DIRECTED ENERGY PROFESSIONAL SOCIETY

Technical Program

Advanced High Power Lasers

4th Annual Free Electron Laser Review

26th Annual Solid State and Diode Laser Technology Review

11th Annual Ultrashort Pulse Laser Workshop

24-27 June 2013

Santa Fe, New Mexico

MONDAY

SHORT COURSES

0700 **Registration at La Fonda**

0800 **Short Courses Begin**

1. **Ultrashort Pulse Laser Bioeffects**
   Instructor: *Benjamin Rockwell and Bob Thomas,* AFRL

2. **Introduction to High Power Semiconductor Lasers**
   FULL DAY COURSE
   Instructor: *Paul Leisher,* Rose-Holman Institute of Technology and *Steve Patterson,* DILAS USA

3. **Introduction to Free Electron Lasers**
   FULL DAY COURSE ***WEBCAST***
   Instructor: *Dinh Nguyen and Henry Freund,* Los Alamos National Laboratory

1200 **Break for Lunch**

1300 **Afternoon Course Begins and Full Day Course Resumes**

4. **Windows and Coatings for HEL Systems** ***WEBCAST***
   Instructor: *Bill Decker,* Defense Acquisition University

5. **Filamentation: Experimental Aspects**
   Instructor: *Howard Milchberg*, UMD and *John Palastro*, IREAP

SECURITY NOTE:
Letters listed in this agenda after presentation titles indicate distribution statements as follows:

C - information is limited to U.S. citizens who are employees of the U.S. Federal Government or its contractors

D - information is limited to U.S. citizens who are employees of the U.S. Department of Defense or its contractors

TUESDAY MORNING

JOINT SESSION

Plenary Session (Open) *WEBCAST*
La Fonda

0700 **Registration at the La Fonda Hotel Breakfast**

0815 **Welcome**
Mr. Mark Neice, DEPS

0830 **Optics and Photonics: Essential Technologies for Our Nation**
Jim Horkovich, Raytheon

0915 **Acceleration of Electrons by Laser Wakefield Acceleration with the Petawatt Laser Facility at LBL**
Dr. Cameron Geddes, LBL

1000 **Break**

1030 **Technologies Enabling High-Average-Power FEL**
Dr. Mark Curtin, Boeing DES

1200 **Lunch**

TUESDAY AFTERNOON

FEL

Free Electron Laser Review (Limited C/Open)
Chair: *Dinh Nguyen,* Los Alamos National Lab
La Fonda

Session is Limited C

1300 **(Invited) Progress on the Mark II Quarterwave SRF Injector (C)**
Rich Swent, Naval Postgraduate School

1330 **Simulation of a Regenerative Amplifier Free-Electron Laser (C)**
Henry Freund, Los Alamos National Laboratory

1345 **Modeling Free Electron Lasers Using GPUs (C)**
Michael Phillips, Advanced Energy Systems

1400 **Technology Roadmap toward a MW FEL (C)**
Dinh Nguyen, Los Alamos National Laboratory

1415 **Normal-Conducting RF Injector Beam Test Overview (C)**
Dinh Nguyen, Los Alamos National Laboratory

1430 **Break**

Session is now Open

1500 **(Invited) The Fritz Haber Institute IR and THz Free Electron Laser**
Alan Todd, Advanced Energy Systems

1530 **Non-Invasive Detection and Characterization of Beams**
Sandra Biedron, Colorado State University

1545 **A New 4D FEL Oscillator Model**
Joseph Blau, Naval Postgraduate School

1600 **The Effect of Accelerator Frequency on Free Electron Laser Performance**
Keith Cohn, Naval Postgraduate School

1615 **The CSU Accelerator and FEL Facility**
Stephen Milton, Colorado State University

1700 **Exhibitor / Welcome Reception**

SSDLTR

High Energy Lasers (Limited D/Open)

Chair: *LeAnn Brasure*, Schafer Corporation
La Fonda

Session is Limited D

1300 **High Power Planar Waveguide Laser for the Raytheon RELI Program (D)**
David Mordaunt, Raytheon Space and Airborne Systems

1330 **The Solid State Laser Testbed (SSLT) - Static and Dynamic Test Facility (D)**
Chuck LaMar, USA SMDC

1400 **Robust Electric Laser Initiative (RELI) NGAS Coherent Combination Progress (D)**
Martin Wacks, Northrop Grumman

