



September 1-4, 2009  
Wailea Beach Marriott Resort, Maui, Hawaii  
Draft Agenda (as of 8/24/2009)

**Sunday 30 August**  
2:00 pm – 6:00 pm

**EARLY REGISTRATION | Aulani Foyer**

*Presenting and poster authors please submit your technical paper and signed Transfer of Copyright Agreement upon check-in. Presenting authors, please load your PowerPoint onto the presentation laptop. Poster authors, please have your poster ready for viewing Wednesday, 2 September by 7:30 am.*

**Monday 31 August**  
2:00 pm – 6:00 pm

**EARLY REGISTRATION | Aulani Foyer**

5:00 pm – 8:00 pm **EXHIBITOR LOAD-IN**

**Tuesday 1 September**  
10:00 am – 8:00 pm

**EXHIBITOR LOAD-IN**

2:00 pm – 6:00 pm **EARLY REGISTRATION | Aulani Foyer**

6:00 pm – 7:30 pm **WELCOME RECEPTION | Luau Gardens**  
**Co-sponsored by General Dynamics**

**Wednesday 2 September**  
6:00 am

**BREAKFAST | Luau Gardens** *at leisure from 6:00 am to 7:15 am*

7:30 **EXHIBITION AND POSTER ROOM | Jade-Plumeria Ballroom**

**CONFERENCE OPENING | Aulani Ballroom**

Jeanne Unemori Skog  
President & CEO, Maui Economic Development Board

**INVOCATION**

Reverend Kealahou Alika, Keawala'i Congregational Church

**WELCOME REMARKS** *(via video)*

Daniel K. Inouye, United States Senator

**KEYNOTE ADDRESSES**

**Introductions**

Colonel L. Kirk Lewis, Ret.  
Senior Analyst, Institute for Defense Analyses

Lieutenant General Larry D. James, Commander, 14th Air Force (Air Forces Strategic), Air Force Space Command, and Commander, Joint Functional Component Command for Space, U.S. Strategic Command, Vandenberg Air Force Base, California

Lieutenant General John T. "Tom" Sheridan, Commander, Space and Missile Systems Center, Air Force Space Command, Los Angeles Air Force Base, California

9:00 **BREAK**

9:20 **IRIDIUM/COSMOS COLLISION**

Session Chair, Doyle Hall, AMOS - Boeing LTS Maui

Analysis of the Prediction Characteristics for the Collision  
Vladimir Agapov, Vympel Corp., Russia

The Spectrum of Satellite Breakup and Fragmentation  
David Finkleman, Center for Space Standards and Innovation

Analysis and Implications of the Iridium 33/Cosmos 2251 Collision  
T.S. Kelso, Center for Space Standards and Innovation

High Power Large Aperture Radar Observations of the Iridium-Kosmos Collision  
Juha Vierinen, Sodankyla Geophysical Observatory, Finland

**10:40**

**ASTRODYNAMICS**

Session Chair, T.S. Kelso, Center for Space Standards & Innovation

Localized Density/Drag Prediction for Improved Onboard Orbit Propagation  
Nathan Stastny, Air Force Research Laboratory

Comparison of Different Algorithms of Orbit Determination Using Radar Measurements Acquired  
Kyle Alfriend, Texas A&M University

Investigation of the Characteristics of the Algorithm of Primary Orbit Determination for LEO  
Sergey Kamensky, Vympel Corporation, Russia

**11:40**

**LUNCHEON | Lokelani Ballroom**

**12:40 pm**

**IMAGING**

Session Chair, Charles Matson, Air Force Research Laboratory

A Real Time Superresolution Image Enhancement Processor  
David Gerwe, The Boeing Company

Support-Based Digital and Optical Super-resolution in One and Two Dimensions  
Sudhakar Prasad, University of New Mexico

Preconditioning MFBD and the Local Minimum Trap  
James Nagy, Emory University

A Statistical Information based analysis of a Compressive Imaging System  
Douglas Hope, University of New Mexico

Speckle Imaging with a Partitioned Aperture: Laboratory Results  
Brandoch Calef, Boeing LTS Maui

Enhancing Image Processing Performance for PCID in a Heterogeneous Network of Multi-code Processors  
Richard Linderman, Air Force Research Laboratory

**2:40**

**BREAK**

**3:00**

**IMAGING (continued)**

First Polarimetric Images of Boosting Rocket Exhaust Plumes  
David Tyler, Lockheed Martin Space Systems, ATC

Beyond Diffraction Limited Seeing Through Polarization Diversity  
Steven James, Air Force Research Laboratory

Improving the Detection of Near Earth Objects for Ground Based Telescopes  
Anthony O'Dell, U.S. Air Force

