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## Publications and Conference Presentations

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### Publications

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R. Adam, M. Currie, C. Williams, R. Sobolewski, O. Harnack, and M. Darula, "Direct Observation of Subpicosecond Single-Flux-Quantum Generation in Pulse-Driven Y-Ba-Cu-O Josephson Junctions," *Appl. Phys. Lett.* **76**, 469 (2000).

S. H. Chen, R. J. Jin, D. Katsis, J. C. Mastrangelo, S. Papernov, and A. W. Schmid, "Photorecimization Broadening of Selective Reflection and Polarization Band of Glassy Chiral-Nematic Films," *Liq. Cryst.* **27**, 201 (2000).

J. P. Knauer, R. Betti, D. K. Bradley, T. R. Boehly, T. J. B. Collins, V. N. Goncharov, P. W. McKenty, D. D. Meyerhofer, V. A. Smalyuk, C. P. Verdon, S. G. Glendinning, D. H. Kalantar, and R. G. Watt, "Single-Mode Rayleigh-Taylor Growth-Rate Measurements on the OMEGA Laser System," *Phys. Plasmas* **7**, 338 (2000).

F. J. Marshall, J. A. Delettrez, V. Yu. Glebov, R. P. J. Town, B. Yaakobi, R. L. Kremens, and M. Cable, "Direct-Drive, Hollow-Shell Implosion Studies on the 60-Beam, UV OMEGA Laser System," *Phys. Plasma* **7**, 1006 (2000).

R. L. McCrory, J. M. Soures, A. Babushkin, R. E. Bahr, R. Betti, T. R. Boehly, R. Boni, D. K. Bradley, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein,

V. Yu. Glebov, V. N. Goncharov, R. Q. Gram, D. R. Harding, D. G. Hicks, B. Hughes, P. A. Jaanimagi, T. J. Kessler, J. P. Knauer, C. K. Li, S. J. Loucks, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, A. V. Okishev, S. Padalino, R. D. Petrasso, P. B. Radha, S. P. Regan, F. H. Séguin, W. Seka, R. W. Short, A. Simon, M. D. Skeldon, S. Skupsky, C. Stoeckl, R. P. J. Town, M. D. Wittman, B. Yaakobi, and J. D. Zuegel, "Recent Advances in Direct-Drive ICF Target Physics at the Laboratory for Laser Energetics," in *Fusion Energy 1998* (IAEA, Vienna, 1999), Vol. I, pp. 167-176.

A. V. Okishev, "The Oldest Higher-Educational Optical Institution in Russia Turns 100," *Optics & Photonics News*, March 2000, 17.

A. V. Okishev, M. D. Skeldon, R. L. Keck, and W. Seka, "All-Solid-State Optical Pulse Shaper for the OMEGA Laser Fusion Facility," in *Advanced Solid-State Lasers*, OSA Technical Digest (Optical Society of America, Washington, DC, 2000), pp. 30-32.

D. L. Tubbs, C. W. Barnes, J. B. Beck, N. M. Hoffman, J. A. Oertel, R. G. Watt, T. Boehly, D. Bradley, P. Jaanimagi, and J. Knauer, "Cylindrical Implosion Experiments Using Laser Direct Drive," *Phys. Plasmas* **6**, 2095 (1999).

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### Forthcoming Publications

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E. L. Alfonso, I. Anteby, and D. R. Harding, "Temperature Profiles and  $\ell = 1$  Nonuniformity within Cryogenic ICF Targets," to be published in *Fusion Technology*.

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.

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

R. Betti and J. P. Freidberg, "Radial Discontinuities in Tokamak MHD Equilibria with Poloidal Flow," to be published in *Physics of Plasmas*.

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. Regan, W. Seka, S. Skupsky, V. A. Smalyuk, R. P. J. Town, and B. Yaakobi, "Laser-Uniformity and Hydrodynamic-Stability Experiments at the OMEGA Laser Facility," to be published in *Laser and Particle Beams*.

D. P. Butler, Z. Celik-Butler, and R. Sobolewski, "Y-Ba-Cu-O as an Infrared Radiation Sensing Material," to be published in the *Handbook of Advanced Electronic and Photonic Materials* (Academic Press, NY).

J. L. Chaloupka and D. D. Meyerhofer, "Characterization of a Tunable Single-Beam Ponderomotive-Optical Trap," to be published in the *Journal of the Optical Society of America B*.

T. J. B. Collins, H. L. Helfer, and H. M. VanHorn, "Oscillations of Accretion Disks and Boundary Layers in Cataclysmic Variables: I. Unperturbed, Steady-Flow Models," to be published in *Astrophysical Journal*.

T. J. B. Collins, H. L. Helfer, and H. M. VanHorn, "Oscillations of Accretion Disks and Boundary Layers in Cataclysmic Variables: II. A Local, Linear Stability Analysis of Accretion Disk Boundary Layers," to be published in *Astrophysical Journal*.