1430 **Break**

1500 **Feasibility of High-Energy Lasers Onboard USMC Helicopters (C)**
Miguel Alvarez, Naval Postgraduate School

Session is now Open

1500 **Anti-Reflective Surface Structures for High Energy Laser Applications**
Lynda Busse, Naval Research Laboratory

1530 **Navy LAWS**
TBD

1700 **Exhibitor / Welcome Reception**

USPLW

Research at Universities for Ultrashort Pulse Laser Applications and Measurements (Open)

Chair: *Pete Latham*, Air Force Research Laboratory
La Fonda

1300 **Invited - Advancements in LWA and USPL Projects at UT**
Michael Downer, University of Texas

1340 **Invited - Measurements of USPL Induced Filaments at UMd**
Howard Milchberg, University of Maryland

1420 **Invited-Towards the Most Intense Light Fields in the Galaxy: The SCARLET Laser Focus at OSU**
Enam Chowdry, Ohio State University

1500 **Break**

1530 **Invited - Filamentation Modeling MURI and USPL Projects at UA**
Jerry Maloney, University of Arizona

1610 **Invited - Filamentation Sciences MURI and USPL Projects at UCF**
Martin Richardson, University of Central Florida

1700 **Exhibitor / Welcome Reception**

	Tuesday Morning	Tuesday Afternoon	Wednesday Morning	Wednesday Afternoon	Thursday Morning
North Ballroom	Plenary Session	SSDLTR: High Energy Lasers	SSDLTR: Fiber Lasers	SSDLTR: Beam Combination	SSDLTR: Solid State Lasers
New Mexico Room		USPLW: Research at Universities for UPL Applications & Measurements	USPLW: UPL Technology and Applications I	USPLW: UPL Technology and Applications II	
Stiha		FEL Review Session		SSDLTR: Modeling and Simulation	
South Ballroom	Exhibits Breaks	Exhibits Breaks	Exhibits Breaks	Exhibits Breaks	Exhibits Breaks
La Terraza Terrace	Lunch	Lunch	Lunch	Lunch	

UPCOMING EVENT

Directed Energy Systems Symposium
An All Classified Event
26-30 August 2013, Monterey, California
Abstracts still being accepted!

Sixteenth Annual Symposium
Huntsville, Alabama
Visit www.deps.org
More information coming soon

NEED CEUs BUT DON'T HAVE TRAVEL FUNDS?

Distance Learning Offering
Optics Systems Short Course
Online from 1 July -23 August 2013

Distance Learning Offering
High Energy Laser Weapon Systems Short Course
Online from 15 July - 8 September 2013

SSDLTR

Fiber Lasers (Limited C/Open)

Chair: *LeAnn Brasure*, Schafer Corporation
La Fonda

Session is Limited C

0700 **Registration at the La Fonda Hotel Breakfast**

0800 **Characterization of a 200-W Single-Mode Illuminator Laser at 1030 nm (C)**
Santanu Basu, Sparkle Optics Corporation

0830 **1.2 kW 1030 nm High Brightness, Narrow Line-Width Yb-Doped Fiber Amplifier (X)**
Ye Huang, Nufern

Session is now Open

0900 **Power Scaling of Resonantly Pumped Holmium-Doped Fibre Lasers**
Alex Hemming, Defence Science and Technology Organisation

0930 **Break**

1000 **Development of Single Mode Crystalline Core Double Clad Fibers**
Brandon Shaw, Naval Research Laboratory

1030 **Mode-Dependent Losses in 50micron Core Leakage Channel Fibers**
Guancheng Gu, Clemson University

1100 **High Power Diode Pumped Raman Fiber Lasers for Guidestar Applications**
Mike Klopfer, University of New Mexico

1130 **High Power Monolithic PCF Amplifiers**
Donald Sipes, Optical Engines, Inc

1200 **Lunch**

USPLW

Ultrashort Pulse Laser Technology and Applications I (Open)

Chair: *Tom Nelson*, Sandia National Laboratories
La Fonda

0700 **Registration at the La Fonda Hotel Breakfast**

0820 **Invited - AFOSR Ultrashort Laser Portfolio**
Pat Roach, AFOSR

0900 **Time-Dependent Polarization States of High Power, Ultrashort Laser Pulses During Atmospheric Propagation**
John Palastro, University of Maryland

0930 **Experiments on Femtosecond Laser Filamentation with Shaped Beams**
Pavel Polynkin, University of Arizona

