

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

S. Alexandrou, R. Sobolewski, and T. Y. Hsiang, "Time-Domain Characterization of Bent Coplanar Waveguides," *IEEE J. Quantum Electron.* **28**, 2325 (1992).

D. K. Bradley, P. M. Bell, J. D. Kilkenny, R. Hanks, O. Landen, P. W. McKenty, P. A. Jaanimagi, and C. P. Verdon, "High-Speed Gated X-Ray Imaging for ICF Target Experiments," *Rev. Sci. Instrum.* **63**, 4813 (1992).

S. Y. Chou, Y. Liu, W. Khalil, M. I. Nathan, T. Y. Hsiang, and S. Alexandrou, "Ultrafast Nanoscale Metal-Semiconductor-Metal Photodetectors on Bulk and Low-Temperature-Grown GaAs," *Appl. Phys. Lett.* **61**, 819 (1992).

E. M. Epperlein, "Laser Filamentation in Plasmas," in *Research Trends in Physics: Inertial Confinement Fusion*, edited by K. A. Brueckner, N. G. Basov, S. W. Haan, and C. Yamanaka (AIP, New York, 1992), pp. 262–276.

P. M. Fauchet and T. Gong, "Femtosecond Dynamics of Hot Carriers in GaAs," in *Ultrafast Laser Probe Phenomena in Semiconductors and Superconductors*, edited by R. R. Alfano (SPIE, Bellingham, WA, 1992), Vol. 1677, p. 25.

B. S. W. Kuo, J. C. M. Li, and A. W. Schmid, "Thermal Conductivity and Interface Thermal Resistance of Si Film on Si Substrate Determined by Photothermal Displacement Interferometry," *Appl. Phys. A* **55**, 289 (1992).

F. J. Marshall, J. G. Jernigan, T. Collins, J. F. Arens, and G. Pien, "Measuring Laser-Plasma X-Ray Emission Using Photodiode Arrays," *Rev. Sci. Instrum.* **63**, 5094 (1992).

C. I. Moore, "Confinement of Electrons to the Center of a Laser Focus via the Ponderomotive Potential," *Journal of Modern Optics* **39**, 2171 (1992).

Forthcoming Publications

P. S. Maruthi Sai, M. J. Levene, T. Gillbro, R. S. Knox, R. H. Hwang-Schweitzer, and S. Mahajan, "Time-Resolved Fluorescence of Phycoerythrocyanin-Containing Phycobilisomes from the Cyanobacterium *Westiellopsis Prolifica*," to be published in *Biophysical Journal*.

R. L. McCrory, J. M. Soures, J. P. Knauer, S. A. Letzring, F. J. Marshall, S. Skupsky, W. Seka, C. P. Verdon, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, R. L. Keck, T. J. Kessler, H. Kim, R. L. Kremens, P. W. McKenty, R. W. Short, and B. Yaakobi, "Short-Wavelength-Laser Requirements for Direct-Drive Ignition and Gain," to be published in *Lasers and Particle Beams*.

R. L. McCrory, R. E. Bahr, D. K. Bradley, D. L. Brown, R. S. Craxton, J. Delettrez, R. Epstein, P. A. Jaanimagi, T. Kessler, J. P. Knauer, S. Letzring, F. Marshall, P. W. McKenty, W. Seka, S. Skupsky, J. M. Soures, C. P. Verdon, and B. Yaakobi, "Direct-Drive Implosion Experiments for Laser Fusion on OMEGA and the OMEGA Upgrade," to be published in *Lasers and Particle Beams*.

R. L. McCrory, J. M. Soures, C. P. Verdon, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, R. J. Hutchison, P. A. Jaanimagi, S. D. Jacobs, J. H. Kelly, R. L. Keck, 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, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, and B. Yaakobi, "Direct-Drive Laser Fusion Target Physics Experiments," to be published in the *Proceedings of the 14th International Atomic Energy Agency (IAEA) International Conference on Plasma Physics and Controlled Nuclear Fusion Research*, Wurzburg, Germany, 30 September–7 October 1992.