F. Dahmani, A. W. Schmid, J. C. Lambropoulos, and S. J. Burns, "Lifetime Prediction of Laser-Pre-cracked Fused Silica Subjected to Subsequent Cyclic Laser Pulses," to be published in the *Journal of Materials Science*.

F.-Y. Fan, J. C. Mastrangelo, D. Katsis, and S.-H. Chen, "Novel Glass-Forming Liquid Crystals: V. Nematic and Chiral-Nematic Systems with an Elevated Glass Transition Temperature," to be published in *Liquid Crystals*.

V. N. Goncharov, S. Skupsky, P. W. McKenty, J. A. Delettrez, R. P. J. Town, and C. Cherfils-Cl  rouin, "Stability Analysis of Directly Driven OMEGA and NIF Capsules," to be published in the *Proceedings of the 1999 Inertial Fusion Sciences and Applications Conference, Bordeaux, France, 12–17 September 1999*.

V. N. Goncharov, S. Skupsky, P. W. McKenty, R. P. J. Town, T. R. Boehly, D. D. Meyerhofer, and O. V. Gotchev, "A Model of Laser Imprinting," to be published in *Physics of Plasmas* (invited).

S. R. Gorodkin, W. I. Kordonski, E. V. Medvedeva, Z. A. Novikova, A. B. Shorey, and S. D. Jacobs, "A Method and

Device for Measurement of a Sedimentation Constant of Magnetorheological (MR) Fluids," to be published in the *Review of Scientific Instruments*.

K. Green and R. Sobolewski, "Extending the S-Parameter Approach to Linear Time-Varying Microwave Devices: Part I. Analysis," to be published in *IEEE Microwave Theory and Techniques*.

M. J. Guardalben and N. Jain, "Phase-Shift Error Due to Molecular Alignment Distortions in the Liquid Crystal Point-Diffraction Interferometer," to be published in *Optics Letters*.

K. S. Il'in, M. Lindgren, M. Currie, A. D. Semenov, G. N. Gol'tsman, R. Sobolewski, S. I. Cherednichenko, and E. M. Gershenzon, "Picosecond Hot-Electron Energy Relaxation in NbN Superconducting Photodetectors," to be published in *Applied Physics Letters*.

P. A. Jaanimagi, R. Boni, and R. L. Keck, "Neutron-Induced Background in CCD Detectors," to be published in the *Review of Scientific Instruments*.

S. D. Jacobs and A. B. Shorey, "Magnetorheological Finishing: New Fluids for New Materials," to be published in the *Optical Fabrication and Testing Technical Digest (OSA)*.

I. A. Kozhinova, S. D. Jacobs, S. R. Arrasmith, and L. L. Gregg, "Corrosion in Aqueous Cerium Oxide Magnetorheological Fluids," to be published in the *Optical Fabrication and Testing Technical Digest (OSA)*.

C. K. Li, D. G. Hicks, F. H. S  guin, J. A. Frenje, R. D. Petrasso, J. M. Soures, P. B. Radha, V. Yu. Glebov, C. Stoeckl, J. P. Knauer, R. Kremens, F. J. Marshall, D. D. Meyerhofer, S. Skupsky, S. Roberts, C. Sorce, T. C. Sangster, T. W. Phillips, M. D. Cable, and R. J. Leeper, "D-<sup>3</sup>He Proton Spectra for Diagnosing Shell  $\rho R$  and Fuel  $T_i$  of Imploded Capsules on OMEGA," to be published in *Physics of Plasmas*.

F. J. Marshall, J. A. Delettrez, R. Epstein, V. Yu. Glebov, D. R. Harding, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, R. P. J. Town, B. Yaakobi, C. K. Li, F. H. S  guin, D. G. Hicks, and R. D. Petrasso, "Direct-Drive, High-Convergence-Ratio Implosion Studies on the OMEGA Laser System," to be published in the *May 2000 Special Issue of Physics of Plasmas*.

