHNOLOGIES FOR LUNAR SURFACE SCIENCE

Enabling Technology for Lunar Surface Science	599
P. E. Clark, P. S. Millar, B. Beaman, M. Choi, L. Cooper, S. Feng, R. King, L. Leshin, R. Lewis, P. S. Yeh, E. Young, and J. Lorenz	
SPARCLE: Electrostatic Tool for Lunar Dust Control	608
P. E. Clark, S. A. Curtis, F. Minetto, C. Y. Cheung, J. F. Keller, M. Moore, and C. I. Calle	

SENSORS

The Next Generation Advanced Video Guidance Sensor: Flight Heritage and Current Development	615
R. T. Howard and T. C. Bryan	

PROPULSION ANALYSIS

Computer Program for Analysis, Design and Optimization of Propulsion, Dynamics, and Kinematics of Multistage Rockets	622
M. Lali	

LECTURE SERIES PAPERS

Holonomy Attractor Connecting Spaces of Different Curvature Responsible for “Anomalies”	629
B. Binder	
Block Ignition Inertial Confinement Fusion (ICF) with Condensed Matter Cluster Type Targets for p-B11 Powered Space Propulsion	656
G. H. Miley, H. Hora, J. Badziak, J. Wolowski, Z.-M. Sheng, J. Zhang, F. Osman, W. Zhang, and X. He	
The Potential of Astrosociology in the Twenty-First Century: Developing an Emerging Field to Help Solve Social Problems	674
J. Pass	
Engineering Dynamics of a Scalar Universe Part I: Theory & Static Density Models	687
G. A. Robertson	
Engineering Dynamics of a Scalar Universe Part II: Time-Varying Density Model & Propulsion	706
G. A. Robertson	
Author Index	723

INTRODUCTION

With great pleasure, the organizing committee introduces the Proceedings of the **Space, Propulsion & Energy Sciences International Forum (SPESIF-2009)** held February 24-26, 2009. The venue for the event was at the Von Braun Center situated downtown, Huntsville, Alabama. This year forum theme is:

Toward the Integration of the Space, Propulsion & Energy Sciences

SPESIF-2009 provides an international focus for the global integration of space, propulsion & energy industry, academic researchers and students worldwide through the presentation of the latest ideas, current activities and future ambitions across a diverse spectrum of topics. These topics span the range from basic research to recent technology advances and hardware testing, providing excellent opportunities for interaction and informative dialogue among the forum's attendees.

The hosted conferences, symposium and workshops are:

- **13th Conference on Thermophysics Applications in Microgravity**
Chairs: Ted Swanson, NASA Goddard Space Flight Center, USA
Tung T. Lam, The Aerospace Corporation, USA
- **6th Symposium on New Frontiers in the Space Propulsion Sciences**
Chairs: Glen A. Robertson, IASSPES, USA
R. Clive Woods, Louisiana State University, USA
- **1st Symposium on Astrosociology**
Chairs: Jim Pass, Astrosociology Research Institute, USA
Albert A. Harrison, University of California, Davis, USA
- **Workshop on Future Energy Sources**
Chairs: Dave Goodwin, U.S. Department of Energy, USA
Len Danczyk, Energetics Technology, USA
- **Workshop on High-Frequency Gravitational Waves**
Chairs: Bob Baker, GRAVWAVE, USA
Gary Stephenson, Seculine Consulting, USA
- **Workshop on Future Directions in Space Science and Technology**
Chairs: A. A. M. Delil, AATCS Consultant, Netherlands
Michael T. Pauken, NASA Jet Propulsion Laboratory, USA

The SPESIF-2009 program featured one plenary session, which began with opening remarks by the forum's organizer and general chair on

- **Why is there a need to integrate the Space, Propulsion & Energy Sciences?**
Glen A. Robertson, IASSPES, USA

followed by presentations on

- **Interstellar Propulsion Research: Realistic Possibilities and Idealistic Dreams**
Les Johnson, NASA Marshall Space Flight Center, USA

- **What We Will Really Do On the Moon**

Brent Sherwood, NASA Jet Propulsion Laboratory, USA

SPESIF-2009 also contained nine one to two hour lectures on various topics in the space, propulsion & energy Sciences. A few have papers contain in these proceedings, but most do not. The first two lectures followed the plenary and are:

1. **Dark and Useless Energy**

Lloyd Knox, University of California, Davis, USA

2. **Solar Sailing**

Les Johnson, NASA Marshall Space Flight Center, USA

Other lectures (in no particular order) are spread across the Forum and included:

3. **Central Holonomy Condition Connecting Spaces of Different Curvature and Forcing some "Anomalies" in General Relativity and Quantum Mechanics**

Bernd Binder, Quantics, Germany

4. **Laser Based Solar Power**

Richard L. Fork, University of Alabama at Huntsville, USA

5. **Aneutronic Fusion Research and Development for Future Aerospace Power and Propulsion Needs**

H. David Froning, Flight Unlimited, Australia/USA

6. **Developing Impact Sensors Using Triboluminescence**

W.A. Hollerman, University of Louisiana, USA

7. **Advanced Space Propulsion Concepts for Interstellar Travel**

Gregory V. Meholic, Los Angeles, CA, USA

8. **Block Ignition Inertial Confinement Fusion (ICF) with Condensed Matter Cluster Type Targets for p-B11 Powered Space Propulsion**

George H. Miley, University of Illinois, USA

9. **Engineering Dynamics of A Scalar Universe**

Glen A. Robertson, IASSPES, USA

Education is a major emphasis of SPESIF. However, in this first year no general educational programs could be implemented. SPESIF-2009 waived registration fees for the 1st University and College student co-attending with their professor. Several co-attending student participated in this and all gave presentations. Additionally, other general University and College students registered at the student rate; all submitted papers and gave presentations or were co-authors.

The technical program for SPESIF-2009 offered 128 presentations in 42 sessions with representation from 13 countries. We are very grateful to the members of the executive committee and the chairs and co-chairs of the technical sessions for their hard work, dedication

and contribution to the technical program. In addition, we wish to express our appreciation to the authors and speakers for their contributions to the technical program and to the archival Proceedings containing the full text papers. These proceedings are published by the American Institute of Physics, both in a searchable CD and a hardbound form and marketed worldwide.

Special thanks are due to the Staff of the Institute for Advanced Studies in the Space, Propulsion & Energy Sciences (IASSPES), Cecil Stokes & Whitt Brantley, Organizing Chairs and Ms. Melissa Le, SPESIF-Administrative Chair. The efforts and contributions of these individuals are key to the professional organization of such an international event.

Our thanks also go out to the exhibitors, whose contributions supported the attendance of the co-attending University and College students, for their timely and informative displays on the latest technology.

In general, we are grateful to all for their effort in helping organize and plan SPESIF-2009. Without the commitment, dedication and contribution of these individuals, this year's meeting would not have been possible.

My heartfelt thanks go out to the families of the IASSPES staff for their understanding, patience and continued encouragement and support through the demanding task of organizing the event.

Glen A. Robertson
President, IASSPES

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Albert A. Harrison, University of California, Davis, USA

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Chairs: Dave Goodwin, Department of Energy, USA
Len Danczyk, Energetics Technology, USA

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Workshop on Future Directions in Space Science and Technology

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