R. L. McCrory, "Laser-Driven ICF Experiments," to be published in *Nuclear Fusion by Inertial Confinement*.

R. L. McCrory, "Direct-Drive Implosion Experiments for Laser Fusion on OMEGA and the OMEGA Upgrade," to be published in the *Proceedings of the 21st ECLIM*, Warsaw, Poland, 21–25 October 1991.

R. L. McCrory, "Irradiation Uniformity Requirements for Direct-Drive Laser Fusion," to be published in the *SPIE Proceedings of the XIV International Conference on Coherent and Nonlinear Optics*, St. Petersburg, Russia, 24–27 September 1991.

C. J. McKinstrie and M. V. Goldman, "Three-Dimensional Instabilities of Counterpropagating Light Waves in Homogeneous Plasmas," to be published in the *Journal of the Optical Society of America B*.

C. J. McKinstrie and X. D. Cao, "The Nonlinear Detuning of Three-Wave Interactions," to be published in the *Journal of the Optical Society of America B*.

D. D. Meyerhofer, H. Chen, J. A. Delettrez, B. Soom, S. Uchida, and B. Yaakobi, "Resonance Absorption in High Intensity Contrast, Picosecond Laser-Plasma Interactions," to be published in *Physics of Fluids*.

J. Peatross, B. Buerke, and D. D. Meyerhofer, "Sequential Ionization in ^3He with a 1.5 ps, 1-mm Laser Pulse," to be published in *Physical Review A*.

- J. K. Samarabandu, R. Acharya, C. D. Edirisinghe, P. C. Cheng, H. Kim, T. H. Lin, R. G. Summers, and C. E. Musial, "Analysis of Multi-Dimensional Confocal Images," to be published in the *Proceedings of the SPIE Symposium "Biomedical Imaging,"* San Diego, CA, 24 February 1991.
- N. Sampat, "Imaging System Design and Image Analysis Techniques for the Automatic Alignment of a Fusion Laser," to be published in the *Journal of Electronic Imaging.*
- M. D. Skeldon and S. T. Bui, "The Temporal Mode Structure of a Regenerative Amplifier with Intracavity Etalons," to be published in the *Journal of the Optical Society of America B.*
- S. Skupsky, T. J. Kessler, S. A. Letzring, and Y.-H. Chuang, "Laser-Beam Pulse Shaping Using Spectral Beam Deflection," to be published in the *Journal of Applied Physics.*
- R. Sobolewski, W. Xiong, and W. Kula, "Patterning of Thin-Film, High- T_c Circuits by the Laser-Writing Method," to be published in *IEEE Transactions on Applied Superconductivity.*
- R. Sobolewski, "Electro-Optic Time Domain Characterization of Coplanar Transmission Structures," to be published in the *Proceedings of IEEE LEOS '92 Annual Meeting—Symposium on Applied Optical Diagnostics of Semiconductor Materials and Devices,* Boston, MA, 16–19 November 1992.
- J. M. Soures, R. L. McCrory, T. R. Boehly, R. S. Craxton, S. D. Jacobs, J. H. Kelly, T. J. Kessler, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, W. D. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, and C. P. Verdon, "The OMEGA Upgrade Laser for Direct-Drive Target Experiments," to be published in *Lasers and Particle Beams.*
- J. M. Soures, "Solid State Lasers," to be published in *Nuclear Fusion by Inertial Confinement,* edited by G. Velerade, Y. Ronen, and J. M. Martinez-Val.
- J. M. Soures, "High-Technology Advances from LLE Research," to be published in the *Rochester Business Profiles Journal.*
- J. M. Soures, "The OMEGA Upgrade Laser Facility for Direct-Drive Experiments," to be published in the *Proceedings of the Fusion Power Associates Annual Meeting and Symposium,* Princeton, NJ, 25–26 June 1991, and in the *Journal of Fusion Energy.*
- J. Sweetser, T. J. Dunn, I. A. Walmsley, C. Radzewicz, S. Palese, and R. J. D. Miller, "Characterization of an FM Mode-Locked Nd:YLF Laser Synchronized with a Passively Mode-Locked Dye Laser," to be published in the *Journal of the Optical Society of America B.*
- C. J. Twomey, S. H. Chen, T. Blanton, A. W. Schmid, and K. L. Marshall, "Solid Polymers Doped with Rare Earth Metal Salts. II. Thermal Behavior and Morphology of the Neodymium Acetate-Poly(ethylene oxide) System," to be published in *Journal of Polymer Science, Polymer Physics Edition.*
- R. Vanderhaghen, P. M. Fauchet, A. Mourchid, and D. Hulin, "The Cooling Rate of Hot Carriers in Disordered Semiconductors," to be published in the *Proceedings of QELS '92,* Anaheim, CA, 10–15 May 1992.

