
Publications and Conference Presentations

Publications

R. Adam, R. Sobolewski, and M. Darula, "Subpicosecond Dynamics of the Switching Process in Y-Ba-Cu-O Josephson Junctions," in *Superconducting and Related Oxides: Physics and Nanoengineering IV*, edited by I. Bozovic and D. Pavuna (SPIE, Bellingham, WA, 2000), Vol. 4058, pp. 230–244.

T. R. Boehly, A. Babushkin, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, T. J. Kessler, J. P. Knauer, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, W. Seka, S. Skupsky, V. A. Smalyuk, R. P. J. Town, and B. Yaakobi, "Optical and Plasma Smoothing of Laser Imprinting in Targets Driven by Lasers with SSD Bandwidths Up to 1 THz," *Phys. Plasmas* **8**, 2331 (2001) (invited).

D. P. Butler, Z. Celik-Butler, and R. Sobolewski, "Y-Ba-Cu-O as an Infrared Radiation Sensing Material," in *Handbook of Advanced Electronic and Photonic Materials and Devices*, edited by H. S. Nawly, Vol. 3: High T_c Superconductors and Organic Conductors (Academic Press, NY, 2001), Chap. 4, pp. 169–195.

G. N. Gol'tsman, O. Okunev, G. Chulkova, A. Dzardanov, A. Lipatov, A. Semenov, K. Smirnov, B. Voronov, C. Williams, and R. Sobolewski, "Picosecond Superconducting Single-Photon Optical Detector," *Appl. Phys. Lett.* **79**, 705 (2001).

V. N. Goncharov, P. McKenty, S. Skupsky, R. Betti, R. L. McCrory, and C. Cherfils-Cl  rouin, "Modeling Hydrodynamic Instabilities in Inertial Confinement Fusion Targets," *Phys. Plasmas* **7**, 5118 (2001).

P. A. Jaanimagi, R. Boni, and R. L. Keck, "Neutron-Induced Background in Charge-Coupled Device Detectors," *Rev. Sci. Instrum.* **72**, 801 (2001).

C. K. Li, D. G. Hicks, F. H. S  guin, J. Frenje, R. D. Petrasso, J. M. Soures, P. B. Radha, V. Yu. Glebov, C. Stoeckl, J. P. Knauer, F. J. Marshall, D. D. Meyerhofer, S. Skupsky,

S. Roberts, C. Sorce, T. C. Sangster, T. W. Phillips, and M. D. Cable, "Measuring Fusion Yields, Areal Densities, and Ion Temperatures of Imploded Capsules at OMEGA," *Rev. Sci. Instrum.* **72**, 864 (2001).

P. W. McKenty, V. N. Goncharov, R. P. J. Town, S. Skupsky, R. Betti, and R. L. McCrory, "Analysis of a Direct-Drive Ignition Capsule Designed for the National Ignition Facility," *Phys. Plasmas* **8**, 2315 (2001) (invited).

D. D. Meyerhofer, J. A. Delettrez, R. Epstein, V. Yu. Glebov, V. N. Goncharov, R. L. Keck, R. L. McCrory, P. W. McKenty, F. J. Marshall, P. B. Radha, S. P. Regan, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, J. M. Soures, C. Stoeckl, R. P. J. Town, B. Yaakobi, J. D. Zuegel, R. D. Petrasso, S. Padalino, J. A. Frenje, D. G. Hicks, F. H. S  guin, C. K. Li, N. Izumi, R. Lerche, T. C. Sangster, and T. W. Phillips, "Core Performance and Mix in Direct-Drive Spherical Implosions with High Uniformity," *Phys. Plasmas* **8**, 2251 (2001) (invited).

V. A. Smalyuk, T. R. Boehly, L. S. Iwan, T. J. Kessler, J. P. Knauer, F. J. Marshall, D. D. Meyerhofer, C. Stoeckl, B. Yaakobi, and D. K. Bradley, "Fourier-Space Image Processing for Spherical Experiments on OMEGA," *Rev. Sci. Instrum.* **72**, 635 (2001) (invited).

