

Sunday 12 September

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

Monday 13 September

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

Tuesday 14 September

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

2:00 pm – 8:00 pm **EXHIBITOR LOAD-IN | Jade-Plumeria Ballroom**

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

Wednesday 15 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

Major General Susan Helms
Director of Plans and Policy, U.S. Strategic Command, Offutt Air Force Base, Nebraska

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 **ORBITAL DEBRIS**

Session Chair, Thomas Schildknecht, Astronomical Institute, University of Bern

AIUB Efforts to Survey, Track, and Characterize Small-Size Objects at High Altitudes
Thomas Schildknecht, Astronomical Institute, University of Bern

Optical Photometric Observations of GEO Debris
Patrick Seitzer, University of Michigan

Detection of Faint GEO Objects Using Population and Motion Prediction
Masahiko Uetsuhara, Kyushu University

Orbital Debris Observation via Laser Illuminated Optical Measurement Techniques
Makoto Tagawa, Kyushu University

Developing an Effective Policy for Managing the Risk Posed by Orbital Debris
William Welser IV, RAND Corporation

11:00

NON-RESOLVED OBJECT CHARACTERIZATION

Session Chair, Matt Hejduk, SRA International

Satellite Attitude from Small Aperture Telescopes
Daron Nishimoto, PDS, LLC

Noise-Tolerant Spectral Signature Classification in Unresolved Object Detection Using Adaptive Lattice Neural Networks
Mark Schmalz, Center for Computer Vision and Visualization

Satellite Surface Material Characterization from Multi-band Optical Observations
Doyle Hall, Boeing LTS – AMOS

12:00

LUNCHEON | Lokelani Ballroom

1:00 pm

NON-RESOLVED OBJECT CHARACTERIZATION (continued)

Investigation of Properties and Characteristics of High-Area-to-Mass-Ratio Objects Based on Examples of Optical Observation Data of Space Debris Objects in GEO-like Orbits
Thomas Schildknecht, Astronomical Institute, University of Bern

Comparison of Orbital and Physical Characteristics of Bright and Faint GEO Objects
Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS

Catalogue-Wide Satellite Photometric Behavior Paradigms
Matt Hejduk, SRA International

Phase Angle: What is it good for?
Paul Kervin, Air Force Research Laboratory – Maui

Warming and Cooling of Spacecraft in Sunlight and Shadow from IR Spectroscopy
Ray Russell, The Aerospace Corporation

Analysis of Unresolved Spectral Infrared Signature for Extraction of its Invariant Features
Anil Chaudhary, Applied Optimization, Inc.

3:00

**EXHIBITION AND POSTER PRESENTATIONS | Jade-Plumeria Ballroom
Co-sponsored by Analytical Graphics, Inc.**

Posters listed on last page of schedule

5:00

AMOS SITE CAPABILITIES TUTORIAL | Aulani Ballroom
Capt Steven James, AFRL Detachment 15

5:30-6:30

NEW GENERATION NETWORKING RECEPTION | Molokini Pool Deck
Sponsored by the Space Foundation *(by invitation only)*

8:00-10:00

“AN EVENING UNDER THE STARS WITH ORBITAL” DESSERT RECEPTION | Pacific Terrace Rooftop
Sponsored by Orbital Sciences Corporation

Thursday 16 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 **KEYNOTE | Aulani Ballroom**

Lt. Gen. Michael A. Hamel, USAF (Retired)
Senior Vice President, Strategy and Development, Orbital Sciences Corporation

8:20 **INTEGRATING DIVERSE DATA**

Session Chair, Kim Luu, Air Force Research Laboratory

Collision Threat Characterization for Space Objects - Enhanced SSA for the JSpOC Mission
Vas Majer, Integral Systems, Inc.

