
Publications and Conference Presentations

Publications

- M. S. Adams, M. V. Fedorov, V. P. Krainov, and D. D. Meyerhofer, "Comparison of Quasiclassical and Exact Dipole Moments for Bound-Free Transitions in Hydrogen," *Phys. Rev. A* **52**, 125 (1995).
- T. R. Boehly, R. S. Craxton, T. H. Hinterman, P. A. Jaanimagi, J. H. Kelly, T. J. Kessler, R. L. Kremens, S. A. Kumpan, S. A. Letzring, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, J. M. Soures, and C. P. Verdon, "The Upgrade to the OMEGA Laser System," *Fusion Technol.* **26**, 722 (1994); also in the *Proceedings of the IAEA Technical Committee Meeting on Drivers for Inertial Confinement Fusion*, Paris, France 14–18 November 1994, edited by J. Coutant (IAEA, 1995), pp. 79–86.
- M. J. Cumbo, D. Fairhurst, S. D. Jacobs, and B. E. Puchebner, "Slurry Particle Size Evolution during the Polishing of Optical Glass," *Appl. Opt.* **34**, 3743 (1995).
- D. Gupta, W. R. Donaldson, and A. M. Kadin, "Rapid Flux Motion and Critical State Dynamics in a Superconducting Disk," *J. Appl. Phys.* **78**, 372 (1995).
- F. A. Hegmann, D. Jacobs-Perkins, S. H. Moffat, C.-C. Wang, R. A. Hughes, M. Currie, P. M. Fauchet, T. Y. Hsiang, J. S. Preston, and R. Sobolewski, "Electro-Optic Sampling of 1.5-ps Photoresponse Signal from $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin Films," *Appl. Phys. Lett.* **67**, 285 (1995).
- S. D. Jacobs, D. Golini, Y. Hsu, B. E. Puchebner, D. Strafford, W. I. Kordonsky, I. V. Prokhorov, E. Fess, D. Pietrowski, and V. W. Kordonsky, "Magnetorheological Finishing: A Deterministic Process for Optics Manufacturing," in the *International Conference on Optical Fabrication and Testing*, edited by Toshio Kasai (SPIE, Bellingham, WA, 1995), Vol. 2576, pp. 372–382 (invited).
- J. C. Mastrangelo, H. Shi, S.-H. Chen, and T. N. Blanton, "Design, Synthesis, and Stability of Organic Glasses for Advanced Optical Applications," in *Polymer Preprints* (American Chemical Society, August 1995), Vol. 36(2), pp. 43–44.
- R. L. McCrory, "Progress Toward Ignition with Direct-Drive," in *Great Systems in Science and Technology*, edited by J. Horowitz and J. L. Lions (Mason Publishing, Paris, France, 1993), pp. 555–569.
- C. J. McKinstrie and E. A. Startsev, "Wave Propagation in a Drifting Plasma," *Phys. Plasmas* **5**, 3234 (1995).
- D. Shvarts, U. Alon, D. Ofer, R. L. McCrory, and C. P. Verdon, "Nonlinear Evolution of Multimode Rayleigh-Taylor Instability in Two and Three Dimensions," *Phys. Plasmas* **2**, 2465 (1995).
- C.-C. Wang, M. Currie, R. Sobolewski, and T. Y. Hsiang, "Subpicosecond Electrical Pulse Generation by Edge Illumination of Silicon and Indium Phosphide Photoconductive Switches," *Appl. Phys. Lett.* **67**, 79 (1995).
- M. Yu, C. J. McKinstrie, and G. P. Agrawal, "Modulational Instabilities in Dispersion-Flattened Fibers," *Phys. Rev. E* **52**, 1072 (1995).
- M. Yu, G. P. Agrawal, and C. J. McKinstrie, "Effect of Residual Dispersion in the Phase-Conjugation Fiber on Dispersion Compensation in Optical Communication Systems," *IEEE Photonics Technol. Lett.* **7**, 932 (1995).

