Annual Anomalous Absorption Conference

1–6 May 2016

Saybrook Point Inn & Spa
Old Saybrook, Connecticut

PROGRAM

Sunday, 1 May 2016, 7:00 p.m.

Registration 7:00 p.m. Lobby
Reception 7:00 – 8:00 p.m. Soundview Ballroom D

Monday, 2 May 2016
Continental Breakfast 7:30 AM (Soundview Ballrooms C&D)

Morning Session Begins at 8:00 AM Soundview Ballroom A&B

**ORAL SESSION 1 8:00–10:20 AM Dustin Froula (Chair)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
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<tbody>
<tr>
<td>8:00</td>
<td>J. Myatt</td>
<td>Introduction and Welcome</td>
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<tr>
<td>8:30</td>
<td>M1-1</td>
<td>Thomson Scattering Characterization of a 1D Hohlraum Wall Surrogate (a Au Sphere) for Improved Understanding of Hohlraum Physics</td>
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<td>9:00</td>
<td>M1-2</td>
<td>Measurements of the Effect of Adiabat on the Shell Thickness of Direct-Drive Implosions on OMEGA</td>
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<td>9:20</td>
<td>M1-3</td>
<td>Low Convergence Path to Fusion Ignition</td>
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<td>M1-4</td>
<td>Design of a Low Convergence Fusion Ignition Capsule</td>
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<td>10:00</td>
<td>M1-5</td>
<td>Laser Plasma Interaction in Rugby-Shaped Hohlraum</td>
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J.S. Ross, G. Swadling, M.D. Rosen, K. Widmann, B. Heeter, and J.D. Moody (Lawrence Livermore National Laboratory)


K. Molvig, M.J. Schmitt, and G.H. McCall (Los Alamos National Laboratory)

M.J. Schmitt, K. Molvig, and G.H. McCall (Los Alamos National Laboratory)

ORAL SESSION II  

10:40  **M2-1**  BigFoot: Formation of a High Areal Density Hotspot at the National Ignition Facility


11:00  **M2-2**  Integrated Simulations and Predictive Capability for Near-Vacuum Hohlraums in the NIF Marble Platform


11:30  **M2-3**  Use of Hohlraum Liners to Improve the Hohlraum Performance


11:50  **M2-4**  Two Shock Implosions at NIF

_G. Kyrala, J. Kline, T. Ma, S. Khan, S. MacLaren, J.D. Salmonson, J. Pino, T. Dittrich, J. Ralph, D.P. Turnbull, P. Celliers, R. Rygg, and P. Kervin (Los Alamos National Laboratory and Livermore National Laboratory)_

12:10  **M2-5**  Effects of Preheat and Mix on the Adiabat of an Imploding Capsule

_B. Cheng, T.J.T. Kwan, Y.M. Wang, and S. Batha (Los Alamos National Laboratory)_

12:30  **LUNCH**  

_Soundview Ballrooms C&D_  

**AFTERNOON ON OWN**

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**Evening Session, Monday, 2 May 2016, 7:00 p.m.**  

_Soundview Ballrooms A&B_  

**INVITED TALK:**

7:00  **M3-1**  Multi-Beams Laser-Plasma Interactions: From ICF to “Plasma Photonics” Applications

_P. Michel, D. Turnbull, C. Goyon, L. Divol, T. Chapman, B.B. Pollock, J.S. Ross, and J.D. Moody (Lawrence Livermore National Laboratory)_
PM-1 A Wave-Based Model for Cross-Beam Energy Transfer in Inhomogeneous Plasmas
Presented by J.F. Myatt (Laboratory for Laser Energetics)

PM-2 The Effect of Cross-Beam Energy Transfer on Two-Plasmon Decay in Direct-Drive Implosions
Presented by D.H. Froula (Laboratory for Laser Energetics)

PM-3 Overview of First CBET Campaign at the Nike Laser
Presented by J.L. Weaver (U.S. Naval Research Laboratory)

PM-4 Towards A More Precise Driving of Capsules in Ignition-Scale Hohlraums
Presented by W.L. Kruer (Lawrence Livermore National Laboratory)

PM-5 Controlling Laser Plasma Interactions with Temporal Bandwidth
Presented by F.S. Tsung (UCLA)

PM-6 Laser Plasma Instability (LPI) Experiments with Plasma Profile Measurements at the Nike Laser
Presented by J. Oh (U.S. Naval Research Laboratory)

PM-7 When Gold and Diamond Meet at High Velocity: Collision, Diffusion, Penetration?
Presented by L. Divol (Lawrence Livermore National Laboratory)

PM-8 Conduction-Zone Measurements Using X-Ray Self-Emission Images
Presented by A.K. Davis (Laboratory for Laser Energetics)
Tuesday, 3 May 2016
Continental Breakfast 7:30 AM (Soundview Ballrooms C&D)

Morning Session Begins at 8:30 AM

Morning Sessions:

<table>
<thead>
<tr>
<th>ORAL SESSION I</th>
<th>8:30 a.m.–10:30 a.m.</th>
<th>Jason Myatt (Chair)</th>
</tr>
</thead>
</table>

8:30  

**T1-1** Crossed Beam Energy Transfer: Assessment of the Paraxial Complex Geometrical Optics Approach Versus a Time-Dependent Paraxial Method

_A. Colaïtis, S. Hüller, D. Pesme, G. Duchateau, and V. Tikhonchuk (CELIA, Université de Bordeaux/CNRS/CEA, and Centre de Physique Théorique, Ecole Polytechnique, CNRS, Université Paris-Saclay)_

9:00  

**T1-2** Inline Modeling of Cross-Beam Energy Transfer and Raman Scattering in NIF Hohraums


9:30  

**T1-3** Polarization Dependence of Crossed-Beam Energy Transfer in Unabsorbed Light Beamlets


9:50  

**T1-4** Spatial Non-Uniformity of Crossed-Beam Energy Transfer


10:10  

**T1-5** The High-Power, Low-Intensity Approach to Eliminating Stimulated Brillouin Backscatter


10:30  

**BREAK**
10:50  T2-1  Simulation of 2D Kinetic Effects in Plasmas Using the Grid Based Continuum Code LOKI


11:20  T2-2  Evidence of Multibeam Stimulated Brillouin Scattering in Direct-Drive Inertial Confinement Fusion Implosions


11:40  T2-3  2D2V Fully Kinetic Simulations and Nonlinear Models of Ion Acoustic Waves Relevant to Stimulated Brillouin Scattering

T. Chapman, R.L. Berger, J.W. Banks, S. Brunner, B.I. Cohen, and B. Arrighi (Lawrence Livermore National Laboratory, Rensselaer Polytechnic Institute, and Centre de Recherches en Physique des Plasmas)

12:00  T2-4  Simulating Stimulated Brillouin Scattering in NIF Rugby Hohlraum Experiments Using pF3D

S.H. Langer, P. Amendt, and A.B. Langdon (Lawrence Livermore National Laboratory)

12:20  T2-5  Heat-Flux Measurements from Collective Thomson-Scattering Spectra

R.J. Henchen, S.X. Hu, W. Rozmus, J. Katz, and D.H. Froula (Laboratory for Laser Energetics and University of Alberta, Canada)

12:40  LUNCH  Soundview Ballrooms C&D

AFTERNOON ON OWN
Evening Session, Tuesday, 3 May 2016, 7:00 p.m. 
Andrew Schmitt (Chair)

MIXED POSTER SESSION – beginning at 8:00 p.m. 
Fenwick, Gardiner, Riverside Halls

PT-1 2-D Highly-Resolved Simulation Studies of Fill Tubes on Ignition Double-Shell Targets for the NIF

Presented by J.L. Milovich (Lawrence Livermore National Laboratory)

PT-2 Fast Electron Transport in Different Allotropes of Shock-Heated Carbon

Presented by C.M. Krauland (Center for Energy Research, University of California – San Diego)

PT-3 Beyond Nonlinear Saturation of Backward Raman Amplifiers

Presented by I. Barth (Princeton University Plasma Physics Laboratory)

PT-4 Transforming the Idler for Use in Laser–Plasma Interaction Experiments

Presented by S. Bucht (Laboratory for Laser Energetics)

PT-5 Dynamic Thomson Scattering from Nonlinear Electron Plasma Waves

Presented by A. Davies (Laboratory for Laser Energetics)

PT-6 Shock-Wave Acceleration of Protons on OMEGA EP

Presented by D. Haberberger (Laboratory for Laser Energetics)

PT-7 Full-Pulse Particle-In-Cell Simulations of Hot-Electron Generation in OMEGA Experiments

Presented by E. Borwick (Laboratory for Laser Energetics, and Departments of Mechanical Engineering and Physics and Astronomy, University of Rochester)

PT-8 Recent Progress on Understanding in the LWFA in the Nonlinear Self-Guided Blowout Regime

Presented by W. B. Mori (UCLA)

PT-9 Redistribution of Thermal Energy Due to Magnetic Field Reconnection

Presented by A.S. Joglekar (University of California – Los Angeles Particle-in-Cell and Kinetic Simulation Center)

PT-10 The UCLA Particle-In-Cell and Kinetic Simulation Software Center (PICKSC)

Presented by W.B. Mori (UCLA)
Wednesday, 4 May 2016
Continental Breakfast 7:30 AM (Soundview Ballrooms C&D)

Morning Session Begins at 8:30 AM

Morning Sessions:        Soundview Ballrooms A&B

ORAL SESSION I        8:30 a.m.–10:30 a.m.        Dan Haberberger (Chair)

8:30  W1-1  Raman Amplifiers for Fast Igniter Pulses

J. Sadler, N. Ratan, L. Ceuvorst, M. Kasim, and P. Norreys
(University of Oxford)

9:00  W1-2  Increased Raman Amplification in the Regime of Nonlinear Landau Damping

S. Depierreux, C. Neuville, C. Baccou, V. Yahia, C. Goyon, G. Loisel,
P.-E. Masson-Laborde, M. Casanova, P. Loiseau, A. Debayle, D. Pesme,
S. Hüller, A. Heron, C. Riconda, P. Nicolaï, R. Nuter, G. Duchateau,
A. Colaitis, N. Borisenko, A. Orekhov, O. Rosmej, T. Rienecker, W. Seka
V. Tikhonchuk, and C. Labaune (CEA, LULI, Centre de Physique Theorique,
CELA, Helmolzentrum fur Schwerionenforschung GSI, and
Laboratory for Laser Energetics)

9:30  W1-3  Experimental Investigation of Self-Diffraction from Laser Generated
Plasma Gratings

S.E. Schrauth, R. Luthi, R. Plummer, B. Hollingsworth, W. Carr,
M. Norton, R. Wallace, A. Hamza, B. MacGowan, M. Shaw,
M. Spaeth, K. Manes, J.M. Di Nicola, and P. Michel
(Lawrence Livermore National Laboratory)

9:50  W1-4  Collective SRS Driven by Two Side-By-Side, Co-Propagating, Picosecond
Laser Pulses

C. Rousseaux, K. Glize, S.D. Baton, L. Lancia, D. Bénisti,
and L. Gremillet (CEA, LULI-CNRS, and Università di Roma)

10:10  BREAK
10:30 W2-1 Advances in Particle Driven Plasma Wakefield Accelerators at FACET


11:00 W2-2 Planar Laser–Plasma Interaction Experiments at Direct-Drive Ignition-Relevant Scale Lengths at the National Ignition Facility


11:20 W2-3 Modeling of Laser–Plasma Interaction Experiments at Direct-Drive Ignition-Relevant Plasma Conditions at the National Ignition Facility


11:40 W2-4 Kinetic Analysis of Convective Stimulated Raman Scattering and its Potential as a Temperature Diagnostic

R.W. Short, W. Seka, and J.F. Myatt (Laboratory for Laser Energetics)

12:00 W2-5 Simulation of Stimulated Brillouin Scattering and Stimulated Raman Scattering in Shock Ignition

L. Hao, J. Li, W.-D. Liu, R. Yan, and C. Ren (Laboratory for Laser Energetics, Fusion Science Center, and Departments of Mechanical Engineering and Physics and Astronomy, University of Rochester)

12:20 W2-6 Density Modulation-Induced Absolute Laser-Plasma-Instabilities: Simulations and Theory

J. Li, R. Yan, and C. Ren (Laboratory for Laser Energetics, Fusion Science Center, and Departments of Mechanical Engineering and Physics and Astronomy, University of Rochester)

12:40 LUNCH Soundview Ballrooms C&D

AFTERNOON ON OWN
Evening Session, Wednesday, 4 May 2016, 7:00 p.m.  Soundview Ballrooms A&B

William Kruer (Chair)

INVITED TALK:

7:00  W3-1  The National Ignition Facility: An Unexpected Journey, Lessons to be Learned to Secure Projects of Scale, and Perspectives on the Future of Inertial Confinement Fusion Research

E. M. Campbell (Laboratory for Laser Energetics)

MIXED POSTER SESSION – beginning at 8:00 p.m.  Fenwick, Gardiner, Riverside Halls

PW-1  Vlasov Fokker Planck Modeling of High Energy Density

Presented by A. Tableman (UCLA)

PW-2  Behavior of NIF Hohlraums with Beryllium Capsules

Presented by D.C. Wilson (Los Alamos National Laboratory)

PW-3  PIC Simulation of Nuclear EMP

Presented by W.A. Farmer (Lawrence Livermore National Laboratory)

PW-4  The Kinetic Behavior of Stimulated Raman Scattering in the Presence of External Magnetic Fields

Presented by B.J. Winjum (UCLA)

PW-5  Laser Backscatter Measurements from MagLIF Targets on Z

Presented by D.E. Bliss (Sandia National Laboratories)

PW-6  3-D Simulations of Magnetized Direct-Drive ICF Implosions

Presented by C.A. Walsh (Imperial College, UK)

PW-7  Analysis of Laser Filamentation in Sandia MagLIF Experiments

Presented by A.J. Schmitt (U.S. Naval Research Laboratory)

PW-8  Benchmarking Molecular Dynamic Simulations for Multi-Scale Applications

Presented by J.H. Cooley (Los Alamos National Laboratory)


Presented by J.W. Bates (U.S. Naval Research Laboratory)
Thursday, 5 May 2016
Continental Breakfast 7:30 AM (Soundview Ballrooms C&D)

Morning Session Begins at 8:30 AM

Morning Sessions:       Soundview Ballrooms A&B

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>8:30</td>
<td>R1-1</td>
<td>An Overview of Laser-Driven Magnetized Liner Inertial Fusion on OMEGA</td>
<td>J.R. Davies, D.H. Barnak, R. Betti, P.-Y. Chang, K.J. Peterson,</td>
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<td>A.B. Sefkow, D.B. Sinars, and S.A. Slutz (Laboratory for Laser Energetics</td>
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<td>9:00</td>
<td>R1-2</td>
<td>Scaling Laser-Driven MagLIF to the NIF</td>
<td>D.H. Barnak, R. Betti, E.M. Campbell, P.-Y. Chang, J.R. Davies,</td>
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<td>J.P. Knauer, K.J. Peterson, S. Regan, A.B. Sefkow, D.B. Sinars,</td>
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<td>and Sandia National Laboratories)</td>
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<td>J.R. Davies, M. Geissel, C.S. Goyon, B. Hansen, A.J. Harvey-Thompson,</td>
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<td>C.A. Jennings, B.G. Logan, J. Moody, T.N. Nagayama, B.B. Pollock,</td>
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<td>J.L. Porter, A.B. Sefkow, I.C. Smith, D. Strozzi, and M.-S. Wei</td>
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<td>(Sandia National Laboratories, General Atomics, Laboratory for Laser</td>
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<td>Energetics, and Lawrence Livermore National Laboratory)</td>
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<td>9:40</td>
<td>R1-4</td>
<td>Modeling Laser-Plasma Interactions in MagLIF Experiments on NIF</td>
<td>D.J. Strozzi, R.L. Berger, A.B. Sefkow, S.H. Langer, T. Chapman,</td>
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<td>C. Goyan, B. Pollock and J.D. Moody (Lawrence Livermore National</td>
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<td>Laboratory and Sandia National Laboratories)</td>
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<td>10:00</td>
<td>BREAK</td>
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10:20  R2-1  Laser Propagation through Full-Scale, High-Gain MagLIF Gas Pipes Using the NIF


10:50  R2-2  A Systemic Investigation of MagLIF Preheat on OMEGA-EP


11:10  R2-3  Temperature Analysis of MagLIF Preheat Experiments at OMEGA-EP


11:30  R2-4  Near-Beam-Imaging SBS Measurements for MagLIF


11:50  R2-5  Laser Upgrades at the Sandia’s Z-Backlighter Facility in order to Accommodate New Requirements for Magnetic Liner Inertial Fusion on the Z-Machine


12:40  _LUNCH_  

_Soundview Ballrooms C&D_

AFTERNOON ON OWN

BANQUET

5:30 – 6:30  _Banquet Reception_  

_Garden Terrace_

6:30  _Banquet_  

_Soundview Ballrooms C&D_
Friday, 6 May 2016

Continental Breakfast 7:30 AM (Soundview Ballrooms C&D)

Morning Session Begins at 8:30 AM

Morning Sessions:      Soundview Ballrooms A&B

ORAL SESSION I     8:30 a.m.–10:30 a.m. Andrew Schmitt (Chair)

8:30  F1-1 Implementing a Xenon Gas Soft X-Ray Shield to Prevent Optical
      “Blanking” of the First Collection Optic of the New NIF Optical Thomson
      Scattering Diagnostic

      G.F. Swadling, J.S. Ross, D. Manha, J. Galbraith, P. Datte, J. Kilkenny,
      O. Landen, and J.D. Moody (Lawrence Livermore National Laboratory)

9:00  F1-2 Modeling of Neutron Scattering in ICF Experiments

      B.D. Appelbe, F. Manke, and J.P. Chittenden (Centre for Inertial Fusion
      Studies, Blackett Laboratory, Imperial College, UK)

9:20  F1-3 Characterization of Hot Electron Coupling in Shock Ignition-Relevant Regimes

      C.M. Krauland, S. Zhang, J. Peebles, F.N. Beg, N. Alexander,
      W. Theobald, R. Betti, D. Haberberger, C. Ren, R. Yan, E. Borwick,
      M. Campbell, and M.S. Wei (Center for Energy Research,
      University of California – San Diego, General Atomics,
      and Laboratory for Laser Energetics)

9:50  F1-4 Scaled Laboratory Experiments Explain the Kink Behavior of the Crab Nebula Jet

      C.K. Li, P. Tzeferacos, D. Lamb, M.J. Rosenberg, R.K. Follett,
      D.H. Froula, M. Koenig, F.H. Seguin, J.A. Frenje, H.G. Rinderknecht,
      H. Sio, A.B. Zylstra, R.D. Petrasco, P.A. Amendt, H.S. Park,
      B.A. Remington, D.D. Ryutov, S.C. Wilks, R. Betti, A. Frank, S.X. Hu,
      T.C. Sangster, P. Hartigan, R.P. Drake, C.C. Kuranz, G. Gregori,
      P.A. Norreys, S.V. Lebedev, and N.C. Woolsey (MIT, University Chicago,
      Laboratory for Laser Energetics, Physics and Astronomy, University of
      Rochester, Laboratoire LULI, Lawrence Livermore National Laboratory,
      Rice University, University of Michigan, University of Oxford,
      Imperial College, UK, and University of York – London, UK)

10:10  BREAK
ORAL SESSION II  
10:20 a.m.–12:40 p.m.  Frank Tsung (Chair)

10:30  F2-1  Plasma Diffusion Across Coupling Regimes

  G. Kagan, J. Daligault, and S.D. Baalrud (Los Alamos National Laboratory and Department of Physics and Astronomy, University of Iowa)

10:50  F2-2  Experimental Signatures of Suprathermal Ion Distribution in Inertial Confinement Fusion Implosions


11:10  F2-3  Probing Kinetic and Multi-Ion-Fluid Effects in ICF Plasmas Using Precision Time-Resolved Measurements of Several Nuclear Reactions, and X-Ray Core Continuum at OMEGA


11:30  F2-4  Detection of Interspecies Ion Separation via Analysis of Spatially Resolved X-Ray Spectra in OMEGA Implosions


11:50  F2-5  Visualization of Hohlraum-Wall Motion at the National Ignition Facility


See you all next year!