
Publications and Conference Presentations

Publications

G. P. Grim, C. W. Barnes, P. A. Bradley, C. R. Christensen, A. Hauer, G. L. Morgan, J. A. Oertel, M. D. Wilke, D. C. Wilson, C. Barrera, S. W. Haan, B. A. Hammel, J. A. Koch, R. A. Lerche, M. J. Moran, V. L. Glebov, T. C. Sangster, J.-L. Bourgade, L. Disdier, I. Lantuejoul, and O. Landoas, "Neutron Imaging at the NIF," *J. Phys. IV France* **133**, 913 (2006).

M. Houry, E. Delagnes, D. Riz, B. Canaud, L. Disdier, F. Garaude, Y. Giomataris, V. Yu. Glebov, Ph. Legou, Ph. Rebourgeard, and C. Sangster, "DEMIN: A Neutron Spectrometer, Micromegas-Type, for Inertial Confinement Fusion Experiments," *Nucl. Instrum. Methods Phys. Res. A* **557**, 648 (2006).

I. V. Igumenshchev, "Three-Dimensional Simulations of Spherical Accretion Flows with Small-Scale Magnetic Fields," *Astrophys. J.* **649**, 361 (2006).

J. R. Marciante and J. D. Zuegel, "High-Gain, Polarization-Preserving, Yb-Doped Fiber Amplifier for Low-Duty-Cycle Pulse Amplification," *Appl. Opt.* **45**, 6798 (2006).

F. H. Séguin, J. L. DeCiantis, J. A. Frenje, C. K. Li, J. R. Rygg, C. D. Chen, R. D. Petrasso, J. A. Delettrez, S. P. Regan, V. A. Smalyuk, V. Yu. Glebov, J. P. Knauer, F. J. Marshall, D. D. Meyerhofer, S. Roberts, T. C. Sangster, C. Stoeckl, K. Mikaelian, H. S. Park, H. F. Robey, and R. E. Tipton, "Measured Dependence of Nuclear Burn Region Size on Implosion Parameters in Inertial Confinement Fusion Experiments," *Phys. Plasmas* **12**, 082704 (2006).

J. D. Zuegel, V. Bagnoud, J. Bromage, I. A. Begishev, and J. Puth, "High-Performance OPCPA Laser System," *J. Phys. IV France* **133**, 701 (2006).

Forthcoming Publications

R. Betti, K. Anderson, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, D. H. Edgell, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. H. Kelly, J. P. Knauer, J. P. Knauer, S. J. Loucks, J. A. Marozas, F. J. Marshall, A. V. Maximov, D. N. Maywar, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, J. Myatt, P. B. Radha, S. P. Regan, C. Ren, T. C. Sangster, W. Seka, S. Skupsky, A. A. Solodov, V. A. Smalyuk, J. M. Soures, C. Stoeckl, W. Theobald, B. Yaakobi, C. Zhou, J. D. Zuegel, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Progress in Hydrodynamics Theory and Experiments for Direct-Drive and Fast Ignition Inertial Confinement Fusion," to be published in *Plasma Physics and Controlled Fusion*.

R. Betti and J. Sanz, "Bubble Acceleration in the Ablative Rayleigh-Taylor Instability," to be published in *Physical Review Letters*.

R. Betti, A. A. Solodov, J. A. Delettrez, and C. Zhou, "Gain Curves for Fast-Ignition at Densities Around 300 g/cc," to be published in *Physics of Plasmas*.

J. Bromage, C. Dorrer, I. A. Begishev, N. G. Usechak, and J. D. Zuegel, "Highly Sensitive, Single-Shot Characterization for Pulse Widths from 0.4 ps to 85 ps Using Electro-Optic Shearing Interferometry," to be published in *Optics Letters*.

V. Yu. Glebov, D. D. Meyerhofer, T. C. Sangster, C. Stoeckl, S. Roberts, C. A. Barrera, J. R. Celeste, C. J. Cerjan, L. S. Dauffy, D. C. Eder, R. L. Griffith, S. W. Haan, B. A. Hammel, S. P. Hatchett, N. Izumi, J. R. Kimbrough, J. A. Koch, O. L. Landen, R. A. Lerche, B. J. MacGowan, M. J. Moran, E. W. Ng, T. W. Phillips, P. M. Song, R. Tommassini, B. K. Young, S. E. Caldwell, G. P. Grim, S. C. Evans, J. M. Mack, T. J. Sedillo, M. D. Wilke, D. C. Wilson, C. S. Young, D. Casey, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, J. L. Bourgade, L. Disdier, M. Houry, I. Lantuejoul, O. Landoas, G. A. Chandler, G. W. Cooper, R. J. Leeper, R. E. Olson, C. L. Ruiz, M. A. Sweeney, S. P. Padalino, C. Horsfield, and B. A. Davis, "Development of Nuclear Diagnostics for the National Ignition Facility," to be published in *Review of Scientific Instruments* (invited).

V. Yu. Glebov, C. Stoeckl, T. C. Sangster, C. Mileham, and R. A. Lerche, "High-Yield Bang Time Detector for the OMEGA Laser," to be published in *Review of Scientific Instruments*.

V. N. Goncharov, "Ablative Richtmyer–Meshkov Instability: Theory and Experimental Results," to be published in the *Proceedings of Scottish Summer School*.

V. N. Goncharov, "Direct-Drive Inertial Fusion: Basic Concepts and Ignition Target Designing," to be published in the *Proceedings of Scottish Summer School*.

M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, "Electrically Tunable Silicon 2-D Photonic Bandgap Structures," to be published in *IEEE Journal of Quantum Electronics*.

B. Hu, R. Betti, and J. Manickam, "Kinetic Stability of the Internal Link Mode in ITER," to be published in *Physics of Plasmas*.

S. D. Jacobs, "Manipulating Mechanics and Chemistry in Precision Optics Finishing," to be published in *Science and Technology of Advanced Materials*.

Z. Jiang and J. R. Marciante, "Mode-Area Scaling of Helical-Core, Dual-Clad Fiber Lasers and Amplifiers Using an Improved Bend-Loss Model," to be published in the *Journal of the Optical Society of America B*.

T. Z. Kosc, C. J. Coon, G. V. Babcock, K. L. Marshall, A. Trajkovska-Petkoska, and S. D. Jacobs, "Exploring Motion Reversal in Polymer Cholesteric-Liquid-Crystal Devices," to be published in the *Proceedings of SPIE*.

T. Z. Kosc, A. A. Kozlov, and A. W. Schmid, "Formation of Periodic Microstructures on Multilayer Dielectric Gratings Prior to Total Ablation," to be published in *Optics Express*.

B. E. Kruschwitz, J. H. Kelly, M. J. Shoup III, L. J. Waxer, E. C. Cost, E. T. Green, Z. M. Hoyt, J. Taniguchi, and T. W. Walker, "High-Contrast Plasma-Electrode Pockels Cell (PEPC)," to be published in *Applied Optics*.

N. N. Lepeshkin, S. G. Lukishova, R. W. Boyd, and K. L. Marshall, "Feedback-Free, Single-Beam Pattern Formation by Nanosecond Pulses in Dye-Doped Liquid Crystals," to be published in the *Proceedings of SPIE*.

S. G. Lukishova, A. W. Schmid, R. Knox, P. Freivald, L. Bissell, R. W. Boyd, C. R. Stroud, Jr., and K. L. Marshall, "Room Tem-

perature Source of Single Photons of Definite Polarization," to be published in the *Journal of Modern Optics*.

J. A. Marozas, "Fourier-Transform-Based Continuous Phase-Plate Design Technique: A High-Pass Phase-Plate Design as an Application for OMEGA and the NIF," to be published in the *Journal of the Optical Society of America A*.

F. J. Marshall, J. P. Knauer, D. Anderson, and B. L. Schmitt, "Absolute Calibration of Kodak Biomax-MS Film to X Rays in the 1.5- to 8-keV Range," to be published in *Review of Scientific Instruments*.

K. L. Marshall, A. G. Noto, G. Painter, and N. Tabirian, "Computational Chemistry Methods for Predicting the Chiroptical Properties of Liquid Crystal Systems. II. Application to Chiral Azobenzenes," to be published in the *Proceedings of SPIE*.

P. W. McKenty, M. D. Wittman, and D. R. Harding, "Effect of Experimentally Observed Hydrogenic Fractionation in ICF Ignition-Target Performance," to be published in the *Journal of Applied Physics*.

A. V. Okishev and J. D. Zuegel, "Intracavity-Pumped Raman Laser Action in a Mid-IR, Continuous-Wave (cw) MgO:PPLN Optical Parametric Oscillator," to be published in *Optics Express*.