1000 **Break**

1030 **Demonstration of Diode-Pumped Laser Producing 1 Joule Picosecond Pulses at 100 Hz Repetition Rate**
Jorge Rocca, Colorado State University

1100 **THz Generation by Optical Cherenkov Emission from Ionizing Two Color Laser Pulses**
Luke Johnson, University of Maryland, IREAP

1130 **Quantum Non-local Interaction (NLI) Model for Laser Field Ionization**
Thomas Rensink, University of Maryland, College Park

1200 **Lunch**

SSDLTR

Beam Combination (Limited D/Open)

Chair: *Jack Slater*, Schafer Corporation
La Fonda

Session is Limited D

1300 **Advances in Spectral Beam Combining of Fiber Lasers (D)**
Eric Honea, Lockheed Martin Laser and Sensor Systems

1330 **Hybrid Combining of kW-Class Fiber Amplifiers (D)**
Charles Yu, MIT Lincoln Laboratory

Session is now Open

1400 **Incoherent Beam Combining Using a Sparse Array of Fast Steering Mirrors**
Zachary Patrick, United States Naval Academy

1430 **Break**

1500 **Coherent Combination of Watt-Class Semiconductor Optical Amplifiers**
Kevin Creedon, MIT Lincoln Laboratory

1530 **Near Diffraction Limit Coherent Addition of Broad-Area Laser Diode Array**
Bo Liu, Oak Ridge National Laboratory

SSDLTR

Modeling and Simulation (Open)

Chair: *Dave Mordaunt*, Raytheon
La Fonda

1300 **Quasi-Analytical Solution for Mode Instability Thresholds**
Liang Dong, Clemson University

1330 **Advances in the Modeling of Modal Instabilities in Single and Multi-Core High Power Fiber Amplifiers**
Eric Bochove, Air Force Research Laboratory

1400 **A Dynamical Description of High Power Phased Laser Arrays and Biological Neural Assemblies or Other Interconnected Systems in Physics, Biology and Society**
Eric Bochove, Air Force Research Laboratory

WEDNESDAY AFTERNOON

USPLW

Ultrashort Pulse Laser Technology and Applications II (Limited)

Chair: *Pete Latham*, Air Force Research Laboratory

La Fonda

1330 **1 mJ Monolithic Fiber Femtosecond Laser**
Mike Mielke, Raydiance

1400 **Electric Field Measurments During Filament Guided Discharge**
Andreas Schmitt-Sody, Air Force Research Laboratory

1430 **Break**

1500 **Laboratory for Ultra Short Pulse Laser Formatting Progress: Lockheed Martin MFC Dallas**
Paul Perryman, Lockheed Martin MFC Dallas

THURSDAY MORNING

SSDLTR

Solid State Lasers (Limited C/Open)

Chair: *Tim Newell*, Air Force Research Laboratory

La Fonda

0700 **Registration at the La Fonda Hotel Breakfast**

Session is Limited C

0800 **Coherent Diode Laser Array with 35 Elements on a Single Chip**
Christopher Corcoran, Corcoran Engineering, Inc

Session is now Open

0830 **Metamorphic III-Sb VECSELs on GaAs/AlGaAs Distributed Bragg Reflectors**
Ganesh Balakrishnan, University of New Mexico

0900 **Ultra High Brightness Laser Diode Modules around 1.5 µm for Highly Efficient Resonant Pumping**
Haro Fritsche, Institute for Optics and Atomic Physics Technische Universitat von Berlin

0930 **Break**

1000 **High Spectral and Spatial Brightness Diode Laser Pump Sources for DPAL and Fiber Laser Pumping Applications**
Rajiv Pandey, DILAS Diode Laser Inc.

1030 **Synthesis and Optical Properties R E3+ doped MgO**
Tigran Sanamyan, US Army Research Laboratory

Conference Organizers

Free Electron Lasers Review

Sarwat Chappell, Office of Naval Research
Dinh Nguyen, Los Alamos National Laboratory

Solid State and Diode Laser Technology Review

Tim Newell, Air Force Research Laboratory
Mark Dubinskiy, US Army Research Laboratory

Ultrashort Pulse Laser Workshop

Pete Latham, Air Force Research Laboratory
Thomas Nelson, Sandia National Laboratories

Event Coordinator and Short Courses
Cynnamon Spain, DEPS

Security and Registration
Tiffany Bjelke, DEPS