
Publications and Conference Presentations

Publications

- T. R. Boehly, R. E. Olson, P. M. Celliers, D. H. Munro, W. Seka, O. L. Landen, G. W. Collins, L. J. Suter, T. C. Sangster, and D. D. Meyerhofer, "The Effect of Condensates and Inner Coatings on Vacuum Hohlraum Targets," *Phys. Plasmas* **17**, 032701 (2010).
- W. R. Donaldson, J. R. Marciante, and R. G. Roides, "An Optical Replicator for Single-Shot Measurements at 10 GHz With a Dynamic Range of 1800:1," *IEEE J. Quantum Electron.* **46**, 191 (2010).
- R. Florido, R. C. Mancini, T. Nagayama, R. Tommasini, J. A. Delettrez, S. P. Regan, V. A. Smalyuk, R. Rodríguez, and J. M. Gil, "Argon *K*-Shell and Bound-Free Emission from OMEGA Direct-Drive Implosion Cores," *High Energy Density Phys.* **6**, 70 (2010).
- T. B. Jones, R. Gram, K. Kentch, and D. R. Harding, "Capillarity and Dielectrophoresis of Liquid Deuterium," *J. Phys. D: Appl. Phys.* **42**, 225505 (2009).
- R. L. McCrory, D. D. Meyerhofer, S. J. Loucks, S. Skupsky, R. E. Bahr, R. Betti, T. R. Boehly, R. S. Craxton, T. J. B. Collins, J. A. Delettrez, W. R. Donaldson, R. Epstein, K. A. Fletcher, C. Freeman, J. A. Frenje, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, P. A. Jaanimagi, R. L. Keck, J. H. Kelly, T. J. Kessler, J. D. Kilkenny, J. P. Knauer, C. K. Li, L. D. Lund, J. A. Marozas, P. W. McKenty, F. J. Marshall, S. F. B. Morse, S. Padalino, R. D. Petrasso, P. B. Radha, S. P. Regan, S. Roberts, T. C. Sangster, F. H. Séguin, W. Seka, V. A. Smalyuk, J. M. Soures, C. Stoeckl, K. A. Thorp, B. Yaakobi, and J. D. Zuegel, "Direct-Drive Inertial Fusion Research at the University of Rochester's Laboratory for Laser Energetics: A Review," in *Current Trends in International Fusion Research—Proceedings of the Fifth Symposium*, edited by E. Panarella and R. Raman (NRC Press, Ottawa, Canada, 2008), pp. 267–277.
- A. V. Okishev, "Optical Differentiation and Multimillijoule ~150 ps Pulse Generation in a Regenerative Amplifier with a Temperature-Tuned Intracavity Volume Bragg Grating," *Appl. Opt.* **49**, 1331 (2010).
- S. P. Regan, N. B. Meezan, L. J. Suter, D. J. Strozzi, W. L. Kruer, D. Meeker, S. H. Glenzer, W. Seka, C. Stoeckl, V. Yu. Glebov, T. C. Sangster, D. D. Meyerhofer, R. L. McCrory, E. A. Williams, O. S. Jones, D. A. Callahan, M. D. Rosen, O. L. Landen, C. Sorce, and B. J. MacGowan, "Suprathermal Electrons Generated by the Two-Plasmon-Decay Instability in Gas-Filled *Hohlraums*," *Phys. Plasmas* **17**, 020703 (2010).
- H. F. Robey, T. R. Boehly, R. E. Olson, A. Nikroo, P. M. Celliers, O. L. Landen, and D. D. Meyerhofer, "Experimental Validation of a Diagnostic Technique for Tuning the Fourth Shock Timing on National Ignition Facility," *Phys. Plasmas* **17**, 012703 (2010).
- J. E. Schoenly, W. Seka, and P. Rechmann, "Investigation Into the Optimum Beam Shape and Fluence for Selective Ablation of Dental Calculus at $\lambda = 400$ nm," *Lasers Surg. Med.* **42**, 51 (2010).
- R. Shen, S. N. Shafirir, C. Miao, M. Wang, J. C. Lambropoulos, S. D. Jacobs, and H. Yang, "Synthesis and Corrosion Study of Zirconia-Coated Carbonyl Iron Particles," *J. Colloid Interface Sci.* **342**, 49 (2010).
- L. Sun, S. Jiang, and J. R. Marciante, "All-Fiber Optical Magnetic-Field Sensor Based on Faraday Rotation in Highly Terbium-Doped Fiber," *Opt. Express* **18**, 5407 (2010).
- L. Sun, S. Jiang, J. D. Zuegel, and J. R. Marciante, "All-Fiber Optical Isolator Based on Faraday Rotation in Highly Terbium-Doped Fiber," *Opt. Lett.* **35**, 706 (2010).