Monte Carlo Method for Collision Probability Calculations Using 3D Satellite Models
Willem de Vries, Lawrence Livermore National Laboratory

9:00 **BREAK**

9:00-12:30 **SPACE IN THE CLASSROOM | Mauna Loa and Ilima**

An Audience with an Astronaut for Maui Middle School Students

Co-sponsored by the Space Foundation and held in association with Analytical Graphics, Inc., the Air Force Research Laboratory, Lockheed Martin, and Orbital Sciences Corporation

9:20 **INTEGRATING DIVERSE DATA (continued)**

How the Space Data Center is Improving Safety of Space Operations
T.S. Kelso, Center for Space Standards & Innovation

Data Calibrations for the Combined Solutions Using Ranging and Telescope Data
Joseph Chan, Intelsat

Global Space Situational Awareness Sensors
Brian Weeden, Secure World Foundation

Space Data Association, International Data Sharing for SSA
Richard DalBello, Intelsat General

Sharing SSA
Duane Bird, USSTRATCOM

11:00 **INTEGRATING DIVERSE DATA PANEL DISCUSSION**

Moderators: T.S. Kelso, Center for Space Standards & Innovation and Emmet Fletcher, European Space Agency

12:00 **LUNCHEON | Lokelani Ballroom**

1:00 pm **ADAPTIVE OPTICS/IMAGING**

Session Chairs, Michael Hart, University of Arizona, Steward Observatory, CAAO and Glenn Tyler, The Optical Sciences Company

Multi-conjugate Adaptive Optics Testbed for Horizontal Propagation
Sergio Restaino, Naval Research Laboratory

Exploiting Spectral Correlations for Segmentation and Shape Determination from Hyperspectral Databases of Rotating Satellites
Sudhakar Prasad, University of New Mexico

Daytime Image Measurement and Reconstruction for Space Situational Awareness Applications
Michael Roggemann, PDS, LLC

Characterization of Deep Turbulence Over 149 km Propagation Path Using Multi-wavelength Laser Beacons
Mikhail Vorontsov, University of Dayton, LOCI

Measurements of Tilt and Focus for Sodium Beacon Adaptive Optics on the Starfire 3.5 Meter Telescope
Robert Johnson, Starfire Optical Range

2:40 BREAK

3:00 ADAPTIVE OPTICS/IMAGING (continued)

Nonstationary EO/IR Clutter Suppression and Dim Object Tracking
Alexander Tartakovsky, Department of Mathematics, University of Southern California

Images of a Geostationary Spacecraft with the Largest Telescope on Earth
Jack Drummond, AFRL/RDSA

Recent Advances in High-resolution MEMS DM Fabrication and Integration
Thomas Bifano, Boston University

Adaptive Optics at the World's Biggest Optical Telescope
Michael Hart, The University of Arizona

Differential Photometry in Adaptive Optics Imaging
Szymon Gladysz, European Organisation for Astronomical Research in the Southern Hemisphere

Improved Climatological Characterization of Optical Turbulence for Space Optical Imaging and Communications
Randall Alliss, Northrop Grumman Corporation

5:00 ASTRODYNAMICS

Session Chair, Terry Alfriend, Texas A&M University

Operational Maneuver Detection Using Optimal Control Performance Metrics
Marcus Holzinger, University of Colorado at Boulder

Edgeworth Filters for Space Surveillance Tracking
Joshua Horwood, Numerica Corporation

5:40 ADJOURN

Friday 17 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 KEYNOTES | Aulani Ballroom