V. A. Smalyuk, B. Yaakobi, J. A. Delettrez, F. J. Marshall, and D. D. Meyerhofer, "Compressed-Shell Integrity Measurements in Spherical Implosions Experiments," *Phys. Plasmas* **8**, 2872 (2001).

R. Sobolewski, D. P. Butler, and Z. Celik-Butler, "Cooled and Uncooled Infrared Detectors Based on Yttrium Barium Copper Oxide," in *Smart Optical Inorganic Structures and Devices*, edited by S. P. Asmontas and J. Gradauskas (SPIE, Bellingham, WA, 2001), Vol. 4318, pp. 204–214 (invited).

Forthcoming Publications

S. R. Arrasmith, S. D. Jacobs, I. A. Kozhinova, A. B. Shorey, D. Golini, W. I. Kordonski, S. Hogan, and P. Dumas, "Development and Characterization of Magnetorheological Fluids for Optical Finishing," to be published in the Proceedings of Fine Powder Processing '99, University Park, PA, 20–22 September 1999.

A. Babushkin, M. J. Harvey, and M. D. Skeldon, "The Output Signal-to-Noise Ratio of a Nd:YLF Regenerative Amplifier," to be published in Applied Optics.

R. Betti and J. P. Freidberg, "Low- β , Magnetohydrodynamic Tokamak Equilibria with Poloidal Transonic Flow," to be published in Physical Review Letters.

T. R. Boehly, J. A. Delettrez, J. P. Knauer, D. D. Meyerhofer, B. Yaakobi, R. P. J. Town, and D. Hoarty, "The Effect of Shock Heating on the Stability of Laser-Driven Targets," to be published in Physical Review Letters.

T. R. Boehly, V. N. Goncharov, O. Gotchev, J. P. Knauer, D. D. Meyerhofer, D. Oron, S. P. Regan, Y. Srebro, W. Seka, D. Shvarts, S. Skupsky, and V. A. Smalyuk, "The Effect of Plasma Formation Rate and Beam Smoothing on Laser Imprinting," to be published in Physical Review Letters.

B. Buerke and D. D. Meyerhofer, "Accurate Measurement of Hydrogenic Tunneling Rates in a High-Intensity Laser Focus," to be published in Physical Review Letters.

W. R. Donaldson, J. H. Kelly, R. L. Keck, and R. Boni, "Predicting and Measuring Optical Pulse Shapes on the OMEGA Laser System," to be published in the OSA Technical Digest.

F. Y. Fan, S. W. Culligan, J. C. Mastrangelo, D. Katsis, and S. H. Chen, "Novel Glass-Forming Liquid Crystals. VI. High-Temperature Glassy Nematics," to be published in Chemical Materials.

J. A. Frenje, D. G. Hicks, C. K. Li, F. H. Séguin, R. D. Petrasso, K. Fletcher, H. Olliver, S. Padalino, S. Thompson, J. M. Soures, S. Roberts, C. Sorce, T. C. Sangster, and T. W. Phillips, "CR-39 Tract Detector Response to Charged Particles and Neutrons," to be published in the Review of Scientific Instruments.

O. A. Konoplev, Y. Fisher, and D. D. Meyerhofer, "Generation of a Picosecond Laser Pulse with an Intensity Contrast of Eleven Orders of Magnitude," to be published in Optics Letters.

V. Lobatchev and R. Betti, "Ablative Stabilization of the Deceleration-Phase Rayleigh–Taylor Instability," to be published in Physical Review Letters.

A. E. Marino, S. D. Jacobs, L. L. Gregg, G. Chen, and Y. Due, "Durable Phosphate Glasses with Lower Transition Temperatures," to be published in the Journal of Non-Crystalline Solids.

J. A. Marozas, "Self- and Cross-Phase Modulation of High-Intensity Laser Beams Emerging from a Diamond-Turned KDP Wedge," to be published in the Journal of the Optical Society of America B.

