
Publications and Conference Presentations

Publications

- 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," in *Laser-Induced Damage in Optical Materials: 2006*, edited by G. J. Exarhos, A. H. Guenther, K. L. Lewis, D. Ristau, M. J. Soileau, and C. J. Stolz (SPIE, Bellingham, WA, 2007), Vol. 6403, pp. 64030O.
- C. Dorrer, "High-Speed Characterization for Optical Telecommunication Signals," in *Commercial and Biomedical Applications of Ultrafast Lasers VII*, edited by J. Neev, S. Nolte, A. Heisterkamp, and C. B. Schaffer (SPIE, Bellingham, WA, 2007), Vol. 6460, p. 64600L (invited).
- W. Guan and J. R. Marciante, "Dual-Frequency Operation in a Short-Cavity Ytterbium-Doped Laser," *IEEE Photonics Technol. Lett.* **19**, 261 (2007).
- M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, "Electrically Tunable Silicon 2-D Photonic Bandgap Structures," *IEEE J. Quantum Electron.* **12**, 1527 (2006).
- S. X. Hu, "Producing Ultracold and Trappable Antihydrogen Atoms," *Phys. Rev. Lett.* **75**, 010501(R) (2007).
- S. X. Hu, "Three-Body Recombination of Atomic Ions with Slow Electrons," *Phys. Rev. A* **98**, 133201 (2007).
- T. Z. Kosc, K. L. Marshall, A. Trajkovska-Petkoska, C. J. Coon, K. Hasman, G. V. Babcock, R. Howe, M. Leitch, and S. D. Jacobs, "Development of Polymer Cholesteric Liquid Crystal Flake Technology for Electro-Optic Devices and Particle Displays," in *Emerging Liquid Crystal Technologies II*, edited by L.-C. Chien (SPIE, Bellingham, WA, 2007), Vol. 6487, p. 64870L.
- 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," *Appl. Opt.* **46**, 1326 (2007).
- S. G. Lukishova, A. W. Schmid, R. Knox, P. Freivald, L. J. Bissell, R. W. Boyd, C. R. Stroud, Jr., and K. L. Marshall, "Room Temperature Source of Single Photons of Definite Polarization," *J. Mod. Opt.* **54**, 417 (2007).
- J. A. Marozas, "Fourier Transform-Based Continuous Phase-Plate Design Technique: A High-Pass Phase-Plate Design as an Application for OMEGA and the National Ignition Facility," *J. Opt. Soc. Am. A* **24**, 74 (2007).
- J. E. Miller, T. R. Boehly, A. Melchior, D. D. Meyerhofer, P. M. Celliers, J. H. Eggert, D. H. Hicks, C. M. Sorce, J. A. Oertel, and P. M. Emmel, "A Streaked Optical Pyrometer System for Laser-Driven Shock-Wave Experiments on OMEGA," *Rev. Sci. Instrum.* **78**, 034903 (2007).
- J. Myatt, W. Theobald, J. A. Delettrez, C. Stoeckl, M. Storm, T. C. Sangster, A. V. Maximov, and R. W. Short, "High-Intensity Laser Interactions with Mass-Limited Solid Targets and Implications for Fast-Ignition Experiments on OMEGA EP," *Phys. Plasmas* **14**, 056301 (2007) (invited).
- 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?" in *Laser-Induced Damage in Optical Materials: 2006*, edited by G. J. Exarhos, A. H. Guenther, K. L. Lewis, D. Ristau, M. J. Soileau, and C. J. Stolz (SPIE, Bellingham, WA, 2007), Vol. 6403, pp. 64030D (invited).
- S. N. Shafrir, J. C. Lambropoulos, and S. D. Jacobs, "A Magnetorheological Polishing-Based Approach for Studying Precision Microground Surfaces of Tungsten Carbides," *Precision Engineering* **31**, 83 (2007).
- W. Słysz, M. Węgrzecki, J. Bar, P. Grabiec, M. Górska, 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,

“Fibre-Coupled, Single Photon Detector Based on NbN Superconducting Nanostructures for Quantum Communications,” *J. Mod. Opt.* **54**, 315 (2007).

V. A. Smalyuk, R. Betti, J. A. Delettrez, V. Yu. Glebov, V. N. Goncharov, D. Y. Li, D. D. Meyerhofer, S. P. Regan, S. Roberts, T. C. Sangster, C. Stoeckl, W. Seka, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, “Experimental Studies of Direct-Drive, Low-Intensity, Low-Adiabatic Spherical Implosions on OMEGA,” *Phys. Plasmas* **14**, 022702 (2007).

V. A. Smalyuk, V. N. Goncharov, K. S. Anderson, R. Betti, R. S. Craxton, J. A. Delettrez, D. D. Meyerhofer, S. P. Regan, and T. C. Sangster, “Measurements of the Effects of the Intensity Pickets on Laser Imprinting for Direct-Drive, Adiabatic-Shaping Designs on OMEGA,” *Phys. Plasmas* **14**, 032702 (2007).

S. Sublett, J. P. Knauer, I. V. Igumenshchev, A. Frank, and D. D. Meyerhofer, “Double-Pulse Laser-Driven Jets on OMEGA,” *Astrophys. Space Sci.* **307**, 47 (2007).