**4:00**                    **EXHIBITION AND POSTER PRESENTATIONS | Jade-Plumeria Ballroom**  
Posters listed on last page of schedule

**6:00**                    **AMOS SITE CAPABILITIES TUTORIAL | Aulani Ballroom**

**Thursday 3 September**

**6:00 am**                **BREAKFAST | Luau Gardens** *at leisure from 6:00 am to 7:15 am*

**7:30**                    **EXHIBITION AND POSTER ROOM | Jade-Plumeria Ballroom**

**7:30**                    **CONFERENCE KEYNOTE | Aulani Ballroom**

State of the Global Space Industry  
Elliot Holokauahi Pulham, President and CEO, The Space Foundation

**8:00**                    **SPACE SITUATIONAL AWARENESS**  
Session Chair, Michael Egan, National Geospatial-Intelligence Agency

Enhanced Algorithms for EO/IR Electronic Stabilization, Clutter Suppression, and Track-Before-Detect for Multiple Low Observable Targets  
Alexander Tartakovsky, Argo Science Corp. and University of Southern California

Commercial and Foreign Entities (CFE) Pilot Program status update and way-ahead  
Charles Spillar, U.S. Air Force Space Command

Space Surveillance Network Sensor Development, Modification, and Sustainment Programs  
Richard Colarco, L-3 Communications

Probabilistic Evidential Reasoning with Symbolic Argumentation for Space Situation Awareness  
Glenn Takata, Charles River Analytics

**9:20**                    **BREAK**

**9:40**                    **ORBITAL DEBRIS**  
Session Chair, Thomas Schildknecht, Astronomical Institute, University of Bern, Switzerland

Analysis of Situation in GEO Protected Region  
Vladimir Agapov, Keldysh Institute of Applied Mathematics, Russia

Faint deep space debris observations with ISON optical network  
Igor Molotov, Keldysh Institute of Applied Mathematics, Russia

Analysis of Orbit Prediction Sensitivity to Thermal Emissions Acceleration Modeling for High Area-to-mass Ratio Objects  
Thomas Kelecyc, Boeing LTS Maui

Photometric Studies of GEO Debris  
Patrick Seitzer, University of Michigan

Reflectance Spectra of Space Debris in GEO  
Thomas Schildknecht, Astronomical Institute, University of Bern, Switzerland

An Assessment of GEO Orbital Debris Photometric Properties Derived from Laboratory-Based Measurements  
Heather Cowardin, ESCG/JACOBS

**11:40**                    **LUNCHEON | Lokelani Ballroom**

12:40 pm

**NON-RESOLVED OBJECT CHARACTERIZATION**

Session Chair, Matt Hejduk, SRA International (AFSPC/A3C)

Photometry of Rotating Regular N-sided Prisms for Arbitrary Solar Phase Angles  
Keith Knox, Boeing LTS Maui

Signature Intensity Derivative and its Application to Resident Space Object Typing  
Tamara Payne, Applied Optimization Inc.

Catalog of Brightness Curves for GEO Space Debris  
Vadim Vygon, Institute for Precision Instrument Engineering, Russia

A Survey of Geosynchronous Satellite Glints  
Frederick Vrba, U.S. Naval Observatory

Space Object Characterization Using Time-Frequency Analysis of Multispectral Measurements  
from the Magdalena Ridge Observatory  
Christian Alcalá, Atmospheric and Environmental Research, Inc.

Micro-facet Scattering Model for Pulse Polarization Ranging  
John Stryjewski, CSC

2:40

**BREAK**

3:00

**ADAPTIVE OPTICS**

Session Chair, Mike Roggemann, PDS

Advanced Photosensors for Laser Beacon Adaptive Optics on the Starfire Optical Range 3.5 m  
Telescope  
Robert Johnson, Air Force Research Laboratory

Wide-field Image Compensation with Multiple Laser Guide Stars  
Michael Hart, University of Arizona

Predicting Photon Returns of Sodium Guide Stars for Different Laser Technologies  
Edward Kibblewhite, University of Chicago

Holographic Adaptive Optics  
Geoff Andersen, U.S. Air Force Academy

**ADJOURN**

4:40

**INDUSTRY RECEPTION | Mauna Loa & Ilima**

7:00

**CULTURAL EVENING / VIDEO**

**Friday 4 September**

6:00 am

**BREAKFAST | Luau Gardens** *at leisure from 6:00 am to 7:15 am*

7:30

**EXHIBITION AND POSTER ROOM | Jade-Plumeria Ballroom**

7:30

**IYA FILM | Aulani Ballroom**

Hawaiian Starlight: Sharing the Beauty of the Hawaiian Skies  
Jean-Charles Cuillandre, Canada-France-Hawaii Telescope Corp.

