# Publications and Conference Presentations

## Publications


A. Babushkin, W. Bittle, S. A. Letzring, M. D. Skeldon, and W. Seka, "Regenerative Amplifier for the OMEGA Laser System," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 124–130.

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," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 406–413.

A. Babushkin, J. H. Kelly, C. T. Cotton, M. A. Labuzeta, M. O. Miller, T. A. Safford, R. G. Roides, and W. Seka, "Compact $Nd^{3+}$-Based Laser System with Gain $G \leq 10^{13}$ and Output Energy of 20 J," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 939–943.

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, "Reduction of Laser Imprinting Using Polarization Smoothing on a Solid-State Fusion Laser," J. Appl. Phys. **85**, 3444 (1999).

C.-H. Chen, D. Katsis, P. H. Chen, J. C. Mastrangelo, and T. Tsutsui, "Circularly Polarized Light Produced with Glassy Liquid Crystal Films," Polymer Reprints **40**, 1171 (1999).

F. Dahmani, S. Burns, and J. C. Lambropoulous, "Arresting Ultraviolet-Laser Damage in Fused Silica," Opt. Lett. **24**, 516 (1999).

F. Dahmani, J. C. Lambropoulos, S. Burns, S. Papernov, and A. W. Schmid, "How Small Stresses Affect 351-nm Damage Onset in Fused Silica," 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. 431–435.

O. M. Efimov, L. B. Glebov, S. Papernov, and A. W. Schmid, "Laser-Induced Damage of Photo-Thermo-Refractive Glasses for Optical-Holographic-Element Writing," 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. 564–574.

K. Green, W. R. Donaldson, R. L. Keck, A. V. Okishev, M. D. Skeldon, W. Seka, and R. Sobolewski, "Transient Bandwidth Analysis of Photoconductive Microwave Switches Implemented in the OMEGA Pulse-Shaping System," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 165–172.

K. 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," in the *Proceedings of the 10th International Symposium on Space Terahertz Technology*, edited by T. W. Crowe and R. M. Weikle (University of Virginia, Charlottesville, VA, 1999), pp. 390–397.

S. D. Jacobs, W. I. Kordonski, and H. M. Pollicove, "Precision Control of Aqueous Magnetorheological Fluids for Finishing of Optics," in the *Proceedings of the Sixth International Conference on Electro-Rheological Fluids, Magneto-Rheological Suspensions and Their Applications*, edited by M. Nakano and K. Koyama (World Scientific, Singapore, 1998), pp. 861–869.

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- + 1064-nm Laser Excitation," Chem. Phys. **244**, 319 (1999).

M. Lindgren, M. Currie, W.-S. Zeng, R. Sobolewski, S. Cherednichenko, B. Voronov, and G. N. Gol'tsman, "Picosecond Response of a Superconducting Hot-Electron NbN Photodetector," Appl. Supercond. **6**, 423 (1998).

J. A. Marozas, "The Cross-Phase Modulation Between Two Intense Orthogonally Polarized Laser Beams Co-Propagating Through a Kerr-like Medium," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 454–465.

A. V. Okishev, M. D. Skeldon, and W. Seka, "Multipurpose, Diode-Pumped Nd:YLF Laser for OMEGA Pulse Shaping and Diagnostic Applications," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 118–123.

S. P. Regan, D. K. Bradley, A. V. Chirokikh, R. S. Craxton, D. D. Meyerhofer, W. Seka, R. W. Short, A. Simon, R. P. J. Town, and B. Yaakobi, J. J. Carroll III, and R. P. Drake, "Laser–Plasma Interactions in Long-Scale-Length Plasmas Under Direct-Drive National Ignition Facility Conditions," Phys. Plasmas **6**, 2072 (1999).

M. D. Skeldon, A. V. Okishev, R. L. Keck, W. Seka, and S. Letzring, "An Optical Pulse Shaping System Based on Aperture-Coupled Striplines for OMEGA Pulse Shaping Applications," in *Solid State Lasers for Application to Inertial Confinement Fusion*, edited by W. H. Lowdermilk (SPIE, Bellingham, WA, 1999), Vol. 3492, pp. 131–135.

S. Skupsky and R. S. Craxton, "Irradiation Uniformity for High-Compression Laser-Fusion Experiments," Phys. Plasmas **6**, 2157 (1999).

R. Sobolewski, "Ultrafast Dynamics of Nonequilibrium Quasiparticles in High-Temperature Superconductors," in *Superconducting and Related Oxides: Physics and Nanoengineering III*, edited by D. Pavuna and I. Bozovic (SPIE, Bellingham, WA, 1999), Vol. 3481, pp. 480–491.

J. M. Wallace, T. J. Murphy, N. D. Delamater, K. A. Klare, J. A. Oertel, G. R. Magelssen, E. L. Lindman, A. A. Hauer, P. Gobby, J. D. Schnittman, R. S. Craxton, W. Seka, R. Kremens, D. K. Bradley, S. M. Pollaine, R. E. Turner, O. L. Landen, D. Drake, and J. J. MacFarlane, "Inertial Confinement Fusion with Tetrahedral Hohlraums at OMEGA," Phys. Rev. Lett. **82**, 3807 (1999).

J. D. Zuegel and W. Seka, "Upconversion and Reduced $^4F_{3/2}$ Upper-State Lifetime in Intensely Pumped Nd:YLF," Appl. Opt. **38**, 2714 (1999).

## Forthcoming Publications

R. Adam, M. Currie, C. Williams, R. Sobolewski, O. Harnack, and M. Darula, "Direct Observation of Subpicosecond Single-Flux-Quantum in Pulse-Driven Y-Ba-Cu-O Josephson Junctions," to be published in Applied Physics Letters.

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.

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).

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, 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.

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.

V. N. Goncharov, J. A. Delettrez, S. Skupsky, and R. P. J. Town, "Modeling Laser Imprint for Inertial Confinement Fusion Targets," to be published in Physical Review Letters.

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.

S. D. Jacobs, S. A. Arrasmith, I. Z. Kozhinova, L. L. Gregg, H. J. Romanofsky, A. B. Shorey, D. Golini, W. I. Kordonski, P. Dumas, and S. Hogan, "Magnetorheological Finishing of KDP," to be published in the Proceedings of the 1999 Annual Meeting of the Optical Society of America.

D. Katsis, P. H. M. Chen, J. C. Mastrangelo, and S.-H. Chen, "Vitrified Chiral-Nematic Liquid Crystalline Films for Selective Reflection and Circular Polarization," to be published in Chemistry of Materials.

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.

R. S. Knox, "Physical Aspects of the Greenhouse Effect and Global Warming," to be published in the American Journal of Physics.

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.

C. J. McKinstrie and E. A. Startsev, "Forward and Backward Stimulated Brillouin Scattering of Crossed Laser Beams," to be published in Physical Review E.

A. B. Shorey, W. I. Kordonski, S. R. Gorodkin, S. D. Jacobs, R. F. Gans, K. M. Kwong, and C. H. Farney, "Design and Testing of a New Magnetorheometer," to be published in the Review of Scientific Instruments.

A. B. Shorey, K. M. Kwong, and S. D. Jacobs, "Nanoindentation Hardness of Magnetic Particles Used in Magnetorheological Finishing (MRF)," to be published in the Journal of Materials Research.

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, Y. Srebro, and R. P. J. Town, "Nonlinear Evolution of Broad-Bandwidth, Laser-Imposed Nonuniformities in Planar Targets Accelerated by 351-nm Laser Light," to be published in Physics of Plasmas.

J. M. Soures, R. L. McCrory, R. Betti, W. 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. 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. Petrasso, P. B. Radha, S. 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.

## Conference Presentations

The following presentations were made at the Spring Meeting of the Materials Research Society, San Francisco, CA, 5–9 April 1999:

I. A. Kozhinova, S. R. Arrasmith, L. L. Gregg, and S. D. Jacobs, "Origin of Corrosion in Magnetorheological Fluids Used for Optical Finishing."

A. B. Shorey, S. D. Jacobs, W. I. Kordonski, S. R. Gorodkin, and K. M. Kwong, "Design and Testing of a New Magnetorheometer."

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S. A. Arrasmith, S. D. Jacobs, A. B. Shorey, D. Golini, W. I. Kordonski, S. Hogan, and P. Dumas, "Studies of Material Removal in Magnetorheological Finishing (MRF) from Polishing Spots," 101st Annual Meeting of the American Ceramics Society, Indianapolis, IN, 25–28 April 1999.

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The following presentations were made at CLEO/QELS 1999, Baltimore, MD, 23–28 May 1999:

A. Babushkin, W. A. Bittle, M. D. Skeldon, and W. Seka, "Diode-Pumped Regenerative Amplifier for the OMEGA Laser System."

A. Maksimchuk, J. Queneuille, G. Chériaux, G. Mourou, and R. S. Craxton, "Efficient Second-Harmonic Generation of Sub-100-fs Pulses from High-Power Nd:Glass Laser."

A. V. Okishev, "High-Repetition-Rate, Diode-Pumped, Multipass Preamplifier for the OMEGA Master Oscillator."

A. V. Okishev, D. Jacobs-Perkins, S. F. B. Morse, D. Scott, and W. Seka, "Prepulse Contrast Monitor for the OMEGA Drive Line."

M. D. Skeldon, A. V. Okishev, R. L. Keck, and W. Seka, "An Optical Pulse-Shaping System Based on Aperture-Coupled Striplines for OMEGA Pulse–Shaping Applications."

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The following presentations were made at the 29th Annual Anomalous Absorption Conference, Pacific Grove, CA, 13–18 June 1999:

R. S. Craxton, D. D. Meyerhofer, S. P. Regan, W. Seka, R. P. J. Town, and B. Yaakobi, "Simulations of OMEGA Long-Scale-Length Plasmas Representative of the Transition Portion of NIF Direct-Drive Pulses."

J. A. Delettrez, S. P. Regan, T. R. Boehly, C. Stoeckl, D. D. Meyerhofer, P. B. Radha, J. Gardner, Y. Aglitskiy, T. Lehecka, S. Obenschain, C. Pawley, and S. Serlin, "Analysis of Planar Burnthrough Experiments on OMEGA and NIKE."

R. Epstein, T. J. B. Collins, J. A. Delettrez, V. N. Goncharov, S. Skupsky, R. P. J. Town, and B. Yaakobi, "Simulation of the Radiative Preheat of Target Foils and Shells in Laser-Driven Ablation and Implosion Experiments."

V. Yu. Glebov, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, J. M. Soures, C. Stoeckl, T. C. Sangster, S. Padalino, J. Nyquist, and R. D. Petrasso, "Tertiary Neutron Diagnostic by Carbon Activation."

V. N. Goncharov, "Modeling of Laser Imprint for OMEGA and NIF Capsules."

A. V. Kanaev and C. J. McKinstrie, "Numerical Two-Dimensional Studies of Near-Forward Stimulated Brillouin Scattering of a Laser Beam in Plasmas."

M. V. Kozlov and C. J. McKinstrie, "Analysis and Simulation of Sound Waves Governed by the Ion Fluid and Poisson Equations."

V. Lobatchev and R. Betti, "Numerical Study of Linear Feed-out of Short-Wavelength, Rear-Surface Perturbations in Planar Geometry."

C. J. McKinstrie and M. V. Kozlov, "Analysis and Simulation of Sound Waves Governed by the Korteweg–de Vries Equation."

D. D. Meyerhofer, R. Bahr, R. S. Craxton, S. P. Regan, W. Seka, R. P. J. Town, and B. Yaakobi, "Laser–Plasma Interactions in Plasmas Characteristic of the Direct-Drive NIF Foot-to-Main Drive Region."

S. P. Regan, J. A. Delettrez, T. R. Boehly, D. K. Bradley, J. P. Knauer, D. D. Meyerhofer, and C. Stoeckl, "Planar Burnthrough Experiments on OMEGA and NIKE."

R. W. Short, "Forward SBS, Filamentation, and SSD."

V. A. Smalyuk, F. J. Marshall, D. D. Meyerhofer, and B. Yaakobi, "Imaging of Compressed Shells with Embedded Thin, Cold, Titanium-Doped Layers on OMEGA."

Y. Srebro, D. Oron, D. Shvarts, T. R. Boehly, V. N. Goncharov, O. Gotchev, V. N. Smalyuk, S. Skupsky, and D. D. Meyerhofer, "Hydrodynamic Simulations of Static and Dynamic Laser Imprint."

E. A. Startsev and C. J. McKinstrie, "Particle-in-Cell Simulation of Ponderomotive Particle Acceleration in a Plasma."

C. Stoeckl, V. Yu. Glebov, D. D. Meyerhofer, W. Seka, V. A. Smalyuk, and J. D. Zuegel, "Hard X-Ray Signatures for Laser–Plasma Instabilities on OMEGA."

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The following presentations were made at ISEC '99, Berkeley, CA, 21–25 June 1999:

R. Adam, C. Williams, R. Sobolewski, O. Harnack, and M. Darula, "Experiments and Simulations of Picosecond Pulse Switching and Turn-on Delay Time in Y-Ba-Cu-O Josephson Junctions."

K. S. Il'in, A. A. Verevkin, G. N. Gol'tsman, and R. Sobolewski, "Infrared Hot-Electron NbN Superconducting Photodetectors for Imaging Applications."

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J. L. Chaloupka and D. D. Meyerhofer, "Observation of Electron Trapping in an Intense Laser Beam," Applications of High-Field and Short-Wavelength Sources VIII Topical Meeting, Potsdam, Germany, 27–30 June 1999.