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 *Proceedings of the 39th AVS National Symposium and Topical Conferences*, Chicago, IL, 9–13 November 1992.

W. Xiong, W. Kula, R. Sobolewski, and J. R. Gavalier, "Superconducting Properties of Laser-Annealed Lines Fabricated in Oxygen-Deficient Y-Ba-Cu-O Thin Films," to be published in the *Proceedings of the 6th Annual Conference on Superconductivity and Applications*, Buffalo, NY, 15–17 September 1992.

L. X. Zheng, T. Gong, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, "Femtosecond Optical Nonlinearities in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$," to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993.

Conference Presentations

T. J. Kessler, "Unity Diffraction Efficiency and Its Applications to Intense Laser-Matter Interactions," Symposium on the Interaction of Focused Electromagnetic Fields with Optical Disk Structures, Rochester, NY, 1–2 October 1992.

W. Xiong, W. Kula, and R. Sobolewski, "Laser Writing: A New Technique for High Temperature Y-Ba-Cu-O Thin Films," Annual Meeting of the Rochester Chapter of IEEE Electron Device Society, Rochester, NY, 4 November 1992.

J. C. Lambropoulos, S. D. Jacobs, S. J. Burns, and L. Shaw-Klein, "Effects of Anisotropy, Interfacial Thermal Resistance, Microstructure, and Film Thickness on the Thermal Conductivity of Dielectric Thin Films," ASME Winter Annual Meeting, Session on Significant Questions in Heat Transfer, Anaheim, CA, 8–13 November 1992.

The following presentations were made at the Thirty-Ninth AVS National Symposium and Topical Conference, Chicago, IL, 9–13 November 1992:

H. Kim, J. M. Soures, and P.-C. Cheng, "Confocal Microscopic Characterization of Laser-Fusion Target."

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."

R. Sobolewski, "Electro-Optic Time Domain Characterization of Coplanar Transmission Structures," IEEE LEOS '92 Annual Meeting—Symposium on Applied Optical Diagnostics of Semiconductor Materials and Devices, Boston, MA, 16–19 November 1992.

The following presentations were made at the Thirty-Fourth Annual Meeting of the American Physical Society, Division of Plasma Physics, Seattle, WA, 16–20 November 1992:

R. E. Bahr, W. Seka, R. S. Craxton, and A. Simon, "Stimulated Raman Scattering in Long-Scale-Length Plasma Experiments on OMEGA."

R. Betti, A. Simon, and C. P. Verdon, "Dynamic Stabilization of the Ablative Rayleigh-Taylor Instability."

T. R. Boehly, R. S. Craxton, R. J. Hutchison, J. H. Kelly, T. J. Kessler, S. A. Kumpan, S. A. Letzring, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, J. M. Soures, and C. P. Verdon, "Progress on the Upgrade to the OMEGA Laser System."

D. K. Bradley, "Applications of High-Speed-Gated X-Ray Imaging for Laser-Driven Implosions" (invited paper).

R. S. Craxton, W. Seka, R. E. Bahr, and D. L. Montgomery, "Hydrodynamic Simulations of Long-Scale-Length Plasma Experiments on OMEGA."