J. A. Marozas, S. P. Regan, J. H. Kelly, D. D. Meyerhofer, W. Seka, and S. Skupsky, "Laser Beam Smoothing Caused by the Small-Spatial-Scale β -Integral," to be published in the Journal of the Optical Society of America B.

J. A. Marozas, J. D. Zuegel, D. Jacobs-Perkins, and J. H. Kelly, "Angular Spectrum Representation of Pulsed Laser Beams with Two-Dimensional Smoothing by Spectral Dispersion," to be published in the Journal of the Optical Society of America B.

R. L. McCrory, R. E. Bahr, R. Betti, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, J. Frenje, V. Yu. Glebov, V. N. Goncharov, O. V. Gotchev, R. Q. Gram, D. R. Harding, D. G. Hicks, P. A. Jaanimagi, R. L. Keck, J. Kelly, J. P. Knauer, C. K. Li, S. J. Loucks, L. D. Lund, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, R. D. Petrasso, P. B. Radha, S. P. Regan, S. Roberts, F. Séguin, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, J. M. Soures, C. Stoeckl, R. P. J. Town, M. D. Wittman, B. Yaakobi, and J. D. Zuegel, "OMEGA ICF Experiments and Preparation for Direct-Drive Ignition on NIF," to be published in the proceedings of the 18th IAEA Fusion Energy Conference.

A. V. Okishev, R. Boni, M. Millecchia, P. A. Jaanimagi, W. R. Donaldson, R. L. Keck, W. Seka, K. V. Dukelsky, M. A. Eronyan, V. S. Shevandin, G. A. Ermolaeva, G. Nikolaev, and V. B. Shilov, "Unique High-Bandwidth, UV Fiber Delivery System for the OMEGA Diagnostic Applications," to be published in the IEEE Journal on Selected Topics in Quantum Electronics.

F. H. Séguin, C. K. Li, D. G. Hicks, J. A. Frenje, R. D. Petrasso, J. M. Soures, V. Yu. Glebov, C. Stoeckl, P. B. Radha, D. D. Meyerhofer, S. Roberts, C. Sorce, T. C. Sangster, and M. D. Cable, "Diagnostic Use of Secondary D³He Proton Spectra for D-D OMEGA Targets," to be published in Physics of Plasmas.

M. D. Skeldon, "An Optical-Pulse-Shaping System Based on an Electrooptic Modulator Driven by an Aperture-Coupled-Stripline Electrical-Waveform Generator," to be published in the Journal of the Optical Society of America B.

S. Skupsky, R. L. McCrory, R. E. Bahr, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, V. N. Goncharov, R. Q. Gram, D. R. Harding, P. A. Jaanimagi, R. L. Keck, J. P. Knauer, S. J. Loucks, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, O. V. Gotchev, P. B. Radha, S. P. Regan, W. Seka, V. A. Smalyuk, J. M. Soures, C. Stoeckl, R. P. J. Town, M. D. Wittman, B. Yaakobi, J. D. Zuegel, R. D. Petrasso, D. G. Hicks, and C. K. Li, "Recent Progress in Direct-Drive ICF Research at the Laboratory for Laser Energetics," to be published in SPIE's Proceedings of the XXVI European Conference on Laser Interaction with Matter.

V. A. Smalyuk, B. Yaakobi, J. A. Delettrez, F. J. Marshall, D. D. Meyerhofer, S. P. Regan, and R. P. J. Town, "Evolution of Shell Nonuniformities Near Peak Compression of Spherical Implosion," to be published in Physical Review Letters.

D. J. Smith, J. A. Warner, N. E. LeBarron, T. J. Kessler, and S. LaDelia, "The Development of Ion-Etched Phase Plates," to be published in Applied Optics.

E. A. Startsev and C. J. McKinstrie, "Relativistic Ponderomotive Dynamics of a Test Particle in a Plasma," to be published in Physical Review E.

F.-Y. Tsai, E. L. Alfonso, S. H. Chen, and D. R. Harding, "Processing Vapor-Deposited Polyimide," to be published in the Journal of Applied Physics.

