DIRECTED ENERGY PROFESSIONAL SOCIETY

Eighth Annual Directed Energy Symposium

Lihue, Hawaii
14 - 18 November 2005

Contents

Monday

Short Courses

0700 **Registration Open**
Breakfast in Kauai Courtyard
0800 **Short Courses at Marriott Hotel**
All courses are half day unless otherwise noted.

1. Introduction to High Energy Lasers Systems, 0.35 CEU
Mr John Albertine, Consultant

2. Introduction to High Power Microwave Systems, 0.35 CEU
Dr David Stoudt, Lead Instructor, NSWC

3. Propagation of High Energy Lasers in the Atmosphere, 0.35 CEU
Dr Phillip Sprangle, Lead Instructor, NRL

4. Laser Material Effects, 0.35 CEU **(Limited Distribution)**
Dr J Thomas Schriempf, Lead Instructor PMS 405

5. Free Electron Lasers - Theory and Practice, 0.7 CEU - **FULL DAY COURSE**
Dr Henry Freund, Lead Instructor, SAIC

6. SHARE/HELEEOS Scaling Law Models (US Only), 0.7 CEU - **FULL DAY COURSE**
Dr Matthew Whiteley, Lead Instructor ATK Mission Research

1200 Lunch on site
1300 Short Courses Begin and Full Day Courses Resume

7. Propagation, Interaction and Technology of Ultrashort Laser Pulses, 0.35 CEU
Dr Phillip Sprangle, Lead Instructor, NRL

8. Military Worth Analysis for DE Systems (Limited Distribution), 0.35 CEU
Ms Linda Lamberson, AFRL

9. Directed Energy Bioeffects, 0.35 CEU
Dr Michael Murphy, Lead Instructor, AFRL

1730 Poster Session
Poster Reception - Proudly Sponsored By Ionatron

Tuesday Morning

Plenary Session (Open)

Session Chair: *RADM Mike Mathis*, NAVSEA

0630 **Speakers Breakfast in Huleia Room**
0700 **Registration Open**
Breakfast - Proudly Sponsored By Northrop Grumman
0730 **Kalua Pua'a Ceremony in Luau Garden**
0800 **Welcome**
CAPT Roger McGinnis, Ph.D.
Symposium Chair,
Office of Naval Research
0810 *Mr. Ed Duff*
President, DEPS
0820 *RADM Mike Mathis*
NAVSEA
0830 *Mayor Brian Baptiste*
Mayor of Kauai
0840 *The Honorable Daniel Inouye*
(via Video tape)
Senator (D), Hawaii
0900 *ADM Gary Roughead*
Commander, US Pacific Fleet
0920 **Break - Proudly Sponsored By Northrop Grumman**
0940 *RADM Jay Cohen*
Chief of Naval Research
1000 *Ms. Sue Payton*
Deputy Undersecretary of Defense, AS&C
1020 *Maj Gen Stanley Gorenc*
HDQTRS USAF-XOR
1040 *Dr. Mark Swinson*
SMDC
1100 *CAPT Jeff Connelly*
CO, PMRF
1130 **Lunch - Proudly Sponsored By Northrop Grumman**

Tuesday Afternoon

Global Directed Energy Topics (Open)

Session Chair: *Edward Pogue*, LANL

1300 **DEPS Annual Report**
DEPS Board of Directors Announcement
Induction of Fellows
Ed Duff, DEPS

1345 **DE Roadmap Summary**
William *Thompson*, AFRL

1405 **HEL-JTO Overview**
Mark Neice, HEL-JTO

1430 **The Case for DE Weapons**
Douglas Beason, LANL

1450 **Legal Issues for DE**
John Quinn, NAVSEA

1505 **Issue of DE & the Human Body**
Garrett Pohlamus, AFRL

1520 **Break - Proudly Sponsored by**
Northrop Grumman

1550 **ABL Overview**
John *Daniels*, ABL

1615 **ZEUS EOD System Overview**
John Wachs, SMDC

1630 **Weapon Power Overview**
Richard Fingers, AFRL

1645 **Optimum Wavelength for Atmospheric**
Propagation of HEL
Phil Sprangle, NRL

1800 **Luau - Proudly Sponsored by**
Raytheon

HEL Weapon Systems Short Course

April 3-7, 2006
College Park, Maryland
Register at www.deps.org in early 2006

Wednesday Morning

Free Electron Lasers (Open)

Session Chair: *William Colson*, NPS

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0730 **Kalua Pua'a Ceremony in Luau Garden**

0800 **Multiresolution Simulations of High-**
Brightness Photoinjectors
Courtlandt Bohn, Northern Illinois Univ.

0820 **Advances in FEL Accelerator**
Diagnostics
Patrick O'Shea, University of Maryland

0840 **Modeling of Potential Beam Quality**
Degradation Associated with Scaling to
High-Average Power Free Electron Lasers
D.R Gillingham, University of Maryland

0900 **Time-Dependent Simulation Of Free-**
Electron Lasers
Henry Freund, SAIC

0920 **Airborne Megawatt FEL SRF Based**
Enhancements
Roy Whitney, JLAB

0940 **Scallop-Beam Megawatt High-Gain**
Free-Electron Laser
Dinh Nguyen, LANL

1000 **Break**

1020 **A Compact Optically Guided Pinched**
Megawatt Class FEL
Phillip Sprangle, NRL

1020 **A Scalable 100 kW FEL Amplifier Based**
on BNL's ERL
Ilan Ben-Zvi, BNL

1100 **MW-Class FEL Amplifier Based on a**
Strong Focusing Undulator
T. Watanabe, BNL

1120 **Efficiency Enhancement In FEL By**
Means Of Concurrent RF Acceleration
J. Pasour, ATK-Mission Research Corp.

1140 **MW-Class FEL Amplifier Experiments at**
the SDL
X.J. Wang, BNL

1200 **Lunch - Proudly Sponsored By**
Brashear/ L-3 Communications

Electric Lasers (Limited Distribution)

Session Chair: *John Wachs*, SMDC

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0730 **Kalua Pua'a Ceremony in Luau Garden**

0800 **Progress in Yb:YAG Ceramic Laser Development**
Richard Ackerman, Raytheon

0820 **Overview of Progress in Super High Efficiency Diodes for Pumping HELs**
C.Martin Stickley, DARPA

0840 **JHPSSL Development at NGST**
Greg Goodno, Northrop Grumman

0900 **Recent Developments in Real -Time, Intracavity, Adaptive Correction of a Multi-Kilowatt, SSHCL**
Kai LaFortune, LLNL

0920 **Nd:YAG Ceramic ThinZag 5kW Laser Program**
Daniel Trainor, Textron Systems

0940 **Break**

1000 **Demonstration of a High Power Spontaneously-Phasing Multi-Core Fiber Laser: Experiment and Theory**
Almantas Galvanauskas, Univ. of Michagan

1020 **SILL: The Next Generation of Multi- Kilowatt, High Radiance, Pulsed Solid State Illuminators for Airborne Platforms**
Randy St. Pierre, Northrop Grumman

1040 **High-Average-Power Alkali-Vapor Laser**
Ray Beach, LLNL

1100 **Wavelength Beam Combined Slab Coupled Optical Waveguide Lasers for HEL Applications**
George Turner, MIT/LL

1120 **Quasi-CW Diode-Pumped Yb-Doped YO Laser**
Mark Dubinskii, ARL

1200 **Lunch - Proudly Sponsored By Brashear/ L-3 Communications**

High Power Microwave Applications and CONOPS (Classified)

Session Chair: *William Baker*, AFRL

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0730 **Kalua Pua'a Ceremony in Luau Garden**

0800 **Present and Future Activities for Active Denial System 1**
Diana Loree, AFRL

0840 **Some Thoughts of Low Power Active Denial**
Kirk Hackett, AFRL

0900 **Development of JMEM Methodology for HPM Weapons**
Mohammed Maqsood, Sverdrup Technology

0920 **HPM Airborne Electronic Attack Worth Study**
Steve Booher, AFRL

0940 **Historical Summary of RF DE Effects on Vehicle/Vessel**
Stephen Bayne, ARL

1000 **Break**

1020 **Vehicle Engine Stopper Experimental Results**
Kenneth Pascoe, AFRL

1040 **RF Vehicle/Vessel Engine Stopper Project**
A. Young, NIJ

1100 **Systems Engineering Analysis of Ground-Based Solution to MANPAD Threat Against Aircraft Operations in the Airport Environment**
Kenneth Yates, AFRL