- 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. Regan, W. Seka, S. Skupsky, 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, "OMEGA Experiments and Preparation for Direct-Drive Ignition on the National Ignition Facility," to be published in the Proceedings of the 1999 Inertial Fusion Sciences and Applications Conference, Bordeaux, France, 12–17 September 1999.
- P. W. McKenty, M. D. Wittman, and V. N. Goncharov, "Characterization of Thick Cryogenic Fuel Layers Using Convergent-Beam Interferometry: A Numerical Investigation," to be published in the Journal of Applied Physics.
- P. B. Radha, S. Skupsky, R. D. Petrasso, and J. M. Soures, "A Novel Charged-Particle Diagnostic for Compression in ICF Targets," to be published in Physics of Plasmas.
- S. P. Regan, J. A. Marozas, J. H. Kelly, T. R. Boehly, W. R. Donaldson, P. A. Jaanimagi, R. L. Keck, T. J. Kessler, D. D. Meyerhofer, W. Seka, S. Skupsky, and V. A. Smalyuk, "Experimental Investigation of Smoothing by Spectral Dispersion," to be published in the Journal of the Optical Society of America B.
- J. D. Schnittman and R. S. Craxton, "Three-Dimensional Modeling of Capsule Implosions in OMEGA Tetrahedral Hohlräume," to be published in Physics of Plasmas.
- 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 D-<sup>3</sup>He Proton Spectra for D-D OMEGA Targets," to be published in Physics of Plasmas.
- A. B. Shorey and S. D. Jacobs, "Nanohardness of Abrasive Particles Used in Magnetorheological Finishing (MRF)," to be published in Optical Fabrication and Testing Technical Digest (OSA).
- A. B. Shorey, K. M. Kwong, K. M. Johnson, and S. D. Jacobs, "Nanoindentation Hardness of Particles Used in Magnetorheological Finishing (MRF)," to be published in Applied Optics.
- R. W. Short, "Stability of Self-Focused Filaments in Laser-Produced Plasmas," to be published in Physical Review Letters.
- M. D. Skeldon, "A High-Bandwidth Electrical-Waveform Generator Based on an Aperture-Coupled Stripline," to be published in the Review of Scientific Instruments.
- M. D. Skeldon, "An Optical Pulse-Shaping System Based on an Electro-Optic Modulator Driven by an Aperture-Coupled-Stripline Electrical Waveform Generator," to be published in Optics 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.
- R. Sobolewski, "Time-Resolved Nonequilibrium Phenomena in High-Temperature Superconductors," to be published in the Proceedings of the International Workshop on Superconductivity, Magneto-Resistive Materials, and Strongly Correlated Quantum Systems, Hanoi, Vietnam, June 1999 (invited).
- F.-Y. Tsai, E. L. Alfonso, S.-H. Chen, and D. R. Harding, "Mechanical Properties and Gas Permeability of Polyimide Shells Fabricated by the Vapor Deposition Method," to be published in Fusion Technology.
- B. Yaakobi, V. A. Smalyuk, J. A. Delettrez, F. J. Marshall, D. D. Meyerhofer, and W. Seka, "Measurement of  $\rho\Delta R$  Modulation of Laser-Imploded Shells through *K*-Edge Imaging," to be published in Physics of Plasmas.
- B. Yaakobi, V. A. Smalyuk, J. A. Delettrez, R. P. J. Town, F. J. Marshall, V. Yu. Glebov, R. D. Petrasso, J. M. Soures, D. D. Meyerhofer, and W. Seka, "Spherical Implosion Experiments on OMEGA: Measurements of the Cold, Compressed Shell," to be published in the Proceedings of the 1999 Inertial Fusion Sciences and Applications Conference, Bordeaux, France, 12–17 September 1999.
- B. Yaakobi, C. Stoeckl, T. R. Boehly, D. D. Meyerhofer, and W. Seka, "Measurement of Preheat Due to Fast Electrons in Laser Implosions," to be published in Physics of Plasmas.

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## Conference Presentations

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J. D. Schnittman and R. S. Craxton, "Three-Dimensional Modeling of Capsule Implosions in OMEGA Tetrahedral Hohlräume," Israel Plasma Science Technology Association, Beer Sheva, Israel, 9 February 2000.

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A. V. Okishev, M. D. Skeldon, R. L. Keck, and W. Seka, "All-Solid-State Optical Pulse Shaper for the OMEGA Laser Fusion Facility," Advanced Solid-State Lasers 15th Topical Meeting, Davos, Switzerland, 13–16 February 2000.

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A. B. Shorey, K. M. Kwong, and S. D. Jacobs, "Revealing Hardness Variations in Optical Polishing Abrasives," MTS Nano Instrument Users' Meeting, Albany, NY, 22 February 2000.

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The following presentations were made at the 12th APS Topical Conference on Atomic Processes in Plasmas, Reno, NV, 19–23 March 2000:

S. P. Regan, J. A. Delettrez, B. Yaakobi, D. K. Bradley, R. E. Bahr, M. Millecchia, D. D. Meyerhofer, and W. Seka, "Spectroscopic Analysis of Electron Temperature in Laser-Driven Burnthrough Experiments."

V. A. Smalyuk, B. Yaakobi, F. J. Marshall, and D. D. Meyerhofer, "X-Ray Spectroscopic Measurements of Areal Density and Modulations in Areal Density of Cold Compressed Shells in Implosion Experiments on OMEGA."

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J. P. Knauer, T. J. B. Collins, A. Frank, and E. Blackman, "Generation of Collimated Flows by Intense Irradiation with Applications to Astrophysical Phenomena," 3rd International Conference on Laboratory Astrophysics with Intense Lasers, Rice University, Houston, TX, 30 March–1 April 2000.