J. A. Delettrez, W. Seka, and R. L. Keck, "A Strategy for Laser-Beam Power Balance on the OMEGA Upgrade."

E. M. Epperlein, R. W. Short, and A. Simon, "Damping of Ion-Acoustic Waves in the Presence of Electron-Ion Collisions."

R. Epstein, C. P. Verdon, J. Delettrez, D. K. Bradley, and B. Yaakobi, "Simulations of Spectral Signatures of Core-Shell Mixing in Laser-Driven Implosions."

P. A. Jaanimagi, D. K. Bradley, R. L. Kremens, M. A. Russotto, and C. P. Verdon, "Neutron Streak Camera Diagnostic for ICF Implosions."

R. L. Kremens and M. A. Russotto, "Nuclear Diagnostics for the OMEGA Upgrade."

J. S. Li, C. J. McKinstrie, and A. L. Gaeta, "Nonlinear Oscillations and Chaos in Backward Four-Wave Mixing."

F. J. Marshall, J. A. Delettrez, R. Epstein, C. P. Verdon, and B. Yaakobi, "Diagnosis of CD Shell Implosion by Continuum Absorption Spectroscopy."

P. W. McKenty, J. H. Kelly, and S. Skupsky, "Numerical Investigation of Self-Focusing of Broad Bandwidth Laser Light."

C. J. McKinstrie and R. E. Giacone, "The Angular Dependence of SBS in Homogeneous Plasma."

D. D. Meyerhofer, "Prepulse-Free, Short-Pulse, High-Intensity, Laser-Plasma Interactions" (invited paper).

M. A. Russotto and R. L. Kremens, "Monte Carlo Studies of Charged Particle and Neutron Spectra in Laser Fusion Experiments for the Determination of High Fuel Areal Densities."

W. Seka, R. E. Bahr, R. S. Craxton, R. W. Short, and A. Simon, "Two-Plasmon-Decay Instability in Long-Scale-Length Laser Plasmas."

R. W. Short, and E. M. Epperlein, "Parametric Instabilities Driven by Inverse Bremsstrahlung in Laser-Produced Plasmas."

A. Simon, E. M. Epperlein, and R. W. Short, "The Effect of Weak Electron-Ion Collisions on Ion-Sound Wave Decay."

B. Soom, H. Chen, B. Yaakobi, and D. D. Meyerhofer, " K_{α} Emission from High-Contrast, Picosecond Laser-Plasma Interactions."

S. Uchida, H. Chen, Y.-H. Chuang, J. A. Delettrez, and D. D. Meyerhofer, "Characteristics of the Enhanced Field in High-Intensity Contrast Picosecond Laser-Produced Plasmas."

M. Yu and C. J. McKinstrie, "The Impulse Response of a Modulationally Unstable Wave."

The following presentations were made at the Optical Fabrication and Testing Workshop, Boston, MA, 17–19 November 1992:

M. J. Cumbo, A. Lindquist, and S. D. Jacobs, "Assessment of Frictional Forces in Optical Polishing Using Atomic Force Microscopy."

S. D. Jacobs, K. Kubath, and A. Maltsev, "Optical Fabrication Laboratory: Introductory Training for Optical Engineering Students."

J. Lambropoulos, M. J. Cumbo, and S. D. Jacobs, "The Effects of Material Properties and Process Parameters on Surface Quality during Microgrinding of Glass."

A. Lindquist, B. Puchebner, M. J. Cumbo, T. Rich, and S. D. Jacobs, "Bound Abrasive Polisher Concepts for the Center for Optics Manufacturing CNC Machining Centers."

W. E. Smith, T.-H. Bui, A. Lindquist, and S. D. Jacobs, "Non-Destructive Estimation of Subsurface Glass Damage Using Fluorescent Confocal Microscopy."

H. E. Elsayed-Ali, J. W. Herman, and E. A. Murphy, "Ultrafast Laser Superheating of Metal Surfaces," 1992 Materials Research Society Fall Meeting, Boston, MA, 30 November–4 December 1992.

J. H. Kelly, M. J. Shoup, III, M. M. Tedrow, and K. A. Thorp, "Design and Performance of a Modern, 15-cm-Aperture Brewster-Disk Amplifier," