Revision 5
2/8/2018

20th Annual DE S&T Symposium 2018

Preliminary Agenda
February 26- March 2, 2018

Monday Feb. 26

0800-1700
Short Courses at the *Embassy Suites*

1. Introduction to HEL Systems (0800-1200)
2. Introduction to HPM Systems (0800-1200)
3. Introduction to Beam Control (0800-1700)
4. Introduction to Tri-Service Lethality Science (0800-1700)
5. Beam Directors 101 (0800-1700)
6. Atmospheric Laser Propagation (1300-1700)
7. Thermal Management Technologies (1300-1700)
8. HPM Modeling & Effects (1300-1700)
9. Beam Control Assessment Tech Report (1300-1700)

*Boxed Lunch Break 1200-1300

*See Page 19 for acronyms and their meanings.

Tuesday AM- Feb. 27

0800- Welcome *from Mr. Mark Henderson, NAWC CL, Program Committee Chair*
0815- NSWC PHD- *Mr. Paul Mann, Technical Director, NSWC, Port Hueneme Division (Confirmed)*
0845- Army SMDC- *Mr. Thom Webber, Tech Center Director (Invited)*
0915- AF SDPE- *Mr. Thomas Lockhart, Director (Invited)*

*Break (0945)

1015- JNLW- *Ms. Susan Levine, Principal Deputy for Policy and Strategy, JNLWD (Confirmed)*
1045- JNLWD- *Mr. David Law, Chief Scientist, JNLWD (Confirmed)*
1115- DE JTO- *Dr. Larry Grimes, Director, Joint Directed Energy Transition Office (Confirmed)*

Tuesday PM

BC- Adaptive Optics Technology (Sean Cutchins)
At the Embassy Suites

1330- Using the MACS Wave Optics Code to Assist HELWS Design (D) *Donald Link, Radiance Technologies*

1400- Polychromatic Speckle Mitigation for Shack Hartmann Wavefront Sensors (D) *Noah Van Zandt, AFRL/RDLEM*

1430- An In-Depth Overview of Phased Array Research at AFRL (D) *Mark Spencer, AFRL/RDLTS*

*Break (1500-1530)

BC- Acquisition & Tracking (2nd Lt Evan Threlkeld)
at the Embassy Suites

1530- Interferometric Radar Results from MEHEL (D) *Amanda Clark, USASMDC/ARSTRAT*

1600- Acquisition Sensor Technologies for Operation in Adverse Weather Environments (D) *Greg Finney, IERUS Technologies*

1630- DAFHI: Validating TacSim (D) *Evan Threlkeld, AFRL*

1700- MWIR/LWIR Thermal and Polarization Signatures of UAS and Mortars (D) *Joseph Pezzaniti, Polaris Sensor Technologies*

*1730- Session adjourns

1730- Evening exhibitor's reception at the Embassy Suites

Next-Generation Non-Lethal Directed Energy Weapons (Dave Law)
at the Embassy Suites

1330- A Compact 90kW, 95 GHz High Efficiency Gyrotron System with a Non-Superconducting Magnet (A) *Jagadishwar R. Sirigiri, Bridge12 Technologies*

1400- High Power w-band Sheet Beam Devices (A) *John Pasour, Electronic Science & Technology Division, US NRL*

1430- Next-Generation Active Denial Technology Portfolio Update (A) *Randy Woods, NSWC Dahlgren Division*

*Break (1500-1530)

Key Transforming Non-Lethal Directed Energy Weapon Subsystems and Components (Dave Law)
at the Embassy Suites

1530- Update" "High Power Density Solutions for Directed Energy Weapon System Applications" (A) *Hernando Munevar, Candent Technologies Inc.*

1600- JNLWD ADT Tech Development Efforts (includes ADT/NL DEW HERO/Safety Issues) (A) *Randy Woods, JNLWD*

1630- Next Generation DEW Thermal Management System Technologies (A) *John Durbin, Durbin Group*

1700- Non-Lethal Weapons Human Surrogate Update (A) *Keith Sedberry, CFD Research Corporation*

*1730- Session adjourns

1730- Evening exhibitor's reception at the Embassy Suites

AHPL- High Power Gas & Hybrid Lasers (Boris Zhdanov)

at the Embassy Suites

1330- Effects of Multi-Level Kinetics on DPAL Beam Quality (D) *Dr. Glen Perram, AFIT*

1355- D1 and D2 Rubidium Lineshapes with High Pressure Rare Gases (D) *Dr. Christopher Rice, AFIT*

1420- DPAL Modeling Software Toolkit (D) *Dr. Roger Hill, Creare*

1445- Scaling Potential of the Diode-Pumped Rare Gas Laser (D) *Ben Eshel, AFIT*

*Break (1510-1540)

1540- Characterization of Performance of a Conventional Cs DPAL: Beam Quality, Efficiency, Gain Medium Lifetime (A) *Dr. Boris Zhdanov, USAFA*

1605- External Cavity Pump Laser for a DPAL Using an Atomic Line Filter (A) *Bill Hersman, UNH and Xemed*

1630- Diode-Pumped Rare-Gas Microplasma Laser (A) *W. Rawlins, PSI*

1655- A Path Towards 1MW Laser Pump Diodes (A) *John Goings, Lasertel*

*1730- Session adjourns

1730- Evening exhibitor's reception at the Embassy Suites

Power Beaming Metrology, Safety, and Applications (Avi Bar-Cohen & Paul Jaffe)

at the Embassy Suites

1330- Renewable Sustainable Power System with Integrated Robotics and Power Beaming Utilities (D) *Corey Bergsrud, NSWC- Crane Division*

1400- Operational Safety Analysis of Laser Power Beaming (A) *Eric Conrad, US ARMY CERDEC CP&ID*

1430- Safe Operation of Laser Power Beaming Systems (A) *Tom Nugent, PowerLight Technologies*

*Break (1500-1530)

1530- Criteria for Comparison of Power Beaming Demonstrations (A) *Paul Jaffe, US NRL*

1600- Uniform Comparisons of Power Beaming Efficiency (A) *Tom Nugent, PowerLight Technologies*

1630- Economic Feasibility of Space-Based Solar Power Generation in Remote Mining Applications (A) *Ian Lange, Division of Economics and Business, Colorado School of Mines*

1700- Panel 1- Challenges for Power Beaming- *Moderator- Gary Barnhard, Panelists: Seth Potter, James McSpadden*

*1730- Session adjourns

1730- Evening exhibitor's reception at the Embassy Suites

Education Workshop I (Harro Ackerman)
at the Embassy Suites

1330- Introduction to Education Workshop- *Harro Ackermann*

1335- Introduction to the Educational Initiative- *Mark Neice*

1355- The 2018 AFIT Directed Energy Summer Intern Program (A) *Sara Kraft, Center for Directed Energy AFIT*

1415- Gas Breakdown Dynamics: From Microscale to Nanoscale (A) *Amanda Loveless, Purdue University*

1440- Test, Evaluation, and Scaling of Advanced Nanodielectric Materials for High Voltage Capacitors (A) *Samuel Dickerson, University of Missouri Center for Physical and Power Electronics*

*Break (1505-1535)

1535- Characterizing Effective Complex Permittivity of Anisotropic Epsilon Negative Metamaterial Liner in a Rectangular Waveguide for Metamaterial Enhanced Resistive Wall Amplifiers (A) *Patrick Forbes, University of Wisconsin-Madison*

1600- Precision Measurements of Alkali-Methane Mixing and Quenching Cross Sections (A) *Philip Rich, USAFA*

*1630- Session adjourns

1730- Evening exhibitor's reception at the Embassy Suites

Wednesday AM- Feb. 28

BC- Turbulence Measurements (Dr. Brett Hokr)
at the Embassy Suites

0800- The Stabilized Shipboard Maritime Atmospheric Characterization System Atmospheric Transmission Measurement (MACS ATM) LIDAR (D) *Christopher Valenta, Georgia Tech Research Institute Electro-Optical Systems Laboratory*

0830- Advantages of Quantifying Velocity Structure Function, Cv2, rather than Temperature Structure Function, CT2, to Infer Refractive Structure Function, Cn2 (D) *Steven Fiorino, AFIT/ENP*

0900- Using Differential Temperature Sensors to Measure Cn2 in an Experimental Campaign at West Point (D) *Jacob O'Neill, USMA*

0930- The CABLE/TRAX Experiment to Improve Vertical Turbulence Profiles (D) *Steve Hammel, SPAWAR SSC Pacific*

*Break (1000-1030)

Beam Control Components, Coatings & Diagnostics (Amanda Clark)
at the Embassy Suites

1030- Deformable Mirrors: Bigger, Smaller, and Better (D) *Justin Mansell, MZA Associates Corporation*

1100- Carrier Density and Transport in Be-doped InAsSb for Infrared Detector Materials (A) *Lilian Casias, UNM Center for High Technology Materials*

1130- Recent Advancements in Laser Induced Damage Testing of HEL Optical Components (A) *Joseph Randi, Penn State University Applied Research Lab*