S. Wu, P. Geiser, J. Jun, J. Karpinski, D. Wang, and R. Sobolewski, “Time-Resolved Intervalley Transitions in GaN Single Crystals,” *J. Appl. Phys.* **101**, 043701 (2007).

L. Zheng, A. W. Schmid, and J. C. Lambropoulos, “Surface Effects on Young’s Modulus and Hardness of Fused Silica by Nanoindentation Study,” *J. Mater. Sci.* **42**, 191 (2007).

C. D. Zhou, W. Theobald, R. Betti, P. B. Radha, V. A. Smalyuk, D. Shvarts, V. Yu. Glebov, C. Stoeckl, K. S. Anderson, D. D. Meyerhofer, T. C. Sangster, C. K. Li, R. D. Petrasso, J. A. Frenje, and F. H. Séguin, “High- ρR Implosions for Fast-Ignition Fuel Assembly,” *Phys. Rev. Lett.* **98**, 025004 (2007).

Forthcoming Publications

V. Bagnoud, J. D. Zuegel, N. Forget, and C. Le Blanc, “High-Dynamic-Range Temporal Measurements of Short Pulses Amplified by OPCPA,” to be published in *Optics Express*.

R. Betti, C. D. Zhou, K. S. Anderson, L. J. Perkins, W. Theobald, and A. A. Solodov, “Shock Ignition of Thermonuclear Fuel with High Areal Density,” to be published in *Physical Review Letters*.

P. Brijesh, T. J. Kessler, J. D. Zuegel, and D. D. Meyerhofer, “Demonstration of a Horseshoe-Shaped Longitudinal Focal Profile,” to be published in the *Journal of the Optical Society of America B*.

T. J. B. Collins, J. A. Marozas, R. Betti, D. R. Harding, P. W. McKenty, P. B. Radha, S. Skupsky, V. N. Goncharov, J. P. Knauer, and R. L. McCrory, “One-Megajoule, Wetted-Foam Target Design Performance for the NIF,” to be published in *Physics of Plasmas* (invited).

C. Dorrer and J. D. Zuegel, “Design and Analysis of Binary Shapers Using the Error-Diffusion Algorithm,” to be published in the *Journal of the Optical Society of America B*.

C. Dorrer and J. D. Zuegel, “Optical Testing Using the Transport-of-Intensity Equation,” to be published in *Optics Express*.

D. H. Edgell, R. S. Craxton, L. M. Elasky, D. R. Harding, S. J. Verbridge, M. D. Wittman, and W. Seka, “Three-Dimensional Characterization of Cryogenic Targets Using Systems Identification Techniques with Multiple Shadowgraph Views,” to be published in *Fusion Science and Technology*.

K. A. Fletcher, B. Apker, S. Hammond, J. Punaro, F. J. Marshall, J. Laine, and R. Forties, “Detection of Charged Particles with Charge Injection Devices,” to be published in *Review of Scientific Instruments*.

G. N. Gol’tsman, O. Minaeva, A. Korneev, M. Tarkhov, I. Rubstova, A. Divochiy, I. Milostnaya, G. Chulkova, N. Kaurova, B. Voronov, D. Pan, J. Kitaygorsky, A. Cross, A. Pearlman, I. Komissarov, W. Słysz, M. Węgrzecki, P. Grabiec, and R. Sobolewski, “Middle-Infrared to Visible-Light Ultrafast Superconducting Single-Photon Detectors,” to be published in *IEEE Transactions on Applied Superconductivity*.

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*.

W. Guan and J. R. Marciante, "Single-Polarization, Single-Frequency, 2-cm Ytterbium-Doped Fiber Laser," to be published in *Electronics Letters*.

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

M. Khafizov, X. Li, R. Sobolewski, Y. Cui, and X. X. Xi, "Mechanisms of Light Detection by Superconducting Current-Biased MgB₂ Microbridges," to be published in *IEEE Transactions on Applied Superconductivity*.

J. Kitaygorsky, I. Komissarov, A. Jukna, D. Pan, O. Minaeva, N. Kaurova, A. Divochiy, A. Korneev, M. Tarkhov, B. Voronov, I. Milostnaya, G. Gol'tsman, and R. Sobolewski, "Dark Counts in Nanostructured NbN Superconducting Single-Photon Detectors and Bridges," to be published in *IEEE Transactions on Applied Superconductivity*.

X. Li, M. Khafizov, Š. Chromik, M. Valerianova, V. Štrbík, P. Odier, and R. Sobolewski, "Ultrafast Photoresponse Dynamics of Current-Biased Hg-Ba-Ca-Cu-O Superconducting Microbridges," to be published in *IEEE Transactions on Applied Superconductivity*.

J. R. Marciante, W. R. Donaldson, and R. G. Roides, "Averaging of Replicated Pulses for Enhanced Dynamic Range, Single-Shot Measurement of Nanosecond Optical Pulses," to be published in *IEEE Photonics Technology Letters*.

R. L. McCrory, "Highlights of the History of the University of Rochester," to be published in *Inertial Confinement Nuclear Fusion: A Historical Approach by Its Pioneers*.