Forthcoming Publications

R. Adam, W. Kula, R. Sobolewski, J. M. Murduck, and C. Pettiette-Hall, "Laser-Induced Modification of Transport Properties of Y-Ba-Cu-O Step-Edge Weak Links," to be published in *Applied Physics Letters*.

R. Betti, V. N. Goncharov, R. L. McCrory, and C. P. Verdon, "Self-Consistent Cutoff Wave Number of the Ablative Rayleigh-Taylor Instability," to be published in *Physics of Plasmas*.

X. D. Cao, J. Peatross, and D. D. Meyerhofer, "Self-Defocusing of Intense Laser Pulses in a Low-Pressure Gas Target," to be published in *Physical Review A*.

X. D. Cao and D. D. Meyerhofer, "Optimization of Pulse Shaping Using Nonlinear Polarization Rotation," to be published in *Optics Communication*.

S.-H. Chen, J. C. Mastrangelo, and H. Shi, "Novel Low Molar Mass, Glass-Forming Liquid Crystals: Molecular Design, Synthesis, and Morphological Stability," to be published in the *Proceedings of Polymers for Advanced Optical Applications*.

S.-H. Chen, J. C. Mastrangelo, H. Shi, A. Bashir-Hashemi, J. Li, and N. Gelber, "Novel Glass-Forming Materials Based on Adamantane with Pendant Cholesteryl, Disperse Red 1, and Nematogenic Groups," to be published in *Macromolecules*.

C. T. Cotton, "Design Considerations for the OMEGA Upgrade Final Focus Lens," to be published in the *Proceedings of SPIE's 1995 International Symposium on Optical Science, Engineering, and Instrumentation*, San Diego, CA.

C. T. Cotton, "The Design of an All-Spherical, Three-Mirror, Off-Axis Telescope Objective," to be published in the *OSA Proceedings of the International Optical Design Conference '94*, Rochester, NY.

P. M. Fauchet, L. Tsybeskov, C. Peng, S. P. Duttagupta, J. von Behren, Y. Kostoulas, J. V. Vandyshev, and K. D. Hirshman, "Light-Emitting Porous Silicon: Materials Science, Properties, and Device Applications," to be published in the *IEEE Journal of Selected Topics in Quantum Electronics*.

D. Fried, R. E. Glens, J. D. B. Featherstone, and W. Seka, "Permanent and Transient Changes in the Reflectance of CO₂

Laser-Irradiated Dental Hard Tissues at $\lambda = 9.3, 9.6, 10.3,$ and $10.6 \mu\text{m}$ and at Fluences between $1\text{--}20 \text{ J/cm}^2$," to be published in *Lasers in Surgery and Medicine*.

R. E. Giacone, C. J. McKinstrie, and R. Betti, "Angular Dependence of Stimulated Brillouin Scattering in Homogeneous Plasma," to be published in *Physics of Plasmas*.

V. N. Goncharov, R. Betti, R. L. McCrory, P. Sorotokin, and C. P. Verdon, "Self-Consistent Stability Analysis of Ablation Front for Inertial Confinement Fusion," to be published in *Physics of Plasmas*.

V. N. Goncharov and R. Betti, "Growth Rate of the Ablative Rayleigh-Taylor Instability for Indirect-Drive ICF," to be published in *Physics of Plasmas*.

K. Green, W. R. Donaldson, R. Sobolewski, M. D. Skeldon, W. Seka, A. Okishev, and S. A. Letzring, "Transient Microwave Bandwidth Measurements of Illuminated Silicon Switches for Optical Pulse-Shape Control of Laser-Fusion Drivers," to be published in the *SPIE Proceedings of the 1st Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion (ICF)*, Monterey, CA, 30 May–2 June 1995.

J. Hecht, D. Ofer, U. Alon, D. Shvarts, S. A. Orszag, and R. L. McCrory, "Three-Dimensional Simulations and Analysis of the Nonlinear Stage of the Rayleigh-Taylor Instability," to be published in *Laser and Particle Beams*.