*Lunch Break (1200-1330)

Material Interaction/ High Fidelity (Robert Roybal)
at the Embassy Suites

0800- Pulsed Ablation of Metals and Graphite by UV and IR Lasers (D) *Glen Perram, AFIT*

0830- Performance and Integrity of Laser-heated, Load-bearing Polymer Matrix Composites (D) *Daniel Brannum, AFRL/RXA*

0900- Experimental Measurement of Hole Formation in Metal as a Function of Angle of Incidence from a HEL (D) *Nolan Hedglin, USMA*

0930- Response of Spring Steel Protective Surfaces to HEL Exposure (D) *Lyndon Daniel, AFRL/RDLE, Laser Effects Testing Facility*

*Break (1000-1030)

1030- Carbon Fiber Reinforced Polymer Composite Response to HEL Irradiation (D) *Fabiola Lopez, USSMDC*

1100- Prediction of Thermal Decomposition Behaviors of Polymer Matrix Composites using Unified Kinetic Model Parameters (A) *Sangwook Sihn, University of Dayton Research Institute*

1130- Investigation and Selection of Inert Substitutes for the Energetic Content of Munitions in High Energy Laser Effects Research using differential scanning calorimetry (A) *Jordan Johnson, USMA*

*Lunch Break (1200-1330)

Key Transforming Non-Lethal Directed Energy Weapon Systems, Subsystems, and Components (Dave Law)

at the Embassy Suites

0800- Looking Ahead in Non-Lethal Laser Induced Plasma Effects (C) *Dr. Brittany Lynn, SPAWAR SSC Pacific*

0825- The Impact of New Materials for the Next-Generation of JNLWD and DoD DEW Applications (C) *Dr. Randy D. Curry, University of Missouri*

0850- High Efficiency 976 nm and 1532 nm Diode Laser Pumps for High Energy Laser (Dazzler) Applications (C) *Jenna Campbell, Freedom Photonics - Santa Barbara, CA*

0915- Advancements in Metamaterial-Enabled High-Power Microwave Antennas (C) *Micah D. Gregory, Pennsylvania State University*

0940- A Prototype Compact Active Denial System (C) *Dr. Neville Luhmann, University of California - Davis*

*Break (1005-1035)

1035- Recent High-Performance Capacitor Development for Pulse Power Applications (C) *Mark Schneider, General Atomics- Electromagnetic Systems Group*

1100- Compact Nanocomposite Capacitors for Directed Energy Applications (C) *Kirk Slenes, TPL Inc.*

1125- High Power Phased Array Based on Solid State Amplifier- Antenna Element (C) *Dr. Hoon Ahn, Wireless Technology Inc.*

*Lunch Break (1200-1330)

USPL I (Charlene Rusnak & Brittany Lynn)

at the Embassy Suites

0800- Experiment-Theory Comparison of Metastable Electronic State Approach Light-Matter Interaction Model for Optical Filamentation (A) *Anand Bahl, College of Optical Sciences, University of Arizona*

0825- E-field Resolved Simulations of Long Wavelength Mid-IR TW Ultrashort Pulses Over Kilometer Ranges in Realistically Modeled Atmosphere (A) *Jerry Moloney, University of Arizona*

0850- Designing an Amplifier for a Fully Characterized Yb:KGW Ultra Short Pulsed Laser System (A) *Ian Greer, Photonics Research Center USMA*

0915- Filamentation of 3 ps TW CO2 Laser Pulses in Atmosphere (A) *Sergei Tochitsky, Department of Electrical Engineering, UCLA*

0940- USPL Plasma and Higher Order Effect Generation Control through Wavefront Shaping (A) *Brittany Lynn, SPAWAR SSC Pacific*

*Break (1005-1030)

1030- Energy Exchange Between Filaments in Ultrashort Pulse Laser Propagation (A) *Dr. Martin Richardson, University of Central Florida- CREOL*

1055- Gas Pressure Dependence of Broadband Microwave Emission from USPL-Generated Filaments (A) *Alexander Englesby, University of Michigan Air Force Research Laboratory*

1120- Measurements of Radiation from Ultrashort Pulse Interaction with Materials (A) *Ben Rock, US NRL*

*Lunch Break (1200-1330)

Power Beaming Technology & Demonstrations 1 (Avi Bar-Cohen & Paul Jaffe)
at the Embassy Suites

0800- W-Band Power Beaming (D) *Curtis Eckhart, Raytheon*

0830- W-Band Power Beaming (D) *Hooman Kazemi, Raytheon*

0900- Optical Power Transmission with Adaptive Beam Shaping: Approach, Analysis and Proof-of-Concept Field Demonstrations (D) *Mikhail Vorontsov, Optonicus*

0930- Reconfigurable Phased Array with Novel Feeding Architecture (A) *Mitchel Szazynski, Indiana University Purdue University Indianapolis*

*Break (1000-1030)

1030- Review of High Altitude Wireless Powered Aircraft (A) *James McSpadden, Raytheon*

1100- Theoretical Energy-conversion Efficiency for RF Energy Harvesters (A) *Christopher Valenta, Georgia Tech Research Institute Electro-Optical Systems Laboratory*

1130- A Silicon Photovoltaic Array for Demonstrating Wireless Power Transfer (A) *Phillip Jenkins, US NRL*

*Lunch Break (1200-1330)

CDEW Workshop
at the Offsite Location

0800- ONI Threat Brief

0830- TBD

0900- TBD

0930- TBD

*Break (1000-1030)

1030- TBD

1100- TBD

1130- TBD

*Lunch Break (1200-1330)

HPM Counter UAS (Ryan Hoffman)
at the Offsite Location

0800- Outcomes from Recent Evaluations of Counter Unmanned Aerial System Technology

0825- Overview of Counter UAS using HPM Research at NSWCDD

0850- UK Perspective on HPM C-UAV

0915- High Power Radio Frequency Effects on Modern Unmanned Air Vehicle Technologies

0940- Counter Unmanned Aerial Vehicles (CUAV) Utilizing Unlike High Power Microwave (HPM) Sources on Comparable Target Asset

*Break (1005-1035)

1035- Compact OmniDirectional Wideband Electromagnetic Lambaster (COWBEL) application for Counter Unmanned Aerial Systems (C-UAS)

1100- THOR - Tactical HPM Operational Responder

1125- HPRF Vessel Stopping Applicability to Counter Unmanned Aerial Systems

*Lunch Break (1200-1330)

Wednesday PM- Feb. 28

BC- Advanced Beam Control Systems (Dr. Robert Pawlak)
at the Embassy Suites

1330- Update on Long Range Deep Turbulence Beacon Generated by an Ultrashort Pulse Laser System (D) *Michael Helle, US NRL*

1400- Tackling with Directed Energy ‚Äúlitmus Test‚Äù of Adaptive Laser Beam Projection onto an Extended Flat Metallic Surface in Atmosphere (D) *Mikhail Vorontsov, Optonicus*

1430- Phase Compensation in the Presence of BIL-HEL Wavelength Differences (D) *Mark Spencer, AFRL/RDLTS*

*Break (1500-1530)

BC- Beam Propagation (Patty Wallentine)
at Embassy Suites

1530- Shipborne Atmospheric Extinction Lidar: Initial Look at Data from CABLE-TRAX Experiment (D) *David Sonnenfroh, Physical Sciences Inc.*

1600- Use of a Fast Scaling Law Model to Determine Optimal Array Configuration for Incoherent or Coherent Beam Combination (D) *Steven Fiorino, AFIT/ENP*

1630- Characterizing Multispectral Vertical Profiles of Aerosol Extinction with Surface-based Measurements (D) *Jaclyn Schmidt, AFIT*

1700- HELCoMES 3.2 Upgrades for User Defined Beam Inputs (D) *Troy Rhoadarmer, Guidestar Optical Systems, Inc.*

*1730- Session adjourns

Component Response (Dr. Thomas Schriempf)
at the Embassy Suites

1330- The Effects of Rotation Speed, Engagement Power, and Inert Thermal Sinks on the Laser Heating of Cold Rolled Steel Targets (A) *John Roll, USMA*

1400- Laser induced Damage Testing of Silica Windows with Hydrophobic Antireflective Surfaces (A) *Lynda Busse, NRL*

Test Facilities, Instrumentation, Diagnostics and Techniques (Dr. David Lyman)
at the Embassy Suites

1430- Solid State Laser Testbed (SSLT) Scoring System: Dynamic Engagement Results (D) *Daniel Duffin, Radiance Technologies*

*Break (1500-1530)

1530- NSWC Corona-NIST Efforts on Metrology and Calibration for DoD Laser Weapons (A) *Subrata Sanyal, NSWC- Corona Division*

1600- A UAV-Based HEL Beam-Profiling Target: TigerStrike (A) *Aaron Wallo, NSWC*

*1630- Session adjourns

USPL II (Charlene Rusnak & Brittany Lynn)
at Embassy Suites

1330- Mid-IR Laser Development at AFRL (D) *Andreas Schmitt-Sody, AFRL*

1355- Harmonic SWIR and Visible Light Generation in Optical Materials Following Exposure to Mid-IR USPL (D) *Christopher Wolfe, US ARL*

1420- Comparison of Microwave Radiation from Ultrashort Pulse Interactions with Air and Dielectrics (D) *Jennifer Elle, AFRL*

1445- Filament Thermal Waveguide (D) *Anthony Valenzuela, US ARL*

*Break (1510-1540)

1540- Enhanced Filament Ablation (D) *Dr. Martin Richardson, Univ. of Central Florida- CREOL*

1605- Stochastic Parallel Gradient Descent Adaptive Optics for Nonlinearly Focused Laser Propagation in a Turbulent Atmosphere (D) *Joseph Penano, US NRL*

1630- Panel- Beam Control USPL Applications (D) *Justin Mansell, MZA; Michael Helle, NRL; John deGrassie, SNWC, Pacific*

*1730- Session adjourns

Power Beaming Technology & Demonstrations 2 (Avi Bar-Cohen & Paul Jaffe)
at the Embassy Suites

1330- Review of Laser Power Beaming Demonstrations by PowerLight Technologies (A) *Tom Nugent, PowerLight Technologies*

1400- Concepts for Power Beaming with Directed Energy Systems and Thermal Receivers (A) *Bert Murray, Lighthouse DEV LLC*

1430- Laser Beam Wireless Power Transfer Progress Review (A) *Christopher Giranda, DHPC Technologies*

*Break (1500-1530)

1530- Progress of the Space Solar Power Initiative (A) *Michael Kelzenberg, California Institute of Technology*

1600- Long-Range Power Beaming using Single-Mode Fiber Lasers (A) *Richard Fischer, NRL*

1630- Panel 2- Challenges for Terrestrial Power Beaming (A) *Panelists: Mikhail Vrontsov, Tom Nugent, Christopher Giranda, Bert Murray, and Rich Fischer*

*1730- Session adjourns

Education Workshop II (Harro Ackerman)
at the Embassy Suites

1330- High Power Fiber Laser Development at UCF (A) *Justin Cook, Laser Plasma Laboratory, College of Optics and Photonics, University of Central Florida*

1355- Solid State Lasers Controlled by Volume Holographic Elements (A) *Evan Hale, University of Central Florida, CREOL, PPL*

1420- Optical Frequency Comb Architecture for Amplification of High Repetition Rate Optical Pulses using Coherent Spectral Beam Combining (A) *Michael Plascak, CREOL, The College of Optics and Photonics, University of Central Florida*

1445- Thermal Conductance Across a-SiO2/a-SiO2 Interfaces (A) *Joshua LaFlam, US Naval Academy*

*Break (1510-1540)

1540- Semiconductor Deterioration and Characterization of Laser Radiation Damage (A) *Maeve Broeg, US Naval Academy*

1605- Optical Investigation of a Regularized Shear Layer for Wavefront Prediction (A) *Matthew Kemnetz, University of Notre Dame*

1630- Detection and Localization of High Energy Laser Strike Using Carbon Nanotube (CNT) Sheet (A) *Peter Joyce, US Naval Academy*

*1730- Session adjourns

CDEW Workshop

at the Offsite Location

1330- Recent Developments at NSRDEC in Microwave Reflective Materials II

1355- RF Protected Apertures

1420- High Power Submillimeter Wave Breakdown of Air

1445- Gradient Metasurfaces for Frequency Selective Diffraction

*Break (1510-1540)

1540- HEL Materials Hardening of a UAV

1605- High Energy Laser Hardened Coatings

1630- Determining and scaling continuous-wave, laser-induced damage thresholds of thin reflectors

1655- Materials Development at AFRL for Mitigating Laser Effects

*1730- Session adjourns

HPM Counter UAS (Ryan Hoffman)

at the Offsite Location

1330- The ONR Short-Pulse Research and Evaluation for sUAS (OSPRES) Program: An Overview

1355- Fault Detection and Identification of High Power Microwave Effects on Small Unmanned Aircraft Systems

1420- Development of a sUAS Diagnostic Suite

1445- RF Coupling Mechanisms for sUAS

*Break (1510-1540)

1540- Developing Predictive Models for High Power Electromagnetic Effects in Hobbyist-Drones