8:00

**ASTRONOMY**

Session Chair, Eileen Ryan, Magdalena Ridge Observatory, New Mexico Tech

Planning Ahead for Asteroid Hazard Mitigation, Phase 1: Parameter Space Exploration and  
Scenario Modeling  
Catherine Plesko, Los Alamos National Laboratory

Rotation Rates of Recently Discovered Small Near-Earth Asteroids  
William Ryan, New Mexico Institute of Mining and Technology

Impact Hazard Mitigation: Understanding the Effects of Nuclear Explosive Outputs on Comets and Asteroids  
Ryan Clement, Los Alamos National Laboratory

Asteroid Detection with the Pan-STARRS Moving Object Processing System  
Larry Denneau, Institute for Astronomy, University of Hawaii

**9:20** **BREAK**

**9:40** **ASTRONOMY (continued)**

Proper Motions from the Pan-STARRS PS1 Survey  
David Monet, U.S. Naval Observatory

The Pan-STARRS Project: The Next Generation of Survey Astronomy Has Arrived  
William Burgett, Institute for Astronomy, University of Hawaii

A New Method for Collimating and Aligning a Very Wide Field Telescope  
Nick Kaiser, Institute for Astronomy, University of Hawaii

The Pan-STARRS Gigapixel Camera  
John Tonry, Institute for Astronomy, University of Hawaii

**11:00** **SPACE-BASED ASSETS**

Session Chair, Thomas Cooley, Air Force Research Laboratory

Applied Reachability for Space Situational Awareness and Safety in Spacecraft Proximity Operations  
Marcus Holzinger, University of Colorado at Boulder

Telescope Spectrophotometric and Absolute Flux Calibration, and National Security Applications, Using CALIPSO Satellite LIDAR, and Future Wavelength-Tunable Systems  
Justin Albert, University of Victoria, Canada

**11:40** **LUNCHEON | Lokelani Ballroom**

**12:40 pm** **SPACE-BASED ASSETS (continued)**

Operationally Responsive Space Launch for Space Situational Awareness Missions  
Thomas Freeman, SMC/SDTW

AFRL's Demonstration and Science Experiments (DSX) Mission  
Mark Scherbarth, Air Force Research Laboratory

Leveraging the Space Plug-and-Play Avionics (SPA) standard to Enable Constellation-Level Collaborative Autonomy  
Louis Marketos, Design\_Net Engineering

**1:40** **INSTRUMENTATION, SENSORS AND SYSTEMS**

Session Chair, John Lambert, The Boeing Company

Stratospheric Observatory for Infrared Astronomy (SOFIA): Infrared Sensor Development and Science Capabilities  
Joel Nelson, Agilex

Geo Satellite Imaging at the Naval Prototype Optical Interferometer (NPOI)  
Sergio Restaino, Naval Research Laboratory

SAM, The Starfire Optical Range Atmospheric Monitor  
Marjorie Shoemake, AFRL/ RDSA, Boeing LTS

**2:40**                    **BREAK**

**3:00**                    **INSTRUMENTATION, SENSORS AND SYSTEMS (continued)**

Novel All Digital Ring Cavity Locking Servo for FASOR-X  
Jeffrey Baker, Boeing LTS Maui

Science Objectives and Commissioning of the Magdalena Ridge Observatory Interferometer  
Charles Cormier, New Mexico Tech

**3:40**                    **ATMOSPHERICS/SPACE WEATHER**

Session Chair, Bill Bradford, PDS

Validation of Optical Turbulence Simulations from a Numerical Weather Prediction Model in Support of Adaptive Optics Design  
Randall Alliss, Northrop Grumman - TASC

Preliminary Results to Support Evidence of Thermospheric Contraction  
Arrun Saunders, University of Southampton, United Kingdom

Improving Laser-Guide Star AO Observations via Mesospheric Sodium Enhancement  
Robert Whiteley, Innovative Technology Systems

**4:40**                    **ADJOURN**

**EXHIBITORS LOAD-OUT**

**6:00**                    **CLOSING DINNER AND SHOW | Pacific Terrace**

**Saturday 5 September**

**7:30 am**                    **OPTIONAL TECHNICAL TOUR (*departs from Wailea Marriott*)**

## **POSTER PRESENTATIONS**

JSpOC Cognitive Task Analysis  
Denise Aleva, Air Force Research Laboratory

Simulations of Optical Interferometric Imaging of Geo-stationary Satellites  
Eric Bakker, New Mexico Tech

Application of MODTRAN® for Planetary Atmospheres to Jupiter and Titan  
Alexander Berk, Spectral Sciences, Inc.

