

# **Technical Program**

## **2007 Directed Energy Systems Symposium**

**Beam Control Conference**  
**DE Modeling and Simulation Conference**  
**Employment of DE Weapons Conference**  
**HEL Lethality Conference**  
**HPM Systems and Effects Conference**

**19 - 23 March**  
**Monterey, California**

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# MONDAY AND WEDNESDAY

## Short Courses

### MONDAY

- 0700 Registration at Hyatt  
Buses to NPS
- 0800 Short Courses Begin
1. **Directed Energy 101 (Unclassified)**  
*Donald Lamberson*, Consultant  
Hyatt Hotel, Regency IV
  2. **Intro to Beam Control (Unclassified)**  
*Paul Merritt*, UNM  
Hyatt Hotel, Regency VI
  3. **Intro to HELSEEM (FOUO)**  
*Robin Ritter*, Tau Technologies  
Hyatt Hotel, Spyglass I
  4. **HELEEOS/HELCOMES (Unclassified)**  
*Rick Bartell*, AFIT  
Hyatt Hotel, Spyglass II
  5. **HPM Engagement and Source Modeling  
(Limited Distribution)**  
*David Dietz*, UNM  
Hyatt Hotel, Oak Tree
  6. **Laser Material Effects (FOUO)**  
*J. Thomas Schriempf*, NAVSEA  
Hyatt Hotel, Regency V

### WEDNESDAY

- 0700 Registration at Hyatt Hotel
- 0800 Short Courses Begin
7. **Analysis of Optical Systems Using Scaling and  
Wave-Optics Models (Unclassified)**  
**FULL DAY COURSE**  
*Bob Praus*, MZA Associates  
Hyatt Hotel, Oak Tree
- 1200 Lunch
- 1300 Full Day Course Resumes and Course  
Begins
8. **Transition from Science and Technology to a  
Weapons System (Unclassified)**  
*Bill Decker*, Defense Acquisition University  
Hyatt Hotel, Spyglass

# MONDAY AFTERNOON

## JOINT SESSION

### Opening Plenary

NPS, King Hall

- 0700 Registration at Hyatt Hotel
- 1100 Buses to NPS
- 1300 Welcome and Introduction
  
- 1315 ACC Directed Energy Way Ahead-2007
  
- 1400 Air Force Directed Energy to DEPS
  
- 1420 Capabilities Development Envolving Directed Energy
  
- 1440 HEL Weapons: Building the Bridge to the Warfighter
  
- 1500 Break
- 1530 Directed Energy Weapons for Navy Applications
  
- 1550 Directed Energy Applications to Naval Aviation: An Acquisition Perspective
  
- 1610 DE Challenges
  
- 1630 Closing Remarks
  
- 1730 Welcome Reception at Hyatt Lobby Patio  
Sponsored by Raytheon

# **TUESDAY MORNING**

## **BEAM CONTROL**

### **Beam Control for Major Systems**

NPS, Ingersol Hall

- 0700    **Registration and Breakfast at Hyatt  
Buses begin to NPS**
- 0800    **Welcome and Introductions**
- 0810    **Methods of Beam Control Within the  
Airborne Laser**
- 0850    **HEL Techology Demonstrator**
- 0930    **Sodium Guidestar Adaptive Optics at  
the Starfire Optical Range (SOR)**
- 1010    **Break**
- 1030    **ATL Optical Control Integration and Test  
Status**
- 1100    **APT Tracking for C-RAM**
- 1130    **JTO System Study**
- 1200    **Lunch**

**AUDIO AND VIDEO RECORDING IS  
PROHIBITED AT ALL DEPS  
SPONSORED EVENTS**

# TUESDAY MORNING

## DE MODELING & SIMULATION

### Modeling Techniques

Hyatt Hotel, Regency Ballroom IV - VI

Chair: *Robert Praus, MZA*

- 0700    **Registration and Breakfast at Hyatt**
- 0755    **Introductions**  
*Douglas Rigdon, Schafer*
- 0800    **Survey of Modern Languages and  
Techniques for Modeling and Simulation  
Projects**  
*Morris Maynard, MZA*
- 0830    **Toward an Ideal Framework for  
Multidisciplinary Modeling and  
Simulation**  
*Steve Coy, MZA*
- 0900    **Climbing the Modeling Pyramid: An  
Approach to Traceable Tier I Models**  
*David Cook, AEGIS Technologies*
- 0930    **Creating a Customizable and Reconfigu-  
rable Scaling Law Model Using Matlab**  
*Amy Ngwele, MZA*
- 1000    **Break**
- 1030    **Verification, Validation and  
Accreditation of HELCOMES**  
*Richard St John, SAIC*
- 1100    **Simplified Algorithm for Implementing  
an ABCD Ray Matrix Wave-Optics  
Propagator**  
*Justin Mansell, MZA*
- 1130    **Analysis of Beam Flatness Reduction  
with Propagation**  
*Robert Shaw, SAIC*
- 1200    **Lunch**