S. P. Regan, R. Epstein, V. N. Goncharov, I. V. Igumenshchev, D. Li, P. B. Radha, H. Sawada, T. R. Boehly, J. A. Delettrez, O. V. Gotchev, J. P. Knauer, J. A. Marozas, F. J. Marshall,

R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, T. C. Sangster, S. Skupsky, V. A. Smalyuk, B. Yaakobi, and R. Mancini, "Laser-Energy Coupling, Mass Ablation Rate, and Shock Heating in Direct-Drive Inertial Confinement Fusion," to be published in *Physics of Plasmas* (invited).

T. C. Sangster, R. Betti, R. S. Craxton, J. A. Delettrez, D. H. Edgell, L. M. Elasky, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, D. Jacobs-Perkins, R. Janezic, R. L. Keck, J. P. Knauer, S. J. Loucks, L. D. Lund, F. J. Marshall, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, S. P. Regan, W. Seka, W. T. Shmayda, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, B. Yaakobi, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, J. D. Moody, J. A. Atherton, B. D. MacGowan, J. D. Kilkenny, T. P. Bernat, and D. S. Montgomery, "Cryogenic DT and D₂ Targets for Inertial Confinement Fusion," to be published in *Physics of Plasmas* (invited tutorial).

S. N. Shafirir, J. C. Lambropoulos, and S. D. Jacobs, "Subsurface Damage (SSD) in Estimation in Precision Microground Hard Ceramics," to be published in *Applied Optics*.

S. N. Shafirir, J. C. Lambropoulos, and S. D. Jacobs, "Technical Note: Toward Magnetorheological Finishing of Magnetic Materials," to be published in the *Journal of Manufacturing Science and Engineering*.

A. A. Solodov, R. Betti, J. A. Delettrez, and C. D. Zhou, "Gain Curves and Hydrodynamic Simulations of Ignition and Burn for Direct-Drive Fast-Ignition Fusion Targets," to be published in *Physics of Plasmas*.

T. Taneda, G. Pepe, L. Parlato, A. A. Golubov, and R. Sobolewski, "Time-Resolved Carrier Dynamics and Electron-Phonon Coupling Strength in Proximized Weak Ferromagnet/Superconductor Nanobilayers," to be published in *Physical Review B*.

Conferences Presentations

The following presentations were made at SPIE Photonics West, San Jose, CA, 20–25 January 2007:

C. Dorrer, "High-Speed Characterization for Optical Telecommunication Signals" (invited).

T. Z. Kosc, K. L. Marshall, A. Trajkovska-Petkoska, C. J. Coon, K. Hasman, G. V. Babcock, R. Howe, M. Leitch, and S. D. Jacobs, "Development of Polymer Cholesteric Liquid Crystal Flake Technology for Electro-Optic Devices and Particle Displays" (invited).

The following presentations were made at ASSP 2007, Vancouver, Canada, 28–31 January 2007:

I. A. Begishev, V. Bagnoud, C. Dorrer, and J. D. Zuegel, “Suppression of Optical Parametric Generation in the High-Efficient OPCPA System.”

Z. Jiang and J. R. Marciante, “Impact of Spatial-Hole Burning on Beam Quality in Large-Mode-Area Fibers.”

J. R. Marciante, “Effectiveness of Radial Gain Tailoring in Large-Mode-Area Fiber Lasers and Amplifiers.”

A. V. Okishev and J. D. Zuegel, “Intracavity-Pumped Raman Laser Action in a Mid-IR CW MgO:PPLN Optical Parametric Oscillator.”

J. M. Soures and D. D. Meyerhofer, “High-Energy-Density Physics Research at NLUF with the OMEGA and OMEGA EP Lasers,” 2007 Stewardship Science Academic Alliance Program Symposium, Washington, DC, 5–7 February 2007.

R. L. McCrory, D. D. Meyerhofer, S. J. Loucks, S. Skupsky, K. S. Anderson, R. Betti, T. R. Boehly, M. J. Bonino, R. S. Craxton, T. J. B. Collins, J. A. Delettrez, D. H. Edgell, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. H. Kelly, T. J. Kessler, J. P. Knauer, L. D. Lund, D. Jacobs-Perkins, J. R. Marciante, J. A. Marozas, F. J. Marshall, A. V. Maximov, P. W. McKenty, S. F. B. Morse, J. Myatt, S. G. Noyes, P. B. Radha, T. C. Sangster, W. Seka, V. A. Smalyuk, J. M. Soures, C. Stoeckl, W. Theobald, K. A. Thorp, M. D. Wittman, B. Yaakobi, C. D. Zhou, J. D. Zuegel, C. K. Li, R. D. Petrasso, J. A. Frenje, and F. H. Séguin, “Inertial Confinement Fusion Research at the Laboratory for Laser Energetics,” 7th Symposium on Current Trends in International Fusion Research: A Review, Washington, DC, 5–9 March 2007.

J. R. Marciante, “Fiber Technologies for Terawatt Lasers,” Optical Fiber Communication Conference 2007, Anaheim, CA, 25–29 March 2007.