J. H. Kelly, T. R. Boehly, J. M. Soures, D. L. Brown, R. Boni, R. S. Craxton, R. L. Keck, T. J. Kessler, R. Kremens, S. A. Kumpan, S. A. Letzring, S. J. Loucks, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, and C. P. Verdon, "The Activation of the Upgraded OMEGA Laser at the University of Rochester," to be published in the *SPIE Proceedings of the 15th International Conference on Coherent and Nonlinear Optics*, St. Petersburg, Russia, June 1995 and the *SPIE Proceedings of the 1st Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion (ICF)*, Monterey, CA, 30 May–2 June 1995.

O. A. Konoplev and D. D. Meyerhofer, "Dynamic Range Limitations in High-Contrast, Noncollinear Autocorrelators,"

to be published in *Generation, Amplification, and Measurement of Ultrashort Laser Pulses III*.

E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Colorimetry of Fractured Cholesteric Liquid Crystal Polymers" to be published in the *Third Color Imaging Conference Proceedings*.

Y. Kostoulas, K. B. Ucer, L. Waxer, G. W. Wicks, I. A. Walmsley, and P. M. Fauchet, "Ultrafast Carrier Lifetime in Low-Temperature-Grown GaAs, InP, and InGaP," to be published in the *Proceedings of LEOS '94 7th Annual Meeting*, Boston, MA, 31 October–3 November 1994.

T. Kotseroglou, C. Bamber, S. Boege, U. Haug, A. C. Melissinos, D. D. Meyerhofer, W. Ragg, C. Bula, K. T. McDonald, E. Prebys, D. L. Burke, P. Chen, R. C. Field, G. Horton-Smith, A. C. Odian, J. C. Spencer, D. Walz, S. Berridge, W. Bugg, K. Shmakov, and A. Weidemann, "Studies of Nonlinear QED with an Ultra-Intense Laser," to be published in *Generation, Amplification, and Measurement of Ultrashort Laser Pulses III*.

W. Kula, R. Adam, and R. Sobolewski, "Y-Ba-Cu-O Thin-Film Structures with a Nonuniform In-Depth Oxygen Concentration Profile," to be published in the *Institute of Physics Conference Series*.

W. Lang, W. Göb, W. Kula, and R. Sobolewski, "Anisotropic Magnetoresistance in the Normal State of Oxygen-Deficient $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin Films Induced by Superconducting Fluctuations," to be published in *Zeitschrift Für Physik B*.

Y. Lin, T. J. Kessler, and G. N. Lawrence, "Design of Continuous Surface-Relief Phase Plates by Simulated Annealing to Achieve Control of Focal Plane Irradiance," to be published in *Optics Letters*.

R. S. Marjoribanks, F. W. Budnik, H. Chen, and D. D. Meyerhofer, "Plasma Electron Temperature in Picosecond Laser Plasmas from Quasi-Steady Ratio of Isoelectronic Lines," to be published in the *Journal of the Optical Society of America B*.

K. L. Marshall, S. D. Jacobs, and J. E. Miller, "Midinfrared Modulation through the Use of Field-Induced Scattering in Ferroelectric Liquid Crystals," to be published in *Applied Optics*.

J. C. Mastrangelo, T. N. Blanton, and S.-H. Chen, "Morphology and Its Stability of Cyclohexane and Biocyclooctene

Rings Containing Pendant Disperse Red 1," to be published in *Chemistry of Materials*.

R. L. McCrory, J. M. Soures, C. P. Verdon, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, S. D. Jacobs, R. L. Keck, J. H. Kelly, T. J. Kessler, H. Kim, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, F. J. Marshall, P. J. McKenty, S. F. B. Morse, A. Okishev, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, M. Tracy, and B. Yaakobi, "Direct-Drive Laser Fusion Experimental Program at the University of Rochester Laboratory for Laser Energetics," to be published in the *Proceedings of the Conference on Plasma Physics and Controlled Nuclear Fusion Research*, Madrid, Spain, September 1994.

R. L. McCrory, J. M. Soures, C. P. Verdon, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, S. D. Jacobs, R. L. Keck, J. H. Kelly, T. J. Kessler, H. Kim, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, F. J. Marshall, P. W. McKenty, S. F. B. Morse, A. Okishev, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, M. Tracy, and B. Yaakobi, "Experiments on OMEGA to Validate High-Gain, Direct-Drive Performance on the National Ignition Facility," to be published in the *Proceedings of the 12th International Conference on Laser Interaction and Related Plasma Phenomena*, Osaka, Japan, April 1995.

