
Publications and Conference Presentations

Publications

- E. L. Alfonso, F.-Y. Tsai, S.-H. Chen, R. Q. Gram, and D. R. Harding, "Fabrication of Polyimide Shells by Vapor Phase Deposition for Use as ICF Targets," *Fusion Technol.* **35**, 131 (1999).
- T. R. Boehly, R. L. McCrory, C. P. Verdon, W. Seka, S. J. Loucks, A. Babushkin, R. E. Bahr, R. Boni, D. K. Bradley, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, D. Harding, P. A. Jaanimagi, S. D. Jacobs, K. Kearney, R. L. Keck, J. H. Kelly, T. J. Kessler, R. L. Kremens, J. P. Knauer, D. J. Lonobile, L. D. Lund, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, A. Okishev, S. Papernov, G. Pien, T. Safford, J. D. Schnittman, R. Short, M. J. Shoup III, M. Skeldon, S. Skupsky, A. W. Schmid, V. A. Smalyuk, D. J. Smith, J. M. Soures, M. D. Wittman, and B. Yaakobi, "Inertial Confinement Fusion Experiments with OMEGA—A 30-kJ, 60-Beam UV Laser," *Fusion Eng. Des.* **44**, 35 (1999).
- S.-H. Chen, D. Katsis, A. W. Schmid, J. C. Mastrangelo, T. Tsutsui, and T. N. Blanton, "Circularly Polarized Light Generated by Photoexcitation of Luminophores in Glassy Liquid-Crystal Films," *Nature* **397**, 506.
- T. J. B. Collins, A. Frank, J. E. Bjorkman, and M. Livio, "Supernova 1987A: Rotation and a Binary Companion," *Astrophys. J.* **512**, 322 (1999).
- F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. J. Burns, and C. Pratt, "Nanoindentation Technique for Measuring Residual Stress Field Around a Laser-Induced Crack in Fused Silica," *J. Mater. Sci.* **33**, 4677 (1998).
- F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. Papernov, and S. J. Burns, "Fracture of Fused Silica with 351-nm-Laser-Generated Surface Cracks," *J. Mater. Res.* **14**, 597 (1999).
- V. N. Goncharov, "Theory of the Ablative Richtmyer–Meshkov Instability," *Phys. Rev. Lett.* **82**, 2091 (1999).
- D. Katsis, A. W. Schmid, and S.-H. Chen, "Mechanistic Insight into Circularly Polarized Photoluminescence from a Chiral-Nematic Film," *Liq. Cryst.* **26**, 181 (1999).
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Cholesteric Liquid Crystal Flakes—A New Form of Domain," *Mol. Cryst. Liq. Cryst.* **317**, 197 (1998).
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Cholesteric Liquid Crystal Transmission Profile Asymmetry," *Mol. Cryst. Liq. Cryst.* **317**, 221 (1998).
- M. Lindgren, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, R. Sobolewski, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, "Intrinsic Picosecond Response Times of Y-Ba-Cu-O Superconducting Photodetectors," *Appl. Phys. Lett.* **74**, 853 (1999).
- F. J. Marshall and G. R. Bennett, "A High-Energy X-Ray Microscope for Inertial Confinement Fusion," *Rev. Sci. Instrum.* **70**, 617 (1999).
- K. L. Marshall, J. Haddock, N. Bickel, D. Singel, and S. D. Jacobs, "Angular-Scattering Characteristics of Ferroelectric Liquid-Crystal Electro-Optical Devices Operating in the Transient-Scattering and the Extended-Scattering Modes," *Appl. Opt.* **38**, 1287 (1999).
- C. J. McKinstrie, R. E. Giacone, and E. A. Startsev, "Accurate Formulas for the Landau Damping Rates of Electrostatic Waves," *Phys. Plasmas* **6**, 463 (1999).

A. V. Okishev, M. D. Skeldon, R. L. Keck, R. Roides, K. Green, and W. Seka, "A High-Bandwidth Optical-Pulse-Shaping/Fiber-Optic Distribution System for the High-Energy OMEGA Laser-Fusion Facility," in the *Optical Fiber Communication Conference and the International Conference on Integrated Optics and Optical Fiber Communication 1999 Technical Digest* (Optical Society of America, Washington, DC, 1999), pp. 286–288.