1605- Effect of RF Pulse Repetition Frequency on Small Unmanned Aerial Systems

1630- Wide Band Effects on UAS Electronics

1655- Workshop Wrap-up Discussion

*1730- Session adjourns

Thursday AM- March 1

Beam Control Testbeds (Dr. Robert Pawlak)
at the Embassy Suites

0800- Overview of the Mobile Beam Control System Integration Laboratory (D) *Amanda Clark, USASMDC/ARSTRAT*

0830- 0930- Panel Discussion *lead by Robert Pawlak*

BC- Turbulence Characterization (Amanda Clark)
at the Embassy Suites

0930- Designing a Branch Point Density Empirical Model Using a Next Generation Atmospheric Turbulence Simulator Design of Experiments Approach (D) *Michael Bishop, AFRL- Starfire Optical Range*

*Break (1000-1030)

1030- Distributed-volume Optical Turbulence Generation in a Scaled-Laboratory Environment using Nematic Liquid-Crystal Phase Modulators (D) *David Dayton, Applied Technology Associates*

1100- Characterizing Atmospheric Turbulence over Long Paths using Time-lapse Imagery (D) *Santasri Bose-Pillai, AFIT*

1130- Analysis of Tilt Removed Hartmann Turbulence Sensor Data (D) *Jack McCrae, AFIT/ENP*

*Lunch Break (1200-1330)

AHPL- Solid State Lasers (Chris Behre)

at the Embassy Suites

0800- Specialty Fiber Amplifiers for Directed Energy (D) *Daniel Creeden, Coherent | Nufern*

0830- Incoherent Laser Beam Combining by Coaxially Overlapping Technique for High Energy Laser weapon (A) *Ryuji Nagaoka, Kawasaki Heavy Industries, Ltd.*

0900- Photonic Lantern Adaptive Mode Control (A) *Juan Montoya, MIT Lincoln Laboratory*

0930- Development of Crystalline Clad Fibers for All-Crystalline Fiber Lasers (A) *Brandon Shaw, NRL*

*Break (1000-1030)

1030- Studying the Limits to Single Mode Operation in Yb Fiber Lasers (A) *Justin Cook, Univ. of Central Florida- CREOL*

1100- On the Potential for High Power Thulium Lasers at 2Âµm Wavelength (A) *Alex Sincore, Univ. of Central Florida- CREOL*

1130- Diamond Raman Lasers â€“ a new Paradigm for Multi-kW Lasers (A) *Martin Richardson, Univ. of Central Florida- CREOL*

*Lunch Break (1200-1330)

HPM Technologies (Matt McQuage)

at the Embassy Suites

0800- Prospects of Photoconductive Semiconductor Switches (PCSS) for HPEM Applications (D) *Timothy Wolfe, AFRL*

0830- Photoconductive Solid-State Switches: Tradespace Evaluation (D) *Noah Kramer, University of Missouri Kansas City*

0900- kV and kA class pulsed metallized thin film capacitors (A) *Nathan Zameroski, Scientific Applications and Research Associates (SARA)*

0930- A New TM01c-fed Low Profile, High Gain, Leaky Wave HPM antenna (A) *Robert Koslover, Scientific Applications and Research Associates (SARA)*

*Break (1000-1030)

1030- Connecting the Dots Between Component Level and Equipment Level EMC Testing (A) *Michael Hatfield, Booz Allen Hamilton*

1100- Predicting the statistical nature of induced electromagnetic fields within randomly interconnected networks of complicated cavities (A) *Sameer Hemmady, Verus Research / UNM*

1130- Developing Predictive Models for Erroneous Software Behavior of Embedded Digital Logic due to Intentional Electromagnetic Interference (A) *Sameer Hemmady, Verus Research / UNM*

*Lunch Break (1200-1330)

Test Facilities, Instrumentation, Diagnostics and Techniques (Dr. David Lyman)
at the Offsite Location

0800- HEL Gain Media Trade Study

0830- Advanced HEL Instrument Design Concept

Material Interaction/ High Fidelity (Robert Roybal)
at the Offsite Location

0900- Modeling Laser Irradiation of Painted Steel Cylinders

System/ Sub-system Test Results (Steven Baird)
at the Offsite Location

0930- Manned Aviation HEL Vulnerability- Initial Testing and Preliminary Results

*Break (1000-1030)

1030- Laser Performance Test Results for LWSD

System/ Sub-system Test Results (Steven Baird)
at the Offsite Location

1100- US-UK HEL PA Effects Portion Overview

Target Vulnerability Assessment (Robert Ulibarri)
at the Offsite Location

1130- HEL Effects on Composite Sandwich Topside Panels

*Lunch Break (1200-1330)

Non-Lethal Directed Energy Weapon Prototypes and Key Technology Development Efforts- Status Updates (Dave Law)
at the Offsite Location

0800- RF/HPM Vessel Stopper Project Updates

0830- Investigation of W-Band Effect(s) on Small Unmanned Aerial Systems (sUAS)

0900- Lockheed Martin RF Vessel MoRFIUS

0930- Remote Generation of RF Emission with Filament Lasers

*Break (1000-1030)

1030- RF/HPM Vehicle Stopper Force Application Sub-System Development and Progress

1100- W-Band Effect(s) Mechanism in sUAS: Electromagnetic or Thermally Induced?

1130- Advanced Cold Plates and Controls that Enable Single Loop High Energy Laser (HEL) Thermal Management Systems (TMS)

*Lunch Break (1200-1330)

Education Workshop III (Harro Ackerman)
at the Embassy Suites

0800- Updates to the Development of Low-Pressure High-Density Plasmas on the Helicon Plasma Experiment (HPX) (A) *CDR Royce W. James, Ph.D., USCGA*

0830- Thomson Scattering and Langmuir Probe Development on the Helicon Plasma Experiment (HPX) (A) *2/c Anita Green, 4/c Maylis Yepez, and 4/c Trent Robledo-Thompson, USCGA*

0900- Experimental Analysis and Theoretical Comparison of Parametric Weather Conditions on Optical Turbulence in a Near Maritime Environment (A) *Richard Watson, US Naval Academy*

0930- Localization and Rapid Detection of High Energy Radiation using Distributed Fiber Optic Sensing (A) *Mathew Kautzman, US Naval Academy*

*Break (1000-1030)

1030- Effects of Directed Near-Infrared Radiation on Saltwater Drops (A) *Samuel Valley, US Naval Academy*

1100- Heat Transfer Analysis of Thermal Damage Behind Carbon Fiber-Reinforced Polymer Skin (A) *Nicholas Stovall-Kurtz, US Naval Academy, Mechanical Engineering Department*

1130- Thermal Effects of Environmental Degradation at Optical Surfaces for Directed Energy Applications (A) *Joshua LaFlam, US Naval Academy*

*Lunch Break (1200-1330)

Thursday PM- March 1

1330- Poster Session *Both Open and Limited Distribution poster sessions will be held after lunch at the Embassy Suites, from 1330-1530

BC- Platform Induced Turbulence (Gar Hassall)

at the Embassy Suites

1330-

1400-

1430- Investigation of Ship-Induced Optical Turbulence for the High Energy Laser with Integrated Optical-dazzler and Surveillance (HELIOS) (D) *Joseph Blau, Physics Department NPS*

*Break (1500-1530)

1530- Aero-Effects Measurements and Modeling Progress (D) *Donald Wittich, AFRL/RD*

1600- Preliminary Aero-Optic Results from Wind Tunnel Testing for Novel Flow Control Concept (D) *David Weston, AFRL*

1630- Aero-Effects Laboratory Description, Characteristics and Initial Testing (D) *Ilya Zilberter, AFRL/RDLEM*

1700- Passive Flow Control for an Aircraft Optical Window (D) *Chung-Jen Tam, AFRL/RDLEM*

*1730- Session adjourns

Next-Generation Non-Lethal Directed Energy Weapons (Dave Law)

at the Embassy Suites

1330- Closed-Loop RF Vehicle Stopper (C) *Sean Ahern, Booz Allen Hamilton*

1400- Past, Present, and Future of Laser Induced Plasma Weapons (C) *Joshua Etu, American Systems Corp.*

1430- Metamagnetics Non-Linear Transmission Line Technology Development Efforts (C) *Antone Gailer, Metamagnetics Inc.*

*Break (1500-1530)

Key Transforming Non-Lethal Directed Energy Weapon Subsystems and Components (Dave Law)

at the Embassy Suites

1530- Next Generation Marx Generator for Pulsed Power Applications (C) *Stephen Bayne, Texas Tech University*

1600- JNLWD RF/HPM Systems Portfolio Overview Brief (C) *Josh Pompeii, NSWC Dahlgren Division*

1630- Planar Scanner Antenna Version 3.0 (C) *Dan Gonzales, Pacific Antenna Systems*

*1700- Session adjourns

HPM Technologies (Matt McQuage)

at the Embassy Suites

1330- Galaxy Software Simulations of Directed Energy: Source Design through Mission Impact (D) *Jason Hammond, AFRL*

1355- Laser triggered EMP/HMP simulator utilizing GaAs PCCS (D) *Nathan Zameroski, Scientific Applications and Research Associates (SARA)*