AFRL Advanced Electric Lasers Branch - Construction and Upgrade of a 50-watt Facility-class Sodium Guidestar Pump Laser  
Timothy Bronder, Air Force Research Laboratory

Experimental investigation of image de-aliasing algorithm performance  
Peter Crabtree, Air Force Research Laboratory

A Lunar Laser Ranging Retroreflector for the 21st Century  
Douglas Currie, University of Maryland

Analytical Modeling of Space-Based Thermal Imaging Systems  
James Dawson, Dynetics, Inc.

Comparing Speckle Imaging Methods  
Gregory Dente, GCD Associates

Militarily Critical Technology Program

James Doherty, Institute for Defense Analyses

The AO PSF from Keck and Gemini  
Jack Drummond, Air Force Research Laboratory

Performance Constraints on the MCS Superresolution Algorithm  
Michael Egan, National Geospatial-Intelligence Agency

Comparison of Different Methods of Ephemeris Retrieval for Correlation of Observations  
Carolin Fruh, Astronomical Institute, University of Bern, Switzerland

Optimizing Site Locations for Determining Shape from Photometric Light Curves  
Dan Fulcoly, U.S. Air Force Academy

ALL-ON-ALL CONJUNCTION ASSESSMENT: Methods for Automating and Minimizing the Computation Time  
Robert Hall, Analytical Graphics Inc.

Accurate Radiometric Calibration using Mechanically-Shuttered CCD Systems  
Doyle Hall, Boeing LTS Maui

Forensic Reconstructions of the Chinese ASAT Test and the Iridium  
Johannes Hacker, Emergent Space

Scaling up of the Iris AO Segmented DM Technology for Atmospheric Correction  
Michael Helmbrecht, Iris AO, Inc.

Price-Based Information Routing in Complex Satellite Networks for Space-Based Situational Awareness  
Islam Hussein, Worcester Polytechnic Institute

Advanced Sciences and Technology Research for Astrodynamics  
Moriba Jah, Air Force Research Laboratory

Simulations of Non-resolved, Infrared Imaging of Satellites  
Kevin Jim, Oceanit

A New Undergraduate Course on the Physics of SSA  
Thomas Jost, U.S. Air Force Academy

The Space Elevator, Orbital Debris, and Space Situational Awareness  
Jason Kent, U.S. Air Force

LEO Satellite Tracking with Raven-Class Systems  
Paul Kervin, Air Force Research Laboratory

Development of a New Type Sensor for In-Situ Space Debris Measurement  
Yukihito Kitazawa, IHI Corporation, Japan

Space Object Radiometric Modeling for Hardbody Optical Signature Database Generation  
Bernie Klem, Arnold Engineering Development Center

Observation of Light Curves of Space Objects  
Hirohisa Kurosaki, Japan Aerospace Exploration Agency, Japan

Automatic Reacquisition of Satellite Positions by Detecting their Expected Streaks in Astronomical Images  
Martin Levesque, DRDC, Canada

Compressive Coherence Sensing  
Daniel Marks, Duke University

The Race toward Becoming Operationally Responsive in Space  
Jeff Nagy, U.S. Air Force

When Satellites Collide: High-Performance Computer Modeling of the Cosmos-Iridium Collision  
Scot Olivier, Lawrence Livermore National Laboratory

Astronomy as a Tool for Training the Next Generation Technical Workforce  
Van Romero, New Mexico Institute of Mining and Technology

High Performance Computing Software Applications Institute for Space Situational Awareness (HSAI-SSA)  
Chris Sabol, Air Force Research Laboratory

Comparison of Neural Networks and Tabular Nearest Neighbor Encoding for Hyperspectral Signature Classification in Unresolved Object Detection  
Mark Schmalz, Department of CISE

Small Aperture Telescope Observations of Co-located Geostationary Satellites  
Robert Scott, DRDC, Canada

Expanding Lookout Capabilities for Architectural Analysis  
BethAnn Shick, U.S. Air Force

High Speed Optical Imaging Photon Counting Microchannel Plate Detectors for Astronomical and Space Sensing Applications  
Oswald Siegmund, University of California, Berkeley

Simulation of Satellite Light Curves for a Combination of Simple Shapes for Ground and Space-based Sensors  
Cody Singletary, U.S. Air Force Academy

Conjunction Risk Assessment with Spherical Quadrature  
Chris Thornton, The Boeing Company

Polarization Pulse Ranging for Space Situational Awareness  
David Tyler, University of Arizona

Advanced SPeckle Imaging Reconstruction Environment (ASPIRE)  
Ron Vioria, Maui High Performance Computing Center

Activities of JAXA's Innovative Technology Center on Space Debris Observation  
Toshifumi Yanagisawa, Japan Aerospace Exploration Agency, Japan

Comparison of Optical Sparse Aperture Image Restoration with Experimental PSF and Designed PSF  
Zhiwei Zhou, Beijing University of Technology, China