1120 **Field Testing of United Kingdom RF Source**
Frank Peterkin, NSWC

1140 **Radiofrequency Weapons Terrorism**
William Berglund, NASIC

1200 **Lunch - Proudly Sponsored By Brashear/ L-3 Communications**

Posters (Classified)

Session Chair: ▫ *Gail Williams,* NAVSEA PMS405

Small Boat Attacks and DE Non Lethal Weapons
Timothy Andreadis, NRL

Analysis of HPM Effects on Marine Engines
Michael Antoniak, NRL

HPM Effects on Vehicle Engines and Health Effects to Human Occupants
Ernest Baca, AFRL

The Los Alamos Portable Pulser : An EMP Simulator Facility
Kalpak Dighe, LANL

Burn Modeling Methodology for Active Denial
Kirk Hackett, AFRL

A Preliminary Repel Effectiveness Model for Active Denial
Kirk Hackett, AFRL

Towards a Safety Model Margin for Active Denial
Kirk Hackett, AFRL

The NAGIRA HPM Source Past and Future Testing
Kelly McDonald, NAVAIR

Testing and Evaluation of Ultra Wideband Pulse Generator As A Potential RF Weapon Threat
Stephen Merryman, NSWC

Understanding the Science of Verification and Validation (V&V): Illustration of the Step by Step Approach to V&V and EM M&S Too
Maqsood Mohammed, Sverdrup Technology

Low Cost Countermeasures Techniques Against an RF Threat
Richard Moran, Booz, Allen, and Hamilton, Inc.

Non-Linear Remote Sensing Using Femtosecond Laser
T. R. Nelson, DARPA

Lethality Assessment of an Air-Borne Wide-Band RF Source Concept
Cynthia Ropiak, Envisioneering, Inc.

Directed Energy MASINT PED Activities at DIA
Mike Wiley, Riverside Research Institute

Photo Injectors / Photocathodes for Free Electron Lasers (Open)

Session Chair: ▫ *Sandra Biedron*, ANL

1300 ▫ **Electron Injectors for High-Power Free-Electron Laser Systems**
Alan Todd, Advanced Energy Systems

1320 ▫ **Two Enabling, and One Displacing, Technologies for High Brightness Electron Gun**
John Noonan, ANL

1340 ▫ **Application of the 2D/3D MICHELLE Code to RF Photoinjector Modeling**
John Petillo, SAIC

1400 ▫ **Alternate Approaches to High-Power Injector Operations**
John Lewellen, ANL

1420 ▫ **A Long-Lived, Ultra-High Quantum Efficiency Photocathode Based on Diamond Amplification**
Ilan Ben-Zvi, BNL

1440 ▫ **Break**

1455 ▫ **Performance of the 10 mA DC GaAs Photocathodes Gun in the JLAB IR Upgrade FEL**
Carlos Hernandez-Garcia, JLAB

1515 ▫ **Photoemission From Cesiated Surfaces and Custom-Designed Dispenser Photocathodes**
Kevin Jensen, NRL

1535 ▫ **Low Workfunction Multi-Alkali Metal Dispenser Photocathode for RF Photo-Injector**
Nathan Moody, University of Maryland

1555▫ **Prospects for Utilizing a Thermionic Cathode in HPFEL**
Todd Smith, Stanford University

1615▫ **Possible Generation of Ultra-Low Instrinsic Emittance Electron Beam via the Schottky-Enabled Photoemission Process**
Zikri Yusof, ANL

1635 ▫ **Photocathode Drive Lasers for Next Generation, High Power, FELs. Can Fiber Lasers Provide the Solution?**
Andrew Brown, Aculight

1800▫ **Luau - Proudly Sponsored By The Boeing Company**

High Power RF Sources for Free Electron Lasers and High Power Microwaves (Limited Distribution)

Session Chair: *Alan Todd*, Advanced Energy Systems

1300 **Overview of High-Power RF Sources for FEL/HPM**
Mike Fazio, LANL

1320 **Multiple Beam RF Amplifiers - Devices, Design Tools and Techniques for HPM Applications**
David Abe, NRL

1340 **Time-Domain Simulation of Klystrons and Inductive Output Tubes**
Henry Freund, SAIC

1400 **Preliminary Modeling and Simulation Results of a Megawatt HOM-IOT**
Edward Wright, Communications and Power Industries