Forthcoming Publications

S.-W. Bahk, E. Fess, B. E. Kruschwitz, and J. D. Zuegel, “A High-Resolution, Adaptive Beam-Shaping System for High-Power Lasers,” to be published in *Optics Express*.

M. A. Barrios, D. G. Hicks, T. R. Boehly, D. E. Fratanduono, J. H. Eggert, P. M. Celliers, G. W. Collins, and D. D. Meyerhofer, “High-Precision Measurements of the Equation of State of Hydrocarbons at 1–10 Mbar Using Laser-Driven Shock Waves,” to be published in *Physics of Plasmas* (invited).

Z. Bei, T. B. Jones, and D. R. Harding, “Electric-Field Centering of Double-Emulsion Droplets Suspended in a Density Gradient,” to be published in *Soft Matter*.

R. Betti, P. Y. Chang, B. K. Spears, K. S. Anderson, J. Edwards, M. Fatenejad, J. D. Lindl, R. L. McCrory, R. Nora, and D. Shvarts, “Thermonuclear Ignition in Inertial Confinement Fusion and Comparison with Magnetic Confinement,” to be published in *Physics of Plasmas* (invited).

J. Bromage, C. Dorrer, J. R. Marciante, M. J. Shoup III, and J. D. Zuegel, “Modal Measurement of a Large-Mode-Area Photonic-Crystal Fiber Amplifier Using Spatially Resolved Spectral Interferometry,” to be published in *Solid State Diode Laser Technology Review*.

P. Y. Chang, R. Betti, B. K. Spears, K. S. Anderson, J. Edwards, M. Fatenejad, J. D. Lindl, R. L. McCrory, R. Nora, and D. Shvarts, “Generalized Measurable Ignition Criterion for Inertial Confinement Fusion,” to be published in *Physical Review Letters*.

C. Dorrer and J. Bromage, “High-Sensitivity Optical Pulse Characterization Using Sagnac Electro-Optic Spectral Shearing Interferometry,” to be published in *Optics Letters*.

V. N. Goncharov, T. C. Sangster, T. R. Boehly, S. X. Hu, I. V. Igumenshchev, F. J. Marshall, R. L. McCrory, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, C. Stoeckl, D. T. Casey, J. A. Frenje, and R. D. Petrasso, “Demonstration of the Highest Deuterium–Tritium Areal Density Using Multiple-Picket Cryogenic Designs on OMEGA,” to be published in *Physical Review Letters*.

W. Guan and J. R. Marciante, “Power Scaling of Single-Frequency Hybrid Brillouin/Ytterbium Fiber Lasers,” to be published in *IEEE Journal of Quantum Electronics*.

S. X. Hu, “Optimizing the FEDVR-TDCC Code for Exploring the Quantum Dynamics of Two-Electron Systems in Intense Laser Pulses,” to be published in *Physical Review E*.

H. Irie and R. Sobolewski, “Terahertz Electrical Response of Nanoscale Three-Branch Junctions,” to be published in the *Journal of Applied Physics*.

A. M. Kaplan, G. P. Agrawal, and D. N. Maywar, “Optical Square-Wave Clock Generation Based on an All-Optical Flip-Flop,” to be published in *IEEE Photonics Technology Letters*.

V. Kaushal, I. Iñiguez-de-la-Torre, H. Irie, G. Guarino, W. R. Donaldson, P. Ampadu, R. Sobolewski, and M. Margala, “A Study of Geometry Effects on the Performance of Ballistic Deflection Transistors,” to be published in *IEEE Transactions on Nanotechnology*.

J. P. Knauer, O. V. Gotchev, P. Y. Chang, D. D. Meyerhofer, A. Polomarov, R. Betti, J. A. Frenje, C. K. Li, M. J.-E. Manuel, R. D. Petrasso, J. R. Rygg, and F. H. Séguin, “Compressing Magnetic Fields with High-Energy Lasers,” to be published in *Physics of Plasmas* (invited).