B. Yaakobi, C. Stoeckl, T. Boehly, D. D. Meyerhofer, and W. Seka, "Measurement of Preheat due to Fast Electrons in Laser Implosions," to be published in SPIE's Proceedings of the XXVI European Conference on Laser Interaction with Matter.

J. D. Zuegel and D. W. Jacobs-Perkins, "An Efficient, High-Frequency Bulk Phase Modulator," to be published in Applied Optics.

J. D. Zuegel and S. A. Letzring, "Bulk Microwave Phase Modulators for Smoothing by Spectral Dispersion," to be published in Applied Optics.

Conference Presentations

The following presentations were made at OPTO Northeast and Imaging 2001, Rochester, NY, 10–11 April 2001:

J. E. DeGroote, S. D. Jacobs, L. L. Gregg, and A. E. Marino, "Exploring Optical Polishing Pitch."

L. L. Gregg and S. D. Jacobs, "The Optics Suitcase—A Tool for Learning."

M. J. Guardalben, L. Ning, N. Jain, D. J. Battaglia, and K. L. Marshall, "Comparison of a Liquid Crystal Point Diffraction Interferometer (LCPDI) and a Commercial Phase-Shifting Interferometer."

S. D. Jacobs, S. R. Arrasmith, I. A. Kozhinova, L. L. Gregg, H. J. Romanofsky, and A. B. Shorey, "Magnetorheological Finishing: MRF of Optical Glasses and Crystals."

A. E. Marino, S. R. Arrasmith, L. L. Gregg, S. D. Jacobs, G. Chen, and Y. Duc, "Developing a Durable Phosphate Glass with a Low Glass Transition Temperature."

J.-R. Park, W. R. Donaldson, R. Boni, and R. Sobolewski, "Optical Properties of a Dual Diffusing Sphere Fiber Optic Detector."

The following presentations were made at the Conference on Lasers and Electro-Optics, Baltimore, MD, 6–11 May 2001:

W. R. Donaldson, J. H. Kelly, R. L. Keck, and R. Boni, “Predicting and Measuring Optical Pulse Shapes on the OMEGA Laser System.”

M. J. Guardalben, A. Babushkin, R. S. Craxton, R. L. Keck, W. R. Donaldson, and K. A. Thorp, “Obtaining UV Energy Balance with 1-THz Spectral Bandwidth on the 60-Beam OMEGA Laser.”

J. Li, T. Y. Hsiang, and W. R. Donaldson, “High-Speed Bragg Modulator on AlGaAs Waveguides.”

T. Z. Kosc, K. L. Marshall, S. D. Jacobs, and B. Klehn, “Polymer Cholesteric Liquid Crystal Flakes for Display and Other Electro-Optic Applications,” *Novel Optical Materials and Applications*, NOMA Cetraro, Italy, 20–27 May 2001.

The following presentations were made at the 31st Anomalous Absorption Conference, Sedona, AZ, 3–8 June 2001:

R. S. Craxton, D. D. Meyerhofer, W. Seka, R. W. Short, and R. P. J. Town, “Design of Long-Scale-Length Plasmas for Interaction Physics Experiments on OMEGA.”

J. A. Delettrez, C. Stoeckl, S. P. Regan, P. W. McKenty, D. D. Meyerhofer, and J. P. Knauer, “Precision One-Dimensional *LILAC* Simulations of CH-Shell Implosions on the OMEGA Laser.”

R. Epstein, J. A. Delettrez, V. Yu. Glebov, V. N. Goncharov, P. W. McKenty, P. B. Radha, S. Skupsky, V. A. Smalyuk, and C. Stoeckl, “One-Dimensional Simulation of the Effects of Unstable Mix on Neutron and Charged-Particle Yield from Laser-Driven Implosions Experiments.”