R. L. McCrory, J. M. Soures, C. P. Verdon, A. Babushkin, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, S. D. Jacobs, R. L. Keck, J. H. Kelly, T. J. Kessler, H. Kim, J. P. Knauer, R. L. Kremens, S. A. Letzring, S. J. Loucks, F. J. Marshall, P. W. McKenty, S. F. B. Morse, A. Okishev, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, and B. Yaakobi, "OMEGA Upgrade Laser System," to be published in the *SPIE Proceedings of the 1st Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion (ICF)*, Monterey, CA, 30 May–1 June 1995.

D. D. Meyerhofer, J. P. Knauer, S. J. McNaught, and C. I. Moore, "Observation of Relativistic Mass Shift Effects during High-Intensity Laser-Electron Interactions," to be published in the *Journal of the Optical Society of America B*.

A. Okishev, M. D. Skeldon, S. A. Letzring, W. R. Donaldson, A. Babushkin, and W. Seka, "The Pulse-Shaping System for the 60-Beam, 30-kJ (UV) OMEGA Laser," to be published in the *Proceedings of Laser Optics '95 Conference*, St. Petersburg, Russia, 27 June–1 July 1995.

- S. Papernov and A. W. Schmid, "A Comparison of Laser-Induced Damage Morphology in Three Model Thin-Film Systems: HfO_2 , Y_2O_3 , and Ta_2O_5 ," to be published in the Proceedings of the XXVI Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 24–26 October 1994.
- J. Peatross and D. D. Meyerhofer, "Intensity-Dependent Atomic-Phase Effects in High-Order Harmonic Generation," to be published in *Physical Review A*.
- J. Z. Roach, A. Ninkov, S. W. Swales, and T. Morris, "Design and Evaluation of a Screen CCD Imaging System," to be published in *Optical Engineering*.
- H. Shi and S.-H. Chen, "Dynamic Mechanical Properties of Cyclohexane-Based Glass-Forming Liquid Crystals and a Linear Side-Chain Polymer Analogue," to be published in *Liquid Crystals*.
- H. Shi and S.-H. Chen, "Effects of Stereochemistry, Mesogenic Core, and Space Length on Crystallization from Nematic and Isotropic Melts of Cyclohexane-Based, Glass-Forming Liquid Crystals," to be published in *Liquid Crystals*.
- H. Shi and S.-H. Chen, "Novel Glass-Forming Liquid Crystals. III. Helical Sense and Twisting Power in Chiral Nematic Systems," to be published in *Liquid Crystals*.
- A. Simon, "Parametric Excitation of Bernstein Modes in Laser-Produced Plasma," to be published in *Physics of Plasmas*.
- A. Simon, "Comparison Between SBS Theories and Experiment," to be published in *Plasma Physics and Technology*.
- M. D. Skeldon, A. Okishev, A. Babushkin, and W. Seka, "Transient Stimulated Brillouin Scattering Pulse Compression for Photoconductive Switch Activation," to be published in the Proceedings of Solid-State Lasers for Application to Inertial Confinement Fusion (ICF), Monterey, CA, 30 May–2 June 1995.
- C. J. Twomey, T. N. Blanton, K. L. Marshall, S.-H. Chen, and S. D. Jacobs, "Some Dynamic Features of the Preparation of Liquid Crystalline Elastomers," to be published in *Liquid Crystals*.
- C. P. Verdon and R. L. McCrory, "Direct-Drive Capsule Physics," to be published in the Proceedings of ECLIM '94, Oxford, England, September 1994.
- C.-C. Wang, M. Currie, D. Jacobs-Perkins, R. Sobolewski, T. Y. Hsiang, and M. J. Feldman, "Electro-Optic Measurements of Single-Flux Quantum Pulses," to be published in the Institute of Physics Conference Series.
- M. D. Wittman, R. Q. Gram, H. Kim, C. K. Immesoete, S. G. Noyes, and S. Scarantino, "Increased Retention Time for Hydrogen and Other Gases by Polymer Shells Using Optically Transparent Aluminum Layers," to be published in the *Journal of Vacuum Science and Technology*.
- W. Xiong, Y. Kostoulas, X. Weng, P. M. Fauchet, and R. Sobolewski, "Femtosecond Study of the Electronic Structure in Semiconducting Y-Ba-Cu-O," to be published in *Physical Review B*.
- B. Yaakobi, D. Shvarts, R. Epstein, and Q. Qu, "X-Ray Backlighting Imaging of Mixed Imploded Targets," to be published in the *Journal of Applied Physics*.
- B. Yaakobi, R. Epstein, C. F. Hooper, Jr., D. A. Haynes, Jr., and Q. Su, "Diagnosis of High-Temperature Implosions Using Low- and High-Opacity Krypton Lines" to be published in the *Journal of X-Ray Science and Technology*.
- M. Yu and C. J. McKinstrie, "Impulse Response of a Nonlinear Dispersive Wave," to be published in *Physical Review E*.
- X. Zhou, S. Alexandrou, and T. Y. Hsiang, "Monte Carlo Investigation of the Intrinsic Mechanism of Subpicosecond Pulse Generation by Nonuniform Illumination," to be published in *Applied Physics Letters*.
- J. D. Zuegel and W. Seka, "Direct Measurements of Lower-Level Lifetime in Nd:YLF," to be published in the *Bulletin of the American Physical Society*.
- J. D. Zuegel and W. Seka, "Direct Measurement of $^4I_{11/2}$ Terminal-Level Lifetime in Nd:YLF," to be published in the *IEEE Journal of Quantum Electronics*.