1420 **The Inductive Output Tube as an Accelerator Driver for Shipboard FELs and Other Directed Energy RF Power Source Applications**
Chris Wheeland, L-3 Communications

1440 **Break**

1500 **Recent Advances in Mesoband Microwave Source Technology**
Wallace Clark, AFRL

1520 **Experimental Observation of RF Radiation Generated by an Explosively-Driven Voltage Generator**
Mark Rader, NRL

1540 **Multimegawatt Electric Power System (MEPS) Program to Demonstrate 5MW Power Generation Capability**
Charles Oberly, AFRL

1600 **Virtual Prototyping of a HPM System (Pulse Power, Source and Antenna) using ICEPIC**
Matthew Bettencourt, AFRL

1620 **SiC SIT Cascode Switch for Power Conditioning**
Steven Van Campen, Northrop Grumman

1640 **Advanced Energy Storage Capacitors for Airborne Pulsed HPM**
Steven Adams, AFRL

1800 **Luau - Proudly Sponsored By The Boeing Company**

Ultrashort Pulse Lasers (Classified)

Session Chair: *Vern Schlie*, AFRL

1300 **Overview -- International fs-TW Laser Efforts: Material Interactions - Effects, Propagation, Applications, Laser Scaling - Petawatts and Beyond**
Vern Schlie, AFRL

1320 **Non-Lethal Ultra-Short Pulse Laser Applications**
Carlton Land, JNLWD

1340 **Foreign Femtosecond Laser Developments**
Roger Ritenour, NGIC

1400 **Direct Measurements of Dynamics of Self-Guided Femtosecond Laser Filaments in Air**
Anthony Ting, NRL

1420 **Recent DARPA-Sponsored Propagation Results**
T. S. *Luk*, DARPA

1440 **Underwater Propagation of Intense, Ultrashort Laser Pulses**
Joseph Penano, NRL

1500 **Break**

1520 **Physics and Modeling of Laser Induced Discharges**
Phillip Sprangle, NRL

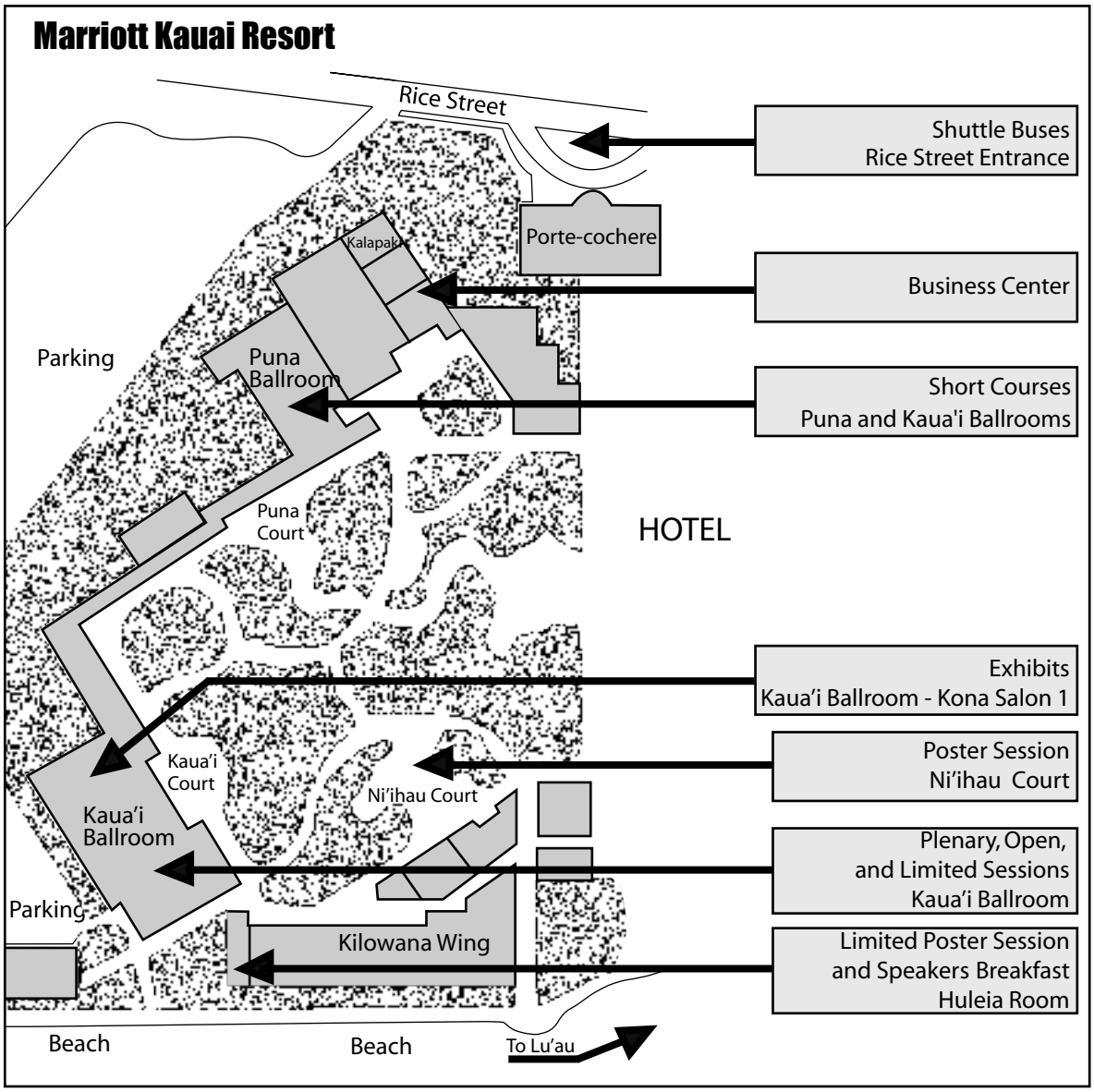
1540 **Basic Physics Modeling of USP Guided Arcs**
William Page, AFRL

1600 **Simulation of Laser Guided Energy Experiments**
Mark Schmitt, LANL

1620 **Measurement of the Variation of Plasma Conductivity with Range for a Laser Induced Plasma Channel**
Philip Girardi, Envisioneering

1640 **Laser-Guided Discharge Channel Dynamics**
Paul Lundquist, Ionatron

1800 **Luau - Proudly Sponsored By The Boeing Company**



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Tuesday Luau - Proudly Sponsored By
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Wednesday Luau - Proudly Sponsored By
The Boeing Company

Prime Power Sources and Power Conditioning (Open)

Session Chair: *Ed Shaffer* & *Al Kehs*, ARL

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0800 **DoD EPTI and P&E Net Assessment Update**
Ed Shaffer, ARL

0820 **Power System Development For a Compact, Portable Directed Energy Source**
Matthew McQuage, NSWC

0840 **High Speed Megawatt Generators for DEW Applications**
Scott Jacobs, Innovative Power Solutions

0900 **High Speed Generator Options for Direct Coupled Gas Turbine Based Flight and Ground Based Power Systems**
Kenneth Pesyna, Rolls-Royce Corporation

0920 **Modifications of Lithium-Ion Battery Technology to Support Directed Energy Applications**
Frank Puglia, Lithion

0940 **Break**

1000 **Lithium Ion Pulse Power for Directed Energy Power Source**
Kamen Nechev, SAFT America

1020 **Solid-State High Power Conversion Systems for Directed Energy Applications**
Michael Kempkes, Diversified Technologies, Inc.

1040 **AC-Link Converter Topology for High Voltage Directed Energy Applications**
Carolyn Bailey, SAIC

1100 **Compact AC-link Converter: AC-DC Power Conditioning For Directed Energy Applications**
Carolyn Bailey, SAIC

1120 **Pulsed Discharge Energy Storage Devices for DEW Applications**
Edward Bowles, General Atomics

1140 **Most Compact Pulse Power Supply for Narrowband HPMW Systems**
W.C. Nunnally, University of Missouri

1200 **Lunch - Proudly Sponsored By Textron**

High Energy Laser Beam Control and Optics I (Limited Distribution)

Session Chair: *Sadegh Siahatgar*, PMS 405

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0800 **Tilt Variance in Wave Optics Simulations with Arbitrary Beam Format**
Amy Ngwele, ATK-Mission Research Corp.

0820 **An Overview of the Aerospace Relay Mirror Systems (ARMS)**
William Browning, Boeing-SVS, Inc.

0840 **Airborne Laser Measurement System**
Steve Watson, ABL

0900 **Extinction Measurements Across Zuniga Shoals**
Paul Berger, MIT/LL

0920 **Atmospheric Characterization for High Energy Laser Beam Propagation in the Maritime Environment**
Steve Hammel, SPAWAR Systems Ctr

0940 **Status of HR Dielectric Stack Optical Coatings for Pulsed HEL Applicaton**
Albert Ogloza, NAWCWD

1000 **Break**

1020 **Technology for High Quality Wavefront Control of HEL Tactical Airbourne and Relay Mirror Beam Control**
William Goodman, Schafer Corporation

1040 **Lightweight, Low Expansion, Low Scatter, Laser Relay Mirror Development and Proposed System Applications**
Harold Bennett, Bennett Optical Research

1100 **CVC SiC for High Energy Laser Mirrors**
Bruce MacDonald, Trex Enterprises Corp.

1120 **Tracking System Upgrades for the Sea Lite Beam Director**
Herbert Barclay, MIT/LL

1140 **HEL Beam Control in Clutter Enviornment**
Dave Douglas, Raytheon

1200 **Lunch - Proudly Sponsored By Textron**

Thursday Morning

Directed Energy Threats to Blue Forces/ Directed Energy Bio-Effects (Classified)

Session Chair: *J. Thomas Schriempf*, NAVSEA PMS405

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0800 **Directed Engery Technology Office**
Counter-RF Overview
Richard Moran, NSWCDD

0820 **Determining Operational Impact of an RF Weapon Attack**
Scott Larimer, NSWC

0840 **Extrapolation of HPM OATS Test Results to Real World, Operationally Significant Environment**
Cynthia Ropiak, Envisioneering

0900 **Directed Energy Warfare (Radio Frequency) Data Base Overview**
Scott Griffiths, NSWC

0920 **Terahertz Radiation Interaction with Tissue**
Jill McQuade, AFRL

0940 **Some Active Denial Modeling**
Kirk Hackett, AFRL

1000 **Break**

1020 **Investigation of Biological Effects of Femtosecond Terawatt Laser Pulses Creating Filaments in Atmosphere**
Semith Kumru, AFRL

1040 **Superthreshold Laser Bioeffects**
John Notabartolo, AFRL

1100 **Ballistic Missile Kill Criteria Assessment for Laser-Induced Damage Modes**
Michael Libeau, NSWCDD

1120 **Contribution of Physical Later Uncertainties to Directed Energy Applications**
Chris Kucera, Analytical Graphics

1140 **Comparison of Damage to MWIR Focal Plane Arrays using Femtosecond, Nanosecond and Microsecond Laser Pulses**
Michael McAuliffe, AFRL

1200 **Lunch - Proudly Sponsored By Textron**

Thursday Afternoon

High Energy Laser Beam Control and Optics II (Open)

Session Chair: *Paul Merritt,* AFRL

1300 **Aero-Optical Two-Way Interactions and High-Energy Laser Beam Propagation in Large Reynolds Number Turbulence**
Haris Catrakis, University of California

1320 **Improving Aero Optics CFD Modeling**
Marc Hallada, Schafer Corporation

1340 **Ultra High Speed Wavefront Curvature Sensing for Aero Optics**
Paul Harrison, Kestrel Corp

1400 **First Adaptive-Optic Correction of a 240 Hz Aero-Optic Aberration Using a Feed-Forward Approach**
Daniel Duffin, Univ. of Notre Dame

1420 **Aero-Optical Measurement Using High-Beamwidth 2-D Wavefront Sensor Array**
David Cavalieri, Univ. of Notre Dame

1440 **Break**

1500 **Experimental Results From the NGST Atmospheric Compensation Adaptive Optics Field Test**
Kenneth Triebes, Northrop Grumman

1520 **A Low Cost Experiment to Measure Optical Turbulence Between Two Buildings**
Thomas Farrell, Northrop Grumman

1540 **Vibration Evaluation of a Precision Inertial Reference Unit**
Joseph Friel, AFRL

1600 **Modeling of a Loop Phase-Conjugate Mirror for a 100 kW Solid-State Laser**
Alexander Betin, Raytheon

1620 **New Techniques for Computer Generation of Turbulence Phase Screens**
Russell Butts, MZA Associaties

1640 **Optimum Wavelength for Atmospheric Propagation of High Energy Laser Beams**
Phillip Sprangle, NRL

Other Directed Energy Concepts and Applications (Limited Distribution)

Session Chair: *William Thompson,* AFRL

1300 **High Explosive Fireball Phenomenology for Event Classification**
Glen Perram, AFIT

1320 **Development of a Live Fire Test and Evaluation Strategy for a Directed Energy (Airborne Laser) Program**
Keenan Lunderman, 46 OG/OGM (TEAS)

1340 **A Tale of Two Codes: A Comparison of ABLPROP and Scale**
Keith Rogers, Boeing Phantom Works

1400 **Terahertz Radiation from Optical Rectification of a Modulated Laser Pulse**
Daniel Gordon, NRL

1420 **NRL Remote Underwater Laser Acoustic Source**
Ted Jones, NRL

1440 **Next Generation Non-Lethal Weapons**
Alicia Conrad, American Systems

1500 **Break**

1520 **Modernization of Civilian Law Enforcement and Correction's Less Lethal Devices Using Directed Energy**
Joseph Cecconi, NIJ

1540 **Lethality of High Power Solid State Lasers on High Explosive Targets**
Charles Boley, LLNL

1600 **The Active Denial System (ACTD): Latest Results and Future Plans**
Susan LeVine, JNLWD

1620 **Quantification of the Degradation of Optical Sensors Due to Laser Jamming**
Monte Anderson, AFIT

1640 **Toward a Mission Appropriate Measure of Laser Beam Quality**
Sean Ross, AFRL

Directed Energy Neutralization of IEDs (Classified)

Session Chair: *Eugene Nolting*, NAVSEA PMS 405

1300 **Operational Effectiveness of a CIED System**
David Stoudt, NSWC

1340 **High-Power THz Source Development for IED Detection**
Alan Todd, Advanced Energy Systems

1400 **Active Thermal Imaging Using a Millimeter-wave Source (ATIMS)**
Timothy Andreadis, NRL

1420 **Effects of RF on Electro Explosive Devices**
Mark Rader, NRL

1440 **Radio Frequency Directed Energy Against Improvised Explosive Devices (IEDs) RAID**
Stephen Bayne, ARL

1500 **Break**

1520 **Neutralization of IEDs Using Directed Energy for Army Applications**
D. Clint Friedman, US Army ARDEC

1540 **MAX POWER HPM Counter-IED Technology**
Jeff Heggemeier, AFRL

1600 **MAX POWER Long Pulse HPM Susceptibility on Blasting Caps and IED Electronics**
Hugh Pohle, AFRL

1620 **SLAPPER HPM Counter-IED System Concept**
Rob Achenbach, Titan

1640 **Ultra Wide Band High Power Microwave Effects Testing with Multiple Sources**
Luis Hernandez, NAVAIR Weapons Division

Directed Energy Related Technologies I (Open)

Session Chair: *Baruch Levush,* NRL

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open Breakfast**

0800 **Impulse Array Antenna Design Using Particle Swarm Optimization**
Michael Morgan, NPS

0820 **Fiber-Pumped Radiation Balanced Laser**
Steven Bowman, NRL

0840 **The Effect of Residence Time on the Production of Singlet Oxygen in a Microwave Discharge**
Glen Perram, AFIT

0900 **Analysis of Thermo-Mechanical Failure Initiation in Pre-Tensioned Aluminum Strips Under Irradiation from an IR Source**
Michael Larson, Tulane University

0920 **Directed Energy Test and Evaluation Capability (DETEC) Project Capability Status Update**
Minh Vuong, DETEC

0940 **The Impact of the Aircraft Counter Measure (ACCM) on Visual Performance**
Semih Kumru, AFRL

1000 **Break**

1020 **Ceramic Laser Materials for the LLNL SSHCL**
Thomas Soules, LLNL

1040 **High Energy Laser Target Subsystems Protection**
Clyde Harris, DETEC

1100 **Long Pulse Microwave Systems**
Rob Achenbach, Titan

1120 **Compact Pulsed Power Sources Designed for HPM and High Powered RF Applications**
Jon Mayes, Applied Physical Electronics

1140 **Surface Diffusion Measurements via Scanning Photoemission Microscopy**
Jonathan Shaw, NRL

Directed Energy Related Technologies II (Limited Distribution)