# TUESDAY MORNING

## EMPLOYMENT OF DE WEAPONS

### **Panel: Military Utility of DE Weapons: Addressing Issues to Achieve Maximum Utility of Directed Energy**

NPS, ME Auditorium

0700    **Registration and Breakfast at Hyatt  
Buses begin to NPS**

0800    **Panel Discussion Begins**

1000    **Break**

1030    **Panel Discussion Continues**

1200    **Lunch**

# TUESDAY MORNING

## HEL LETHALITY

### Keynote Speaker / Session Kickoff

NPS, Glasgow Hall

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Keynote Address
- 0840 Near-Term Tactical Laser Weapon  
Concepts and Trades
- 0920 Advanced Tactical Laser ACTD Lethality  
Considerations
- 1000 Break

### Foreign Threat Description

- 1030 Prioritized Rocket, Artillery, and Mortar  
Target List for HEL Testing
- 1100 Navy Swarm Threat
- 1130 Air Defense Integrated Air Threats
- 1200 Lunch



# **TUESDAY MORNING**

## **HPM SYSTEMS AND EFFECTS**

### **HPM Kickoff Session**

NPS, Spanagel Hall

- 0700    **Registration and Breakfast at Hyatt  
Buses begin to NPS**
- 0800    **Introduction**
  
- 0830    **NAVSEA Overview**
  
- 0900    **Air Force Overview**
  
- 0930    **DHS Overview**
  
- 1000    **Break**
- 1030    **NAVAIR Overview**
  
- 1100    **JIEDDO Neutralization Gaps and  
Requirements**
  
- 1130    **The Rapid Development and  
Deployment of a Directed Energy  
Counter-IED System**
  
- 1200    **Lunch**

# **TUESDAY AFTERNOON**

## **BEAM CONTROL**

### **Tracking for DE Systems**

NPS, Ingersol Hall

- 1300 **Welcome and Introductions**
- 1310 **Precision Tracking and Aimpoint  
Maintenance of Maneuvering Targets in  
the Presence of Background Clutter**
- 1320 **Bayesian Methods in Actively  
Illuminated Laser Tracking Through  
Deep Turbulence**
- 1350 **Results of a Successful Relay Mirror  
Field Experiment**
- 1410 **Image-Based 3D Pose Estimation with  
Application to Automatic Aimpoint  
Designation and Maintenance**
- 1430 **Break**
- 1500 **Acquisition, Tracking and Pointing  
Technologies for Space Exploration**
- 1520 **Passive and Active Tracking  
Performance Trades Using Simulations**
- 1540 **GOES Satellite Compared to Simulation**
- 1600 **Active Track Boresight Error and Beam  
Jitter**
- 1620 **Recent Foreign Laser Weapon Activities**
- 1700 **Classified Poster Session at NPS,  
Spanagel Hall**
- 1730 **Exhibitor Reception at Hyatt Exhibit  
Area**

# TUESDAY AFTERNOON

## DE MODELING & SIMULATION

### Test Modeling

Hyatt Hotel, Regency Ballroom IV - VI

Chair: *Richard Bartell*, AFIT

- 1300 **Modeling Laser Directed Energy Test Observations Using Wave Optics**  
*Rebecca Beauchamp*, MZA
- 1330 **Temperature and Irradiance Sensor Matrix (TISM) for High Energy Laser Test and Evaluation**  
*Derek Strembicke*, AEG
- 1400 **A Modeling and Simulation Concept to Support DEW Range Testing**  
*Michael Cathcart*, GTRI
- 1430 **Break**
- 1500 **HEL Data Fusion for DE Test and Evaluation**  
*Aaron Birenboim*, Tau Technologies
- 1530 **Directed Energy Modeling and Simulation Experiment Results**  
*Joseph Sorroche*, Kirtland AFB
- 1600 **Assessment of High Energy Laser Delivered Irradiance Derived from Off-Axis Scatter**  
*Steven Fiorino*, AFIT
- 1630 **Assessment of Optical Turbulence Strength Based on Probabilistic Climatology**  
*Brett Wisdom*, AFIT
- 1700 **Classified Poster Session at NPS, Spanagel Hall**
- 1730 **Exhibitor Reception at Hyatt Exhibit Area**