A. V. Okishev, M. D. Skeldon, and W. Seka, "A Highly Stable, Diode-Pumped Master Oscillator for the OMEGA Laser Facility," in *Advanced Solid-State Lasers 1999 Technical Digest* (Optical Society of America, Washington, DC, 1999), pp. 124–126.

A. L. Rigatti, D. J. Smith, A. W. Schmid, S. Papernov, and J. H. Kelly, "Damage in Fused-Silica Spatial-Filter Lenses on the OMEGA Laser System," in *Laser-Induced Damage in Optical Materials: 1998*, edited by G. J. Exarhos, A. H. Guenther, M. R. Kozlowski, K. L. Lewis, and M. J. Soileau (SPIE, Bellingham, WA, 1999), Vol. 3578, pp. 472–479.

M. D. Skeldon, R. B. Saager, and W. Seka, "Quantitative Pump-Induced Wavefront Distortions in Laser-Diode- and Flashlamp-Pumped Nd:YLF Laser Rods," *IEEE J. Quantum Electron.* **35**, 381 (1999).

V. A. Smalyuk, T. R. Boehly, D. K. Bradley, J. P. Knauer, and D. D. Meyerhofer, "Characterization of an X-ray Radiographic System Used for Laser-Driven Planar Target Experiments," *Rev. Sci. Instrum.* **70**, 647 (1999).

D. J. Smith, J. A. Warner, N. E. LeBarron, and S. LaDelia, "Production of Distributed Phase Plates Using an Energetic Ion Process," in *Laser-Induced Damage in Optical Materials: 1998*, edited by G. J. Exarhos, A. H. Guenther, M. R. Kozlowski, K. L. Lewis, and M. J. Soileau (SPIE, Bellingham, WA, 1999), Vol. 3578, pp. 702–717.

B. Yaakobi and F. J. Marshall, "Imaging the Cold, Compressed Shell in Laser Implosions Using the $K\alpha$ Fluorescence of a Titanium Dopant," *J. Quant. Spectrosc. Radiat. Transfer* **61**, 465 (1999).

Forthcoming Publications

A. Babushkin, W. A. Bittle, S. A. Letzring, M. D. Skeldon, and W. Seka, "Regenerative Amplifier for the OMEGA Laser System," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

A. Babushkin, R. S. Craxton, S. Oskoui, M. J. Guardalben, R. L. Keck, and W. Seka, "Demonstration of Dual-Tripler Broadband Third-Harmonic Generation and Implications for OMEGA and the NIF," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

A. Babushkin, J. H. Kelly, C. T. Cotton, M. Labuzeta, M. Miller, T. A. Safford, R. G. Roides, W. Seka, I. Will, M. D. Tracy, and D. L. Brown, "Compact Nd^{3+} -Based Laser System with Gain $G_{\text{SS}} \leq 10^{13}$ and 20-J Output Energy," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

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, "Laser-Uniformity and Hydrodynamic-Stability Experiments at the OMEGA Laser Facility," to be published in *Laser and Particle Beams*.

T. R. Boehly, V. A. Smalyuk, D. D. Meyerhofer, J. P. Knauer, D. K. Bradley, R. S. Craxton, M. J. Guardalben, S. Skupsky, and T. J. Kessler, "The Reduction of Laser Imprinting Using Polarization Smoothing on a Solid-State Fusion Laser," to be published in the *Journal of Applied Physics*.

S.-H. Chen, J. C. Mastrangelo, B. M. Conger, and D. Katsis, "Design, Synthesis, and Potential Application of Glass-Forming Functional Organic Materials," to be published in the Proceedings of the 6th International Polymer Conference, Kusatsu, Japan, 20–24 October 1997 (invited).

T. J. B. Collins, H. L. Helfer, and H. M. Van Horn, "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. Van Horn, "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*.

M. Currie, C.-C. Wang, R. Sobolewski, and T. Y. Hsiang, "Picosecond Nodal Testing of Centimeter-Size Superconducting Nb Microstrip Interconnects," to be published in *Applied Superconductivity*.

F. Dahmani, S. Burns, and J. C. Lambropoulos, "Arresting UV-Laser Damage in Fused Silica," to be published in *Optics Letters*.

F. Dahmani, J. C. Lambropoulos, S. Burns, S. Papernov, and A. W. Schmid, "How Small Stresses Affect 351-nm Damage Onset in Fused Silica," to be published in SPIE's Proceedings of the XXX Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 28 September–1 October 1998.

F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. Papernov, and S. J. Burns, "Crack Arrest and Stress Dependence of Laser-Induced Surface Damage in Fused Silica and Borosilicate Glass," to be published in the *Journal of Applied Physics*.

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

O. M. Efimov, L. B. Glebov, S. Papernov, A. W. Schmid, and E. Van Stryland, "Laser-Induced Damage of Photo-Thermo-Refractive Glasses for Optical Holographic Elements Writing," to be published in SPIE's Proceedings of the XXX Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 28 September–1 October 1998.

R. E. Giacone, C. J. McKinstrie, and T. Kolber, "Angular Dependence of Stimulated Brillouin Scattering in a Homogeneous Two-Dimensional Plasma," to be published in *Physics of Plasmas*.

K. Green, W. Seka, M. D. Skeldon, R. L. Keck, A. V. Okishev, and R. Sobolewski, "Transient Bandwidth Analysis of Photoconductive Microwave Switches Implemented in the OMEGA

Pulse-Shaping System," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

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 with the OMEGA Laser System," to be published in *Physics of Plasmas*.

M. Lindgren, W.-S. Zeng, M. Currie, R. Sobolewski, S. Cherednichenko, B. Voronov, and G. N. Gol'tsman, "Picosecond Response of a Superconducting Hot-Electron NbN Photodetector," to be published in *Applied Superconductivity*.

J. A. Marozas, "The Cross-Phase Modulation Between Two Intense Orthogonally Polarized Laser Beams Co-Propagating Through a Kerr-like Medium," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

R. L. McCrory and J. M. Soures, "Status of Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics," to be published in the Proceedings of the 2nd Symposium on Current Trends in International Fusion Research Review and Assessment, Washington, DC, 10–14 March 1997 (invited).

P. W. McKenty, "Direct-Drive Capsule Requirements for the National Ignition Facility and OMEGA Laser Systems," to be published in *Fusion Technology*.

P. W. McKenty and M. D. Wittman, "Characterization of Thick Cryogenic Layers Using an Interferometric Imaging System," to be published in *Fusion Technology*.

A. V. Okishev, M. D. Skeldon, and W. Seka, "Multipurpose, Diode-Pumped Nd:YLF Laser for OMEGA Pulse Shaping and Diagnostics Applications," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, Monterey, CA, 7–12 June 1998.

S. P. Regan, D. K. Bradley, J. J. Carroll III, A. V. Chirokikh, R. S. Craxton, R. P. Drake, D. D. Meyerhofer, W. Seka, R. W. Short, A. Simon, R. P. J. Town, and B. Yaakobi, "Laser–Plasma

Interactions in Long-Scale-Length Plasmas Under Direct-Drive National Ignition Facility Conditions,” to be published in *Physics of Plasmas*.

M. D. Skeldon, A. V. Okishev, R. L. Keck, W. Seka, and S. A. Letzring, “An Optical Pulse-Shaping System Based on Aperture-Coupled Stripline for OMEGA Pulse-Shaping Applications,” to be published in SPIE’s Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

S. Skupsky and R. S. Craxton, “Irradiation Uniformity for High-Compression Laser Fusion Experiments,” to be published in *Physics of Plasmas*.

V. A. Smalyuk, T. R. Boehly, D. K. Bradley, V. N. Goncharov, J. A. Delettrez, J. P. Knauer, D. D. Meyerhofer, D. Oron, D. Shvarts, and Y. Srebro, “Nonlinear Evolution of Broad-Bandwidth, Laser-Imposed Nonuniformities in Planar Targets Accelerated by 351-nm Laser Light,” to be published in *Physics of Plasmas*.

D. J. Smith, J. A. Warner, N. E. LeBarron, T. J. Kessler, S. LaDelia, J. P. Knauer, D. D. Meyerhofer, D. Oron, and D. Shvarts, “The Development of Ion-Etched Phase Plates,” to be published in *Applied Optics*.

R. Sobolewski, “Ultrafast Dynamics of Nonequilibrium Quasiparticles in High-Temperature Superconductors,” to be published in *Superconducting and Related Oxides: Physics and Nanoengineering III*.

J. M. Soures, R. L. McCrory, P. B. Radha, R. Betti, W. A. Bittle, 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, D. R. Harding, P. A. Jaanimagi, R. L. Keck, J. H. Kelly, T. J. Kessler, J. P. Knauer, C. K. Li, S. J. Loucks, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, S. Padalino, R. D. Petrasso, S. P. Regan, W. Seka, R. W. Short, A. Simon, S. Skupsky, D. J. Smith, R. P. J. Town, B. Yaakobi, and J. D. Zuegel, “Recent Advances in Direct-Drive ICF Target Physics at the Laboratory for Laser Energetics,” to be published in the Proceedings of the 1998 IAEA Conference, Yokohama, Japan, 19–24 October 1998.

M. D. Wittman and R. S. Craxton, “Self-Interference Patterns and Their Application to Inertial-Fusion Target Characterization,” to be published in *Applied Optics*.

L. Zheng and D. D. Meyerhofer, “Self- and Cross-Plate Modulation Coefficients in a KDP Crystal Measured by a Z-Scan Technique,” to be published in the *Journal of the Optical Society of America B*.

J. D. Zuegel and W. Seka, “Upconversion and Reduced $^4F_{3/2}$ Upper-State Lifetime in Intensely Pumped Nd:YLF,” to be published in *Applied Optics*.

Conference Presentations

V. N. Goncharov, "Theory of the Ablative Richtmyer–Meshkov Instability," Conference on Hydrodynamic and Magnetohydrodynamic Interface Instabilities: Unsteady or Discontinuous Flows, Paris, France, 11–12 January 1999.

W. R. Donaldson, R. Boni, R. L. Keck, and P. A. Jaanimagi, "UV-Power Balance on the OMEGA Laser," LASE '99, San Jose, CA, 22–29 January 1999.

A. V. Okishev, M. D. Skeldon, and W. Seka, "A Highly Stable, Diode-Pumped Master Oscillator for the OMEGA Laser Facility," 1999 Advanced Solid-State Lasers Fourteenth Topical Meeting, Boston, MA, 31 January–3 February 1999.

The following presentations were made at the Banff Workshop on Laser Plasma Interaction Physics, Banff, Canada, 17–20 February 1999:

W. Seka, S. P. Regan, D. D. Meyerhofer, B. Yaakobi, R. S. Craxton, A. Simon, and R. W. Short, "Recent SBS and SRS Results Under Direct-Drive NIF Conditions."

R. W. Short, "Effects of SSD on Forward SBS and Filamentation."

A. V. Okishev, M. D. Skeldon, R. L. Keck, R. G. Roides, K. Green, and W. Seka, "A High-Bandwidth Optical Pulse-Shaping/Fiber-Optic Distribution System for the High-Energy OMEGA Laser Fusion Facility," OFC/IOOC '99, San Diego, CA, 21–26 February 1999.

S. Il'in, G. N. Gol'tsman, B. M. Voronov, and R. Sobolewski, "Characterization of the Electron Energy Relaxation Process in NbN Hot-Electron Devices," 10th International Symposium on Space Terahertz Technology, Charlottesville, VA, 16–18 March 1999.

J. M. Larkin, W. R. Donaldson, T. H. Foster, and R. S. Knox, "Reverse Intersystem Crossing From a Triplet State of Rose Bengal Populated by Sequential 532- and 1064-nm Laser Excitation," APS 1999 Centennial Meeting, Atlanta, GA, 20–26 March 1999.