M. B. Schneider, D. E. Hinkel, O. L. Landen, R. Bahr, H. A. Baldis, C. Constantin, D. H. Froula, V. Yu. Glebov, R. F. Heeter, A. B. Langdon, M. J. May, J. McDonald, J. S. Ross, W. Seka, M. Singh, C. Stoeckl, L. J. Suter, K. Widmann, and B. K. Young, "Plasma Filling in Reduced-Scale Hohlräume Irradiated with Multiple Beam Cones," to be published in *Physics of Plasmas*.

S. N. Shafrir, J. C. Lambropoulos, and S. D. Jacobs, "A Magnetorheological Polishing-Based Approach for Studying Precision Microground Surfaces of Tungsten Carbides," to be published in *Precision Engineering*.

W. Słysz, M. Węgrzecki, J. Bar, P. Grabiec, M. Górská, V. Zwiller, C. Latta, P. Böhi, A. J. Pearlman, A. S. Cross, D. Pan, J. Kitaygorsky, I. Komissarov, A. Verevkin, I. Milostnaya, A. Korneev, O. Minayeva, G. Chulkova, K. Smirnov, B. Voronov, G. N. Gol'tsman, and R. Sobolewski, "Fiber-Coupled, Single-Photon Detector Based on NbN Superconducting Nanostructures for Quantum Communications," to be published in the *Journal of Modern Optics*.

V. A. Smalyuk, S. B. Dumanis, J. A. Delettrez, V. Yu. Glebov, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, and C. Stoeckl, "Hot-Core Assembly in Cryogenic D₂ Direct-Drive Spherical Implosions," to be published in *Physics of Plasmas*—Brief Communication.

C. Stoeckl, V. Yu. Glebov, P. A. Jaanimagi, D. D. Meyerhofer, T. C. Sangster, M. Storm, S. Sublett, W. Theobald, M. H. Key, A. J. MacKinnon, P. K. Patel, D. Neely, and P. A. Norreys, "Operation of Target Diagnostics in a Petawatt Environment," to be published in *Review of Scientific Instruments* (invited).

S. Sublett, J. P. Knauer, I. V. Igumenshchev, A. Frank, and D. D. Meyerhofer, "Double-Pulse Laser-Driven Jets on OMEGA," to be published in *Astrophysics and Space Science*.

W. Theobald, J. E. Miller, T. R. Boehly, E. Vianello, D. D. Meyerhofer, T. C. Sangster, J. H. Eggert, and P. M. Celliers, "X-Ray Preheating of Window Materials in Direct-Drive Shock-Wave Timing Experiments," to be published in *Physics of Plasmas*.

A. Trajkovska, C. Kim, K. L. Marshall, T. H. Mourey, and S. H. Chen, "Photoalignment of a Nematic Liquid Crystal Fluid and Glassy-Nematic Oligofluorenes on Coumarin-Containing Polymer Films," to be published in *Macromolecules*.

Conference Presentations

V. A. Smalyuk, R. Betti, T. R. Boehly, J. A. Delettrez, V. Yu. Glebov, V. N. Goncharov, J. P. Knauer, D. Y. Li, R. L. McCrory, D. D. Meyerhofer, P. B. Radha, S. P. Regan, T. C. Sangster, S. Skupsky, J. M. Soures, C. Stoeckl, B. Yaakobi, O. Sadot, D. Shvarts, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Experimental Studies of Nonlinear, Directly-Driven, Rayleigh-Taylor Instability on OMEGA," 10th International Workshop on the Physics of Compressible Turbulent Mixing, Paris, France, 17–21 July 2006.

N. N. Lepeshkin, S. G. Lukishova, R. W. Boyd, and K. L. Marshall, "Feedback-Free, Single-Beam Pattern Formation by Nanosecond Pulses in Dye-Doped Liquid Crystals."

K. L. Marshall, A. G. Noto, G. Painter, and N. Tabirian, "Computational Chemistry Methods for Predicting the Chiroptical Properties of Liquid Crystal Systems. II. Application to Chiral Azobenzenes."