## TUESDAY AFTERNOON

### EMPLOYMENT OF DE WEAPONS

#### **Panel: Industry Perspective - Making the Business Case for Directed Energy Weapons**

Hyatt, Spyglass Room

Chair: *Mike Mathis*, Raytheon

- 1300 **Panel Members:**  
*Ed Pogue*, Boeing  
*Michael Bright*, Lockheed Martin  
*Michael Campbell*, General Atomics  
*John Boness*, Textron  
*Mike Booen*, Raytheon
- 1400 **Break**
- 1430 **Panel Discussions Continue**
- 1530 **Vigilant Eagle Case Study Discussion**  
*Mark Slivinski*, Raytheon
- 1700 **Classified Poster Session at NPS,  
Spanagel Hall**
- 1730 **Exhibitor Reception at Hyatt Exhibit  
Area**

## **TUESDAY AFTERNOON**

### **HEL LETHALITY**

#### **Target Vulnerability Assessment**

NPS, Glasgow Hall

- 1300 **Vulnerability Analysis of a Foreign Surface-to-Air Missile**
- 1330 **Assessing Vulnerability to Laser Irradiation of Alternative Aimpoints on a Boosting Tactical Ballistic Missile**
- 1430 **Break**
- 1500 **UAV Vulnerability Studies**
- 1530 **Vulnerability Assessment of Tier I, II, and III MANPADS**
- 1600 **Recommended Vulnerability Criteria of Tactical Targets for Precision Engagement at Force Protection**
- 1700 **Classified Poster Session at NPS, Spanagel Hall**
- 1730 **Exhibitor Reception at Hyatt Exhibit Area**

# **TUESDAY AFTERNOON**

## **HPM SYSTEMS AND EFFECTS**

### **Systems I**

NPS, ME Auditorium

- 1300 **Maritime Applications of Active Denial Technology**
- 1330 **Overview of the Air Force Research Laboratory's Active Denial Technology Area**
- 1400 **Bioeffects Based Design Criteria for a Handheld ADS**
- 1430 **Break**
- 1500 **High Power Microwave Vehicle Effects Test at AFRL**
- 1530 **Marine Engine HPM Systems**
- 1600 **RF Vehicle Engine Stopper Research-Effects Testing and System Design**
- 1630 **Data Analysis of Military Engine Stopper Data to Identify Significant Parameters and Effectiveness Criteria**
- 1700 **Classified Poster Session at NPS, Spanagel Hall**
- 1730 **Exhibitor Reception at Hyatt Exhibit Area**

# WEDNESDAY MORNING

## JOINT SESSION

### Near Term Applications

NPS, Glasgow Hall

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Introduction
- 0810 Concept for a Near Term HEL Counter  
Mortar Weapon
- 0830 System Demonstration of a Live Mortar
- 0850 10 kW Fiber Laser Lethality Testing  
Against a Missile
- 0910 Ship Interdiction HEL Mission Feasibility
- 0930 Propagation Code Calculations and  
Scaling-Law Model for Near-term Fiber  
Laser Systems
- 1000 Break
- 1030 Effects of Aperture Envelope and  
Aperture Filling on Far Field Beam  
Quality in Coherently Combined  
Beamlet Arrays
- 1050 Interfacing Battlefield Simulations For  
Analysis And Wargaming To Standard  
Target Vulnerability Data
- 1110 M&S Vulnerability Module Architecture
- 1130 Use of the THEL Database for Lethality  
Modeling and Simulation
- 1200 Lunch (Served ONLY at NPS)

# WEDNESDAY MORNING

## HPM SYSTEMS AND EFFECTS

### Systems II

NPS, ME Auditorium

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Wideband RF Systems Development
- 0830 Scorpion II Mobile Microwave System  
Test Results
- 0900 RF Interaction with Explosive Device  
Systems
- 0930 Radio Frequency Directed Energy  
Defeat of Electrically Initiated Explosive  
Hazards
- 1000 Break
- 1030 MAX POWER HPM System
- 1100 Photoconductive Switch Based  
HPM System
- 1130 Directed Energy Counter Electronics  
at AFRL
- 1200 Lunch (Served ONLY at NPS)



# WEDNESDAY AFTERNOON

## JOINT SESSION

### Wargaming / Employment

NPS, Ingersol Hall

- 1300 Joint Unclassified/FOUO Poster Session  
Hyatt Regency Conference Center
- 1300 ACE 06 Hotwash Overview
- 1330 Laser Strike Fighter ACE 06 Results
- 1400 Air Combat Test & Evaluation Facility  
ACE 06 Results
- 1430 Break
- 1500 Experimental Results of Five Directed  
Energy Systems in Urban Environment:  
A Case Study in the Use of Mission Level  
Models
- 1530 Directed Energy Interception of  
Rockets, Artillery, and Mortars (RAM) in  
an Operational Context
- 1600 Advanced Tactical laser Adaptive  
Simulation ATLAS Description and  
Applications to Crew Training, TTP  
Development and Simulation Based  
Acquisition
- 1630 Laser Weapons in Wargames: Aimpoint  
Definition
- 1730 Social Hour at Hyatt Conference Center
- 1830 Banquet at Hyatt Ballroom

# WEDNESDAY AFTERNOON

## BEAM CONTROL

### Beam Control Technology

Hyatt Hotel, Regency Ballroom IV - VI

Chair: *Chuck LaMar*, US ARMY SMDC

- 1300 **Joint Unclassified/FOUO Poster Session**  
**Hyatt Regency Conference Center**
- 1300 **Welcome and Introductions**  
*Larry Grimes*, AFRL/DETP
- 1310 **Advanced Lightweight SLMS™ Primary Mirror for an "ATL-like" Beam Director**  
*William Goodman*, Schafer Corporation
- 1330 **Tactical Laser Relay Demonstration**  
*Bill Browning*, Boeing-SVS
- 1350 **Beam Control for the Army Warfighter**  
*Jack Albers*, BAE Systems
- 1410 **ZEUSTM Beam Control System and Mission Capabilities**  
*Owen Hofer*, SPARTA, Inc.
- 1430 **Break**
- 1500 **Experimental Adaptive Beam Train Control with Multiple Beams and Disturbance Paths**  
*Leslie Fowler*, CSA
- 1520 **Vibration Test Program of a Precision Inertial Reference Unit**  
*Paul Merritt*, AFRL/DETA
- 1540 **An Alternative Alignment Beam Approach for Tactical Systems**  
*Dan Herrick*, DES
- 1600 **Near-Zero OPD Phosphate Athermal Glass for Windows, Fibers and Gratings**  
*William Goodman*, Schafer Corporation
- 1620 **HEL Damage Assessment by Components Analysis of Laser Polarimetry Data**  
*Michael Hipp*, DELE
- 1640 **Jitter Control in Actively Illuminated Laser Tracking**  
*Ben Fitzpatrick*, Tempest Technologies
- 1730 **Social Hour at Hyatt Conference Center**
- 1830 **Banquet at Hyatt Ballroom**

# WEDNESDAY AFTERNOON

## HEL LETHALITY

### Component Response

NPS, Glasgow Hall

- 1300 Joint Unclassified/FOUO Poster Session  
Hyatt Regency Conference Center
- 1300 3-D Thermal Modeling of a HE-Filled  
Mortar Shell Irradiated with a  
High Energy Laser (HEL)
- 1330 Laser Vulnerability of Wiring  
Components
- 1400 Laser Lethality Component Effects:  
Surrogate Circuit Boards
- 1430 Break

### System/Subsystem Test Results

NPS, Glasgow Hall

- 1500 Thermal Response of IED Targets to HEL  
Irradiation
- 1530 Large-Area Solar Array Vulnerability
- 1600 Conclusions on Materials Response and  
Systems Effects of HEL Missile Radome  
Irradiation
- 1630 Laser Augmentation of Anti-Ship Missile  
Countermeasure Technology
- 1730 Social Hour at Hyatt Conference Center
- 1830 Banquet at Hyatt Ballroom