1420- Window design for high power microwave vircator material testbed (D) *Sameer Hemmady, Verus Research / UNM*

1445- Microscale Gas Breakdown and Implications to Electron Emission (A) *Allen Garner, Purdue University*

*Break (1510-1530)

AHPL- Solid State Lasers (Chris Behre)
at the Embassy Suites

1330- Power Scaling of Yb-doped and Tm-doped All-Fiber Amplifiers (D) *Shadi Naderi, AFRL*

1400- Historical Perspective on High Diode Development (?) *Scott Keeney*

1445- Enabling Mission Readiness and Conquering Frontiers in Contamination Control: First Contact Polymers Impact on Billion Dollar Projects (A) *James Hamilton, Photonic Cleaning Technologies*

*Break (1515-1545)

1545- Directed Energy Systems Integration Lab (DESIL) MILCON Project (A) *Terry Robinson, NSWC PHD*

1615- 'Crystalline-core/Crystalline-clad' (C4) Fibers for Drastic Increase in Power Scalability Out of a Single Fiber Aperture: Laser Demonstrations, Efficiency, and Path Forward (A) *Mark Dubinskii, US ARL*

1700- Power and Efficiency of the Resonantly Diode-Cladding-Pumped Er Fiber Laser Based on Nanoparticle-Engineered Fibers (A) *Jun Zhang, US ARL*

*1730- Session adjourns

USPL III & BC (Charlene Rusnak, Brittany Lynn, and David Loomis)
at the Offsite Location

1330- Worldwide Ultrashort Pulse Laser Development

1400- Tracker Modeling and On-sky Comparison Studies at the Starfire Optical Range

1430- Extended Range, High Peak Power Laser Effects in a Controlled Environment

1500- Characterization and Modeling of THz Radiation from USPL-surface Interactions

*Break (1530-1600)

HPM Effects (Matt McQuage)
at the Offsite Location

1600- Testing and Evaluation of Mitigation Materials

1615- Counter Personal Water Craft Naval Experiment

1645- Effects

*1730- Session adjourns

Target Vulnerability Assessment (Robert Ulibarri)
at the Offsite Location

1330- Fixed Wing Small UAV (SUAV) Aimpoint Overview

1400- Engineering Level Laser Vulnerability Assessment for A Developmental Air - Air Missile to Support Aircraft Self Protect Modeling & Simulation

1430- Impact of High Fidelity Lethality Data on Laser Weapon System Analysis

*Break (1500-1530)

Systems Engineering Modeling & Analysis (Robert Ulibarri)
at the Offsite Location

1530- Leveraging Lethality: Simulation Experiments

1600- Visualization and Scoring of High Energy Laser Engagement Results

*1630- Session adjourns

ACRONYM	STANDS FOR
AF SDPE	*Air Force Strategic Development Planning & Experimentation*
AFIT	*Air Force Institute of Technology*
AFIT/ENP	*Air Force Institute of Technology/ Department of Engineering Physics*
AFRL	*Air Force Research Laboratory*
AFRL/RDL	*Air Force Research Laboratory/ Research and Development Laser Division*
AFRL/RDLEM	*Air Force Research Laboratory/ Research and Development Laser Weapon Modeling and Simulation*
AFRL/RDLTS	*Air Force Research Laboratory/ Research and Development Laser Technology*
AFRL/RXA	*Air Force Research Laboratory/ Materials & Manufacturing Directorate, Functional Materials and Applications*
ARL	*Army Research Laboratory*
ASD R&E	*Assistant Secretary of Defense Research & Engineering*
DE JTO	*Joint Directed Energy Transition Office*
JNLW	*Joint Non-Lethal Weapons*
JNLWD	*Joint Non-Lethal Weapons Directorate*
MTSI	*Modern Technology Solutions Inc.*
NAWC CL	*Naval Air Warfare Center China Lake*
NPS	*Naval Postgraduate School*
NSWC	*Naval Surface Warfare Center*
PSI	*Planned Systems International, Inc*
SNWC	*Space and Naval Warfare Center*
SPAWAR	*Space and Naval Warfare Systems Command*
US Army CERDEC CP&ID	*Communications-Electronics Research, Development and Engineering Center, Command, Power and Integration Directorate*
US NRL	*United States Naval Research Laboratory*
USAFA	*United States Air Force Academy*
USASMDC	*United States Army Space and Missile Defense Command*
USASMDC/ARSTRAT	*United States Army Space and Missile Defense Command/ Army Forces Strategic Command*
USCGA	*United States Coast Guard Academy*
USMA	*United States Military Academy*