Introductions

Valerie Skarupa
Operationally Responsive Space Office

Peter Marquez
Director of Space Policy, White House National Security Council

Elliot Holokauahi Pulham
Chief Executive Officer, Space Foundation

- 8:40** **ASTRODYNAMICS (continued)**
- Large-Scale Simulation of a Process for Cataloguing Small Orbital Debris
Alex Pertica, Lawrence Livermore Nat. Lab.
- Almost-Optimal Sensor Tasking Using Auction Methods
Richard Hujsak, Analytical Graphics Inc
- 9:20** **BREAK**
- 9:40** **ASTRODYNAMICS (continued)**
- Dynamic Tasking of Networked Sensors Using Covariance Information
Kim Luu, AFRL
- Correlation and Initial Orbit Determination for Short-Arc Optical Observations
Kohei Fujimoto, The University of Colorado-Boulder
- 10:20** **MODELING**
Session Chair, Keric Hill, Pacific Defense Solutions
- Integration of Space Weather into Space Situational Awareness
Geoff Reeves, Los Alamos National Laboratory
- A Parallel, High-Fidelity Radar Model
Benjamin Fasenfest, Lawrence Livermore National Laboratory
- The Application of Parallel Discrete Event Simulation to the Space Surveillance Network
David Jefferson, Lawrence Livermore National Laboratory
- A Bayesian Approach to Multi-Sensor Track Correlation
Matthew Horsley, Lawrence Livermore National Laboratory
- Numerical and Probabilistic Analysis of Asteroid and Comet Impact Hazard Mitigation
Catherine Plesko, Los Alamos National Laboratory
- 12:00** **LUNCHEON | Lokelani Ballroom**
- 1:00 pm** **MODELING (continued)**
- Satellite Collision Modeling with Physics-based Hydrocodes: Debris Generation Predictions of the Iridium-Cosmos Collision Event and other Impact Events
H. Keo Springer, Lawrence Livermore National Laboratory
- Forecasting Kp Using Unscented Kalman Filter-based Model
Charles Wetterer, Colorado Professional Resources
- Real Time Polarization Light Curves for Space Debris and Satellites
John Stryjewski, CSC
- SYSTEMS**
Session Chair, Riki Maeda, Pacific Defense Solutions
- Performances of Telescopes of New Series, ISON Annual Development and Observation Planning
Vladimir Agapov, Keldysh Institute of Applied Mathematics, RAS
- Space Debris Characterization Using Thermal Imaging Systems
James Dawson, Dynetics, Inc.

2:40 **BREAK**

3:00 **SYSTEMS (continued)**
Session Chair, Riki Maeda, Pacific Defense Solutions

An Overview of Wide-field of View Optical Designs for Survey Telescopes
 Mark Ackermann, Sandia National Laboratories

Optimization of Orbital Debris Monitoring with Optical Telescopes
 James Shell, Space Protection Program

Space Situational Awareness Applications for the Magdalena Ridge Observatory Interferometer
 Anders Jorgensen, New Mexico Tech

Status and progress in the Space Surveillance and Tracking segment of ESA's Space Situational Awareness Programme
 Emmet Fletcher, European Space Agency

Space Domain Awareness to Support DARPA GEO Spacecraft Servicing
 Travis Blake, DARPA/TTO

4:40 **ADJOURN**

EXHIBITORS AND LOAD-OUT

5:30 **CLOSING DINNER AND SHOW | Luau Gardens**

Saturday 18 September

7:30 & 10:00 am **OPTIONAL TECHNICAL TOUR (*departs from Wailea Marriott*)**

POSTER PRESENTATIONS

Session Chair, Bernie Klem, Arnold Engineering Development Center

Photon Sieve Space Telescopes
 Geoff Andersen, USAF Academy

Carbon Fiber Reinforced Polymer (CFRP) Optics Quality Assessment for Lightweight Deployable Optics
 Jonathan Andrews, Naval Research Laboratory

Creation of The New Industry-Standard Space Test of Laser Retroreflectors for Fundamental Physics and Space Geodesy: The SCF-TEST
 Simone Berardi, INFN-LNF

Maui4: A 24 Hour Haleakala Turbulence Profile
 William Bradford, PDS, LLC

Development of Robotic Wide Field Telescope System for Near-Earth Space Survey
 Young-Jun Choi, Korea Astronomy & Space Science Institute

Characterization of Orbital Debris Photometric Properties Derived from Laboratory-Based Measurements
 Heather Cowardin, ESCG/Jacobs

Test of Neural Network Techniques using Simulated Dual-band Data of LEO Satellites
 Anthony Dentamaro, Boston College

Advances in Polarimetric Blind Deconvolution
 Kurtis Engleson, Department of the Air Force

High Order Curvature Deformable Mirrors
Christ Ftaclas, Institute for Astronomy, University of Hawaii

Small Space Launch: Origins & Challenges
Thomas Freeman, Launch Test Squadron

Fabra-ROA Baker-Nunn Camera at Observatori del Montsec: An Instrument Update for Space Debris Observation
Octavi Fors, Observatori Fabra, Reial Acadèmia de Ciències i Arts de Barcelona, Barcelona, Spain / Departament d'Astronomia i Meteorologia and Institut de Ciències del Cosmos (ICC), Universitat de Barcelona (UB/IEEC)

SSA Image Quality Modeling
David Gerwe, Boeing

HANDS-ION
Scott Gregory, Oceanit

Novel Segmentation Technique to Enhance Detection of Fast Moving Objects with Optical Sensors
Oleg Gusyatin, MIT Lincoln Laboratory

Advances in Satellite Conjunction Analysis
Robert Hall, AGI

Information Theoretic Characterizations of Coded Imaging-based Space Object Identification
Douglas Hope, University of New Mexico

The Preliminary Study on the Space Object Monitoring in Korea
Jung Hyun Jo, Korea Astronomy & Space Science Institute

The Use of the Taylor "Frozen Flow" Hypothesis for Blind Restoration of Imagery degraded by Atmospheric Turbulence
Stuart Jefferies, Institute for Astronomy

A High Performance Technique for Blind Deconvolution
Stuart Jefferies, Institute for Astronomy

A Scalable Visualization System for Improving Space Situational Awareness
Ming Jiang, Lawrence Livermore National Laboratory

The Long Wavelength Array (LWA): A Large HF/VHF Array for Solar Physics, Ionospheric Science, and Solar Radar
Namir Kassim, Naval Research Laboratory

Discrimination of Closely-Spaced Geosynchronous Satellites-Small Business Innovative Research
Paul LeVan, AFRL

Technical Analysis of Commercially Hosted Optical Payloads for Enhanced SSA
Jonathan Lowe, AGI

Dynamic Tasking of Networked Sensors using Covariance Information
Kim Luu, AFRL

Pay Me Now or Pay Me MORE Later – When To Start Active Orbital Debris Removal
Darren McKnight, Integrity Applications Incorporated

Preliminary Astrometric Results from the PS1 Demo Month and Operational Phase
David Monet, US Naval Observatory

The Magdalena Ridge Observatory Interferometer: Towards Sub-Meter Imaging of Geo-Synchronous Targets
Ifan Payne, Magdalena Ridge Observatory

Maximizing the Performance of the Weather Research and Forecast Model over the Hawaiian Islands
Kevin Roe, MHPCC

Threat Assessment of Small Near-Earth Objects
Eileen Ryan, 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/RDSM

Operational Impact of Improved Space Tracking and Collision Avoidance in the Future LEO Space Debris Environment
David Sibert, ExoAnalytic Solutions, Inc.

Cross Strip Readout Detectors for High Time Resolution Imaging in the 120nm to 900nm Wavelength Regime
Oswald Siegmund, University of California, Space Sciences Lab

ElectroDynamic Debris Eliminator (EDDE): Design, Operation, and Ground Support
Jerome Pearson, STAR, Inc.

Vertical and Horizontal Wind Profiling from a High Energy, Pulsed, 2-Micron, Coherent-Detection Doppler Lidar and Intercomparison with other Sensors
Upendra Singh, NASA Langley Research Center

Fawkes Information Management for Space Situational Awareness
Scott Spetka, ITT Corp. and SUNY Institute of Technology

Assessment of Spacecraft Operational Status Using Electro-Optical Predictive Techniques
Dave Swann, Arnold Engineering Development Center

Sparse-aperture Image Resolution Improvement Technology (SPIRIT)
Mikhail Vorontsov, University of Dayton, LOCI

Determination of Spin Axis Orientation of Geosynchronous Objects Using a Space-based Sensor: An Initial Feasibility Investigation
Brad Wallace, Defence Research and Development Canada

Highly Efficient Screening for Point-like Targets via Concentric Shells
Jan Wassenberg, Fraunhofer IOSB

Los Alamos Radiation Hydrocode Models of Asteroid Destruction by an Internal Explosion
Robert Weaver, Los Alamos National Lab