# WEDNESDAY AFTERNOON

## HPM SYSTEMS AND EFFECTS

### Effects

NPS, ME Auditorium

- 1300 Joint Unclassified/FOUO Poster Session  
Hyatt Regency Conference Center
- 1300 Overview of the NRL HPM Program
- 1330 Insertion Loss Measurements Aboard a  
United States Naval Vessel -  
The Shipboard RF Measurement Project
- 1400 Susceptibility of Electro-Optic  
COTS to HPM
- 1430 Break
- 1500 Electronic Upset Using Far-above-Band  
Modulated RF
- 1530 Explosive Driven RF Warhead/Munitions  
Update
- 1600 A Process for Protecting Test Target  
Subsystems During HPM Testing
- 1630 Shipboard Survivability and Directed  
Energy
- 1730 Social Hour at Hyatt Conference Center
- 1830 Banquet at Hyatt Ballroom

# THURSDAY MORNING

## JOINT SESSION

### HPM and M&S Session

NPS, ME Auditorium

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Computer Network Models for HPM  
Engagement M&S
- 0830 HPM Effects Prediction in Engagement  
Modeling and Simulation
- 0900 Modeling of Ion Generation in HPM  
Sources and the Effects on System  
Performance
- 0930 Transmission Line Modeling of Radiated  
EED Systems
- 1000 Break
- 1030 An Engineering Approach to HPM  
Systems Design
- 1100 NEC Modeling of IED Structures
- 1130 Visualization of Loss Mechanisms in  
Ferro-electric Generators
  
- 1200 Lunch

# THURSDAY MORNING

## BEAM CONTROL

### Adaptive Optics and Fiber Arrays

Hyatt Hotel, Oak Tree Room

Chair: *Lewis DeSandre*, ONR

- 0700 **Registration and Breakfast at Hyatt**
- 0800 **Welcome and Introductions**  
*Larry Grimes*, AFRL/DETP
- 0810 **Analog Closed-loop WaveFront Control with a Moire WaveFront**  
*Keith Bush*, AgilOptics, Inc
- 0830 **Demonstrations of Adaptive Optics: Large Aperture Lightweight Optics for Space Based Applications**  
*Richard Schgallis*, Naval Post Grad School
- 0850 **Atmospheric Compensation Adaptive Optics Testbed Controls Architecture Investigation Results**  
*Kenneth Triebes*, Northrop Grumman
- 0910 **Hardware in the Loop Simulation of a Self-Referencing Interferometer Adaptive Optical System**  
*Joshua Voas*, Pipeline Processing Co
- 0930 **Results of Ultra High Speed Wavefront Curvature Sensing in Transonic Wind Tunnels**  
*Paul Harrison*, Kestrel
- 0950 **Efficiency Analysis of Adaptive Tiled Fiber Array with Coherent and Incoherent Beam Combining**  
*Mikhail Vorontsov*, ARL
- 1010 **Break**
- 1030 **High Power Phased Array Transceiver**  
*Dan Marker*, AFRL/DESE
- 1050 **Segmented Beam Director**  
*Joseph Marron*, LM Coherent Technologies
- 1110 **Optical Phased Array Beam Control for APPLE**  
*Terry Dorschner*, Raytheon
- 1130 **Modeling Effects of an Asymmetric Extended Beacon on Higher-Order Adaptive Optics**  
*Eric Magee*, MZA
- 1200 **Lunch**

# THURSDAY MORNING

## DE MODELING & SIMULATION

### DE Subsystem Integration

Hyatt Hotel, Regency Ballroom IV - VI

Chair: *Stan Patterson*, ARMY AMRDEC

- 0700    **Registration and Breakfast at Hyatt**
- 0800    **Panel Discussion: HEL Integration on Large Tactical Platform**  
*David Leggett*, AFRL
- 0900    **Thermal Management Materials and Concepts for DE Weapons Systems**  
*Michael Harris*, GTRI
- 0930    **Heat Management for a High Energy Laser Military System**  
*Bryan Olay*, USMA
- 1000    **Break**
- 1030    **A Physics Model Input to High Energy Laser Design Parameters**  
*Juan Noda*, USMA
- 1100    **Effect of Addition of a High Energy Electric Laser on the Performance of a C-130 Tactical Platform**  
*Ryan Miller*, Schafer
- 1130    **IHELL Trade-Space Investigation**  
*Stephen Doerr*, SAIC
- 1200    **Lunch**

## THURSDAY MORNING

### EMPLOYMENT OF DE WEAPONS

#### **Panel: Nonmilitary Employment of Directed Energy Systems**

Hyatt Hotel, Spyglass Room

Chair: *A-Lan Reynolds*, Raytheon

0700 **Registration and Breakfast at Hyatt**

0800 **Panel Members:**

*Joe Cecconi*, Department of Justice

*Rolf Dietrich*, Department of Homeland Security

*Sid Heal*, Los Angeles Sheriff's Department

*Neal Armstrong*, U.S. Coast Guard

*Harry Ruffel*, U.S. Customs and Border Protection

*Gordon Hengst*, AFRL/HED

*Kevin Walter*, SARA, Inc.

*Bill Miera*, Fiore Industries, Inc.

*Shawn Miller*, Raytheon

1000 **Break**

1030 **Panel Discussions Continue**

1200 **Lunch**



# THURSDAY MORNING

## HEL LETHALITY

### Material Interaction

NPS, Glasgow Hall

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Optical Scatter Measurements on  
Aerospace Materials
- 0830 Laser Ignition of Urban Materials
- 0900 Lethality Effects of a High-Power  
Solid-State Laser: Large Spot Sizes
- 0930 Laser Lethality Material Effects: A  
Comparison of Two Significant Light  
Sources
- 1000 Break
- 1030 Analysis of Mass Removal from Laser  
Irradiated Composite Samples
- 1100 A Methodology for the Development of  
a Coupling Model for HEL Interactions  
with Metals
- 1130 Laser Effect Testing on Selected Coupon  
Materials
- 1200 Lunch

# THURSDAY AFTERNOON

## JOINT SESSION

### Aero-Optics

Hyatt Hotel, Regency Ballroom IV - VI

Chair: *Paul Berger*, Lincoln Labs / MIT

- 1300 **Welcome and Introductions**  
*Larry Grimes*, AFRL/DETP
- 1310 **Validation of the LES Turbulence Closure Model for Aero-Optics**  
*Aaron Buckner*, Northrop Grumman
- 1330 **Estimation of Optical Path Difference Using Particle Image Velocimetry Measurements over a Flat Aperture Turret**  
*Ryan Schmit*, AFRL/VAAI
- 1350 **Feed-Forward, Adaptive-Optic Correction of a Compressible, Shear Layer Using Natural Flow Excitation**  
*Donald Wittich*, University of Notre Dame
- 1410 **Adaptive-Optics Compensation Temporal Scaling Laws for Aero-Optical Disturbances**  
*Matthew Whiteley*, MZA Associates
- 1430 **Break**
- 1500 **Zuniga Shoal 2005: A Comparison of Experimental Maritime Propagation Data with Model Predictions**  
*Steve Hammel*, SPAWAR Systems Ctr
- 1520 **Results from Maritime Laser Propagation Measurements**  
*David O'Connor*, Naval Air Warfare Center
- 1540 **Turbulence Analysis of Horizontal Near-Sea-Level Laser Propagation Data and Comparison with Wave-Optics Simulation**  
*Boris Venet*, MZA Associates
- 1600 **An Atmospheric Turbulence Monitor to Measure Conditions During Adaptive Optics Field Tests**  
*Thomas Farrell*, Northrop Grumman
- 1620 **Examination of Compensation of Thermal Blooming and Turbulence Using the Enhanced Field Conjugation System**  
*Jeffrey Barchers*, SAIC
- 1640 **The Search for Improved High Energy Laser Optical Windows**  
*Ken Billman*, Lockheed Martin

## THURSDAY AFTERNOON

### BEAM CONTROL

#### Invited Talk

Hyatt Hotel, Oak Tree Room

- 1300 **Invited Talk: Telescope Taxonomy and Applications to Beam Control**  
*Jim Mayo*, Northrop Grumman
- 1430 **Break**
- 1500 **Beam Control Unclassified/FOUO Poster Session**  
Hyatt Regency Conference Center

## THURSDAY AFTERNOON

### DE MODELING & SIMULATION

#### HEL Systems and Assessment

NPS, Ingersol Hall

- 1300 **Performance Assessment of the Tactical Relay Mirror System (TRMS)**
- 1330 **System Assessment of Advance Laser Concepts for Large Tactical Platforms**
- 1400 **Defensive Counterspace Laser Effects Assessment on DSP Satellites**
- 1430 **Break**
- 1500 **Uncertainty Assessments of Ship Defense HEL Performance in Various Worldwide Maritime Environmnets at Wavelengths 1.045  $\mu\text{m}$ , 1.625  $\mu\text{m}$ , and 2.141  $\mu\text{m}$**
- 1530 **The Directed Energy Simulation Testbed: An MxN HEL Mission Effectiveness Analysis Support**
- 1600 **Constructive Modeling of Directed Energy Weapons**
- 1630 **Simulation Studies of a USP Laser Ionization Guides Arc**