V. Yu. Glebov, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, J. M. Soures, C. Stoeckl, S. Padalino, L. Baumgart, R. Colburn, J. Fuschino, and T. C. Sangster, “Current Status of Tertiary Neutron Diagnostic by Carbon Activation.”

Y. A. Kholodov, “A Comparison of Monotone Schemes of High-Order Accuracy for Hyperbolic Problems.”

V. N. Goncharov, S. Skupsky, R. Betti, J. A. Marozas, P. W. McKenty, and R. P. J. Town, “Hydrodynamic Stability of Moderate- to High-Gain Direct-Drive Target Designs for the NIF.”

S. P. Regan, J. A. Delettrez, V. A. Smalyuk, B. Yaakobi, F. J. Marshall, R. Epstein, V. Yu. Glebov, P. A. Jaanimagi, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, J. M. Soures, C. Stoeckl, R. P. J. Town, D. A. Haynes, Jr., C. F. Hooper, Jr., C. K. Li, R. D. Petrasso, and F. H. Séguin, “Core-Mix Measurements of Direct-Drive Implosions on OMEGA.”

W. Seka, S. P. Regan, D. D. Meyerhofer, B. Yaakobi, C. Stoeckl, R. S. Craxton, R. W. Short, H. Baldis, and J. Fuchs, “Multibeam SBS Interaction Experiments in OMEGA Long-Scale-Length Plasmas.”

R. W. Short, R. S. Craxton, W. Seka, and D. D. Meyerhofer, “Theoretical Interpretation of SBS Observations in OMEGA Long-Scale-Length Plasma Experiments.”

A. Simon and R. W. Short, “Damping and Spatial Propagation of Oscillations in Weakly Collisional Plasma.”

C. Stoeckl, R. E. Bahr, V. Yu. Glebov, D. D. Meyerhofer, W. Seka, R. W. Short, and B. Yaakobi, “Measurements on the Two-Plasmon-Decay Instability on OMEGA.”

A. Sunahara, J. A. Delettrez, R. W. Short, and S. Skupsky, “Electron Thermal Conduction in Inertial Confinement Fusion.”

R. L. McCrory, J. A. Delettrez, R. Epstein, V. Yu. Glebov, R. L. Keck, P. W. McKenty, F. J. Marshall, D. D. Meyerhofer, P. B. Radha, S. P. Regan, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, C. Stoeckl, J. M. Soures, R. P. J. Town, B. Yaakobi, J. D. Zuegel, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, K. Fletcher, S. Padalino, C. Freeman, N. Izumi, R. Lerche, T. W. Phillips, and T. C. Sangster, “Core Performance in Direct-Drive Spherical Implosions on OMEGA,” *Pulsed Power Plasma Science 2001*, Las Vegas, NV, 17–22 June 2001.

D. D. Meyerhofer, R. Betti, T. R. Boehly, J. A. Delettrez, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, R. L. McCrory, P. W. McKenty, F. J. Marshall, P. B. Radha, S. P. Regan, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, C. Stoeckl, J. M. Soures, R. P. J. Town, B. Yaakobi, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, K. Fletcher, S. Padalino, C. Freeman, N. Izumi, R. Lerche, T. W. Phillips, and T. C. Sangster, "Interferences of Mix in Direct-Drive Spherical Implosions with High Uniformity," 28th EPS Conference on Controlled Fusion and Plasma Physics, Madeira, Portugal, 18–22 June 2001.

D. D. Meyerhofer, J. H. Kelly, R. P. J. Town, L. J. Waxer, S. J. Loucks, R. L. McCrory, W. Seka, and S. Skupsky, "An Integrated Fast Ignitor Experiment for OMEGA," 5th Workshop on Fast Ignitor of Fusion Targets, Madeira, Portugal, 18–22 June 2001.

T. R. Boehly, B. Yaakobi, J. P. Knauer, D. D. Meyerhofer, and R. P. J. Town, "Measurements of Shock Heating in Laser-Driven Targets," 12th Biennial International Conference of the APS Topical Group on Shock Compression of Condensed Matter, Atlanta, GA, 24–29 June 2001.