Conference Presentations

The following presentations were made at the European Conference on Applied Superconductivity, Edinburgh, Scotland, 3–6 July 1995:

W. Kula, R. Adam, and R. Sobolewski, "Y-Ba-Cu-O Thin-Film Structures with a Nonuniform In-Depth Oxygen Concentration Profile."

C.-C. Wang, M. Currie, D. Jacobs-Perkins, R. Sobolewski, T. Y. Hsiang, and M. J. Feldman, "Electro-Optic Measurements of Single-Flux Quantum Pulses."

The following presentations were made at SPIE's International Symposium on Optical Science, Engineering, and Instrumentation, San Diego, CA, 9–14 July 1995:

C. T. Cotton, "Design Considerations for the OMEGA Upgrade Final Focus Lens."

P. A. Jaanimagi and A. Mens, "Photoelectron Throughput in Streak Tubes."

B. E. Puchebner and S. D. Jacobs, "Development of New Bound Abrasive Polishers for Final Finishing of Optical Glasses."

T. Y. Hsiang, S. Alexandrou, R. Sobolewski, and C.-C. Wang, "Terahertz Dispersion of Coplanar Waveguides and Wave-

guide Bends," Progress in Electromagnetics Research Symposium, Seattle, WA, 24–28 July 1995 (invited).

J. C. Mastrangelo, H. Shi, S.-H. Chen, and T. N. Blanton, "Design, Synthesis, and Stability of Organic Glasses for Advanced Optical Applications," American Chemical Society National Meeting, Chicago, IL, 20–24 August 1995.

The following presentations were made at the OSA Annual Meeting, Portland, Oregon, 10–15 September 1995:

S. D. Jacobs, "Deterministic Magnetorheological Finishing of Spheres and Aspheres" (invited).

A. Schmid, T. Kessler, K. Marshall, and J. Armstrong, "Organic Thin Films on the 30-kJ OMEGA Glass Laser System Organic Thin Films."

D. J. Smith, "Optical Coating Technology for the Upgraded OMEGA Laser" (invited).

H. Kim, S. J. Pan, and P. C. Cheng, "X-Ray Microtomography for Characterizing Inertial Confinement Fusion Spherical Capsules," 13th International Vacuum Congress, 9th International Conference on Solid Surfaces, Yokohama, Japan, 25–29 September 1995.