## THURSDAY AFTERNOON

### EMPLOYMENT OF DE WEAPONS

#### **Panel: Barriers for Employing Directed Energy Weapons: What keeps DEW Systems from Transitioning to our Fighting Forces**

Hyatt, Spyglass Room

Chair: *Mike Booen*, Raytheon

- 1310 **Adversity To Change and It's Impact on Deployment of New Systems**  
*John Hartke*, U.S. Military Academy
- 1320 **Effects Testing**  
*Michael Murphy*, AFRL
- 1340 **The Law of War and High Energy Lasers**  
*David Lambert*, U.S. Military Academy
- 1400 **Solving Challenges to DEW Testing**  
*James Keith* and *Fred Schreiber*,  
46th Test Group, USAF
- 1430 Break
- 1500 **Systems Engineering Design Process for HE Laser Military Systems**  
*Matthew Beigh*, U.S. Military Academy
- 1520 **Validated Laser Predictive Avoidance Methodologies and Future Efforts**  
*Simon Palfery*, AFRL/DETE
- 1540 **Case Study - Total Market Exploration of Active Denial Capabilities and Barriers Impacting Deployment**  
*A-Lan Reynolds* and *Shawn Miller*,  
Raytheon
- 1620 **ICV-Full Spectrums Effects Package**  
*Billy Cook*, CACI

## THURSDAY AFTERNOON

### HEL LETHALITY

#### Material Interaction

NPS, Glasgow Hall

- 1300 Laser Hazard Experiments on Tissue
- 1330 Solid Metal Propellant Laser Interaction
- 1400 Lethality Data Summary Overview
- 1430 Break

#### EO / IR Sensor Susceptibility and Test Facilities, Instrumentation, Diagnostics and Techniques

NPS, Glasgow Hall

- 1500 Effects of a High Energy, Damaging Laser Countermeasure on Imaging Tracker Missile
- 1530 EO/IR Sensor Knowledgebase
- 1600 Laser Susceptibility of MidWave IR Focal Plane Arrays to Laser Radiation at 1.06 and 3.9  $\mu\text{m}$  -A Comparison of Two Array Architectures
- 1630 Ground Target Irradiance Measurement Capability
- 1700 Target Material Scatter Measurements in the Near IR

# THURSDAY AFTERNOON

## HPM SYSTEMS AND EFFECTS

### HPM Subsystems

NPS, ME Auditorium

- 1300 Intermediate Energy Storage Systems for Pulse Power Devices
- 1330 Prime Power for Mobile Systems
- 1400 Feasibility of Guiding Electromagnetic Energy on a Laser-Induced Plasma Channel in Air
- 1430 Break
- 1500 Compact HPM Source Tests
- 1530 Non-Standard Pyramidal Horn Design for HPM Sources
- 1600 Optical System for HPM Generator
- 1630 Integrated Impedance Transformer and Bipolar Pulse Generator for HPM Applications

# FRIDAY MORNING

## JOINT SESSION

### Closing Plenary Session

NPS, Glasgow Hall

- 0700 Registration and Breakfast at Hyatt  
Buses begin to NPS
- 0800 Opening Remarks
  
- 0810 Lethality Highlights
  
- 0830 Modeling and Simulation Highlights
  
- 0850 Beam Control Highlights
  
- 0910 HPM Systems and Effects Highlights
  
- 0930 Employment of DE Weapons Highlights
  
- 0950 Closing Remarks
  
- 1000 Symposium Adjourns

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# **Symposium Organizing Committee**

## **Symposium Co-chairmen:**

*Maj Gen Donald Lamberson, USAF (ret)*

*Maj Gen George Harrison, USAF (ret)*

## **Conference Chairmen:**

*Dr. Tim Andreadis, HPM*

*Mr. Michael Booen, Employment*

*Dr. Lawrence Grimes, Beam Control*

*Mr. Douglas Ridgon, M&S*

*Dr. J. Thomas Schriempf, Lethality*

## **Symposium Coordinator:**

*Cynnamon Spain*

## **Registration / Short Courses:**

*Donna Storment*