Sesion Chair: *David Abe*, NRL

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open Breakfast in Kauai Courtyard**

0805 **Power Generation**
James Tschantz, AFRL

0825 **High Power Density Electric Generators for DEW - A Status Report**
Jay Vaidya, Electrodynamics Associates

0845 **High Power Density Multimegawatt HTS Generator for DEW Systems**
Kiruba Sivasubramaniam, General Electric Global Research Center

0905 **Tools for Evaluation of DEW Power Systems**
E. Walters, PC Krause and Associates

0925 **Design & Test Results of a BSCCO-2223 Superconducting Magnet for DEW Systems**
Michael Coffey, Cryomagnetics

0945 **Break**

1000 **Performance Limitations in Superconducting Magnets for DEW Power Systems**
Charles Oberly, AFRL

1020 **Cryogenic Refrigerators for DE Systems Suitable for Military Operations**
Ray Radebaugh, NIST

1040 **Performance of a High Pressure Flowing Oil Switch at Gigawatt Level Repetitive Operation**
Susan Heidger, AFRL

1100 **Development of Carbon Fiber Replacements for CsI Coated Carbon Fiber Cathodes**
Don Shiffler, AFRL

1125 **Beam Redistribution System-Enabling High Energy Laser Weapon Lethality Testing**
John Gagliano, 46OG/OGM-TEAS

1145 **Time Sampled HEL Far-Field Measurement Techniques**
Dennis Boesen, Northrop Grumman

Friday Morning

Directed Energy Related Technologies III (Classified)

Session Chair: *Richard Nguyen,* HEL-JTO

0630 **Speakers Breakfast in Huleia Room**

0700 **Registration Open**
Breakfast in Kauai Courtyard

0800 **Directed Energy Overview**
William Thompson, AFRL

0810 **High Power FEL Modeling**
Michael Hughes, Advanced Energy Systems

0830 **Laser Capability for Ship Defense Against an Advanced Threat**
Fred Bomse, Center for Naval Analyses

0850 **Warfighter Requirements and Potential Directed Energy Weapons Employment**
Mark Gage, Whitney, Bradley & Brown

0910 **Intial Efforts to Develop a Laser-Based Bomber Defense Weapon**
Stephen Doerr, AFRL

0930 **A Methodology for Comparing the Effectiveness of Directed Energy and Conventional Weapon Engagement of Ground Targets**
Hartmut Legner, Physical Sciences Inc

0950 **THEL Testbed Rocket and Mortar Shootdown Demonstration**
John Nugent, Northrop Grumman

1010 **Experimental Effects of HEL on Charring Composite Materials at LHMEL II**
Robert Cozzens, NRL

1030 **Break**

1045 **Dynamic Monitoring of RF Attenuation Using Water to Simulate Laser Induced Char**
Christopher Lloyd, NRL

1105 **A Measurement of Electrical Charge Delivered to a Target From a Laser Guided Discharge**
Phil Girardi, Envisioneering

1125 **A Model for HPM Induced Upset in Digital Electronics**
Patrick Vail, AFRL

1145 **High Power Microwave Research & Development Efforts at the NRL**
Carol Sullivan, NRL

1205 **Round to Round Comparison of Susceptibility Measurements for a Missile Seeker**
Jeffrey Shue, NRL

Symposium Committee

Captain Roger McGinnis, ONR,
Chair of the Symposium

Dr. William Baker, AFRL,
Co-Chair of the Symposium

Program Committee

Mr. Edward Duff, AFRL
Dr. Roy Hamil, AFRL
Mr. Thomas Hussey, AFRL
Dr. Al Kehs, ARL
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CDR Scott Nessler, NAVSEA
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Dr. Charles Oberly, WP AFB
Mr. Michael O'Neal, NAVSEA
Dr. Frank Peterkin, NSWC DD
Mrs. Jeanne Podracky, ONR
Dr. Garrett Polhamus, AFRL
Mr. Quentin Saulter, ONR
Dr. J. Thomas Schriempf, NAVSEA
Dr. Sadegh Siahatgar, NAVSEA
Mr. Dennis Tressler, NAVSEA
Mr. John Wachs, SMDC
Mrs. Gail Williams, NAVSEA

Registration and Exhibits

Cynnamon Spain, DEPS

Short Courses

Donna Storment, DEPS

Directed Energy Professional Society
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