R. L. McCrory, D. D. Meyerhofer, S. J. Loucks, S. Skupsky, J. M. Soures, R. Betti, T. R. Boehly, M. J. Bonino, R. S. Craxton, T. J. B. Collins, J. A. Delettrez, D. H. Edgell, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. H. Kelly, T. J. Kessler, J. P. Knauer, L. D. Lund, D. Jacobs-Perkins, J. R. Marciante, J. A. Marozas, F. J. Marshall, A. V. Maximov, P. W. McKenty, S. F. B. Morse, J. Myatt, S. G. Noyes, P. B. Radha, A. L. Rigatti, T. C. Sangster, W. Seka, V. A. Smalyuk, C. Stoeckl, K. A. Thorp, L. J. Waxer, M. D. Wittman, B. Yaakobi, J. D. Zuegel, K. A. Fletcher, C. Freeman, S. Padalino, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, “Direct-Drive Inertial Fusion Research at the University of Rochester’s Laboratory for Laser Energetics: A Review,” to be published in *6th Current Trends in International Fusion Research: A Review*.

P. W. McKenty, R. S. Craxton, F. J. Marshall, T. C. Sangster, J. A. Marozas, A. M. Cok, M. J. Bonino, D. R. Harding, D. D. Meyerhofer, R. L. McCrory, J. D. Kilkenny, A. Nikroo, J. Fooks, M. Hoppe, J. M. Edwards, A. J. MacKinnon, D. H. Munro, and R. J. Wallace, “Design of High-Neutron-Yield Polar-Drive Targets for Diagnostic Activation Experiments on the NIF,” to be published in the *Journal of Physics: Conference Series*.

C. Miao, J. C. Lambropoulos, and S. D. Jacobs, "Process Parameter Effects on Material Removal in Magnetorheological Finishing of Borosilicate Glass," to be published in *Applied Optics*.

P. M. Nilson, S. P. D. Mangles, L. Willingale, M. C. Kaluza, A. G. R. Thomas, M. Tatarakis, R. J. Clarke, K. L. Lancaster, S. Karsch, J. Schreiber, Z. Najmudin, A. E. Dangor, and K. Krushelnick, "Plasma Cavitation in Ultraintense Laser Interactions with Underdense Helium Plasmas," to be published in the *New Journal of Physics*.

J. Qiao, A. W. Schmid, L. J. Waxer, T. Nguyen, J. Bunkenburg, C. Kinglsey, A. Kozlov, and D. Weiner, "*In Situ* Detection and Analysis of Laser-Induced Damage on a 1.5-m Multilayer-Dielectric Grating Compressor for High-Energy, Petawatt-Class Laser Systems," to be published in *Optics Express*.

T. C. Sangster, V. N. Goncharov, R. Betti, T. R. Boehly, D. T. Casey, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, D. H. Edgell, R. Epstein, K. A. Fletcher, J. A. Frenje, V. Yu. Glebov, D. R. Harding, S. X. Hu, I. V. Igumenshchev, J. P. Knauer, S. J. Loucks, C. K. Li, J. A. Marozas, F. J. Marshall, R. L. McCrory,

P. W. McKenty, D. D. Meyerhofer, P. M. Nilson, S. P. Padalino, R. D. Petrasso, P. B. Radha, S. P. Regan, F. H. Séguin, W. Seka, R. W. Short, D. Shvarts, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, W. Theobald, and B. Yaakobi, "Shock-Tuned Cryogenic-Deuterium-Tritium Implosion Performance on OMEGA," to be published in *Physics of Plasmas* (invited).

J. E. Schoenly, W. Seka, and P. Rechmann, "Selective Near-UV Ablation of Subgingival Dental Calculus: Measurement of Removal Rates," to be published in the *Proceedings of SPIE*.

V. A. Smalyuk, R. Betti, J. A. Delettrez, V. Yu. Glebov, D. D. Meyerhofer, P. B. Radha, S. P. Regan, T. C. Sangster, J. Sanz, W. Seka, C. Stoeckl, B. Yaakobi, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Implosion Experiments Using Glass Ablators for Direct-Drive Inertial Confinement Fusion," to be published in *Physical Review Letters*.