The following presentations were made at the International Conference on Computational Science and Education, Rochester, NY, 7–10 August 2006:

J. A. Delettrez, "A Survey of the Use of Computer Technology at the Laboratory for Laser Energetics."

P. B. Radha, "Modeling Inertial Confinement Fusion Implosions Through Large-Scale Simulations."

The following presentations were made at the Applied Superconductivity Conference 2006, Seattle, WA, 27 August–1 September 2006:

G. N. Gol'tsman, A. Korneev, O. Minaeva, A. Antipov, A. Divochiy, N. Kaurova, B. Voronov, D. Pan, A. Cross, A. Pearlman, I. Komissarov, W. Słysz, and R. Sobolewski, "Low-Kinetic-Inductance Superconducting Single-Photon Detectors for GHz-Rate and High Quantum Efficiency Counting of Infrared Photons."

M. Khafizov, X. Li, R. Sobolewski, Y. Cui, and X. X. Xi, "Mechanisms of Light Detection by Superconducting Current-Biased MgB₂ Microbridges."

The following presentations were made at Optics and Photonics 2006, San Diego, CA, 13–17 August 2006:

T. Z. Kosc, K. L. Marshall, A. Trajkovska-Petkoska, C. J. Coon, and S. D. Jacobs, "Exploring Motion Reversal in Polymer Cholesteric Liquid Crystal Devices."

J. Kitaygorsky, I. Komissarov, A. Jukna, R. Sobolewski, O. Minaeva, N. Kaurova, A. Korneev, B. Voronov, I. Milostnaya, and G. N. Gol'tsman, "Dark Counts in Nanostructured NbN Single-Photon Detectors and Bridges."

X. Li, M. Khafizov, R. Sobolewski, Š. Chromik, V. Štrbík, M. Valerianova, and P. Odier, “Ultrafast Carrier Dynamics and Photoresponse of Hg-Ba-Ca-Cu-O Superconducting Microbridges.”

S. P. Regan, H. Sawada, D. D. Meyerhofer, R. Epstein, V. N. Goncharov, I. V. Igumenshchev, D. Li, P. B. Radha, J. A. Delettrez, T. R. Boehly, F. J. Marshall, T. C. Sangster, V. A. Smalyuk, B. Yaakobi, S. H. Glenzer, O. L. Landen, G. Gregori, and R. C. Mancini, “Diagnosing Shock-Heated and Compressed Matter in Direct-Drive Inertial Confinement Fusion (ICF),” 12th International Workshop on Radiative Properties of Hot Dense Matter, Albufeira, Algarve, Portugal, 11–15 September 2006.

The following presentations were made at Boulder Damage Symposium XXXVIII, Boulder, CO, 25–27 September 2006:

B. Ashe, K. L. Marshall, C. Giacomini, A. L. Rigatti, T. J. Kessler, A. W. Schmid, J. B. Oliver, J. Keck, and A. Kozlov, “Evaluation of Cleaning Methods for Multilayer Diffraction Gratings.”

S. Papernov and A. W. Schmid, “Using Gold Nanoparticles as Artificial Defects in Thin Films: What Have We Learned About Laser-Induced Damage Driven by Localized Absorbers?”

The following presentations were made at ICUIL 2006, Cassis, France, 25–29 September 2006:

J. Bromage, C. Dorrer, I. A. Begishev, N. G. Usechak, and J. D. Zuegel, “Single-Shot Pulse Characterization from 0.4 to 85 ps Using Electro-Optic Shearing Interferometry.”

J. Bromage, L. J. Waxer, I. A. Begishev, C. Dorrer, J. H. Kelly, and J. D. Zuegel, “Femtosecond Optimization of a Stretcher–Compressor Pair Using a Picosecond-Resolution Diagnostic.”

C. Dorrer, A. Consentino, and J. D. Zuegel, “Development of High-Fluence Beam Shapers.”

T. J. Kessler, J. Bunkenburg, C. Kellogg, F. Dewitt, J. Barone, L. S. Iwan, and K. McGowan, “Holographic Exposure System for Patterning Large Gratings with High Wavefront Quality and Uniform Groove Profile.”

T. J. Kessler, H. Huang, and D. Weiner, “Diffractive Optics for Compensation of Axial Chromatic Aberration in a High-Energy Short-Pulse Laser.”

L. J. Waxer and D. Eimerl, “Modeling the Pulse-Shape Output of OMEGA EP.”

J. D. Zuegel, I. A. Begishev, W. A. Bittle, R. Boni, J. Bromage, C. Dorrer, P. A. Jaanimagi, and J. R. Marciante, “Laser and Diagnostic Technologies Developed for Integrated Pulse-Width Control on OMEGA EP.”