A. A. Solodov, M. Storm, J. F. Myatt, R. Betti, D. D. Meyerhofer, P. M. Nilson, W. Theobald, and C. Stoeckl, "Simulations of Electron-Beam Transport in Solid-Density Targets and the Role of Magnetic Collimation," to be published in the *Journal of Physics, Conference Series*.

Conference Presentations

J. E. Schoenly, W. Seka, and P. Rechmann, "Selective Near-UV Ablation of Dental Calculus: Measurement of Removal Rates," *BiOS 2010*, San Francisco, CA, 23–28 January 2010.

L. Sun, S. Jiang, and J. R. Marciante, "Compact All-Fiber Optical Faraday Isolator," *SPIE Photonics West–LASE*, San Francisco, CA, 23–28 January 2010.

The following presentations were made at *Advanced Solid-State Photonics*, San Diego, CA, 31 January–3 February 2010:

J. Bromage, C. Dorrer, and J. D. Zuegel, "High-Resolution Spatio-Spectral Characterization of Noncollinear Optical Parametric Amplifiers."

J. Bromage, C. Dorrer, and J. D. Zuegel, "Performance Trade-Offs for High-Repetition-Rate Noncollinear Optical Parametric Amplifiers."

R. Xin and J. D. Zuegel, "Directly Chirped Laser Source for Chirped-Pulse Amplification."

A. V. Okishev, D. Wang, D. Westerfeld, L. Shterengas, and G. Belenky, "Characterization of Highly Stable Mid-IR, GaSb-Based Laser Diodes," *Laser Applications to Chemical, Security and Environmental Analysis*, San Diego, CA, 31 January–4 February 2010.

The following presentations were made at the *19th Target Fabrication Meeting*, Orlando, FL, 21–26 February 2010:

Z. Bei, T. B. Jones, D. R. Harding, and A. Tucker-Schwartz, "Electric-Field Mediated Double-Emulsion Droplet Centering Using Density Gradient Suspension."

M. J. Bonino, D. R. Harding, S. G. Noyes, J. Fooks, D. Turner, M. D. Wittman, and L. D. Lund, "Stalk-Mounted Cryogenic Targets: Rationale and Results."

D. H. Edgell, M. D. Wittman, R. S. Craxton, D. R. Harding, B. Smith, and T. Lu, "Three-Dimensional Characterization of Cryogenic Targets Using X-Ray Phase-Contrast Imaging and Shadowgraphy at LLE."

D. R. Harding, T. B. Jones, R. Q. Gram, Z. Bei, W. Wang, M. Moynihan, and S.-J. Scott, "Mass Fabrication of Cryogenic Targets for Inertial Fusion Energy."

R. L. McCrory, "Inertial Confinement Fusion Research at the Laboratory for Laser Energetics."

P. W. McKenty, R. S. Craxton, J. A. Marozas, A. M. Cok, R. Epstein, M. J. Bonino, D. R. Harding, D. D. Meyerhofer, R. L. McCrory, J. D. Kilkenny, A. Nikroo, J. Fooks, M. Hoppe, J. M. Edwards, A. J. MacKinnon, D. H. Munro, and R. J. Wallace, "Results of Recent NIF Polar-Drive Diagnostic Activation Experiments."

M. Moynihan, D. R. Harding, and S. H. Chen, "Microfluidic T-Junctions to Mass Produce NIF and IFE Size Foam Targets."

S.-J. Scott, D. R. Harding, and J. Fooks, "Mechanical Forces that Develop in Foam Material During Evaporative Drying."

W. T. Shmayda, "Decontaminating Tritiated Surfaces with Humid Purge Streams."

W. Wang, T. B. Jones, and D. R. Harding, "On-Chip Double-Emulsion Droplet Assembly Using EWOD and DEP."

M. D. Wittman and D. R. Harding, "Development of NIF-Scale Polar-Drive Cryogenic Targets."

The following presentations were made at OFC 2010, San Diego, CA, 21–25 March 2010:

J. R. Marciante and W. Guan, "Single-Frequency Hybrid Brillouin/Ytterbium Fiber Laser with 1-W Output Power."

L. Sun, S. Jiang, and J. R. Marciante, "All-Fiber Optical Magnetic Field Sensor Based on Faraday Rotation."

D. R. Harding, T. B. Jones, and D. D. Meyerhofer, "Mass Production of Targets for Inertial Fusion Energy," 5th IAEA Technical Meeting, Vienna, Austria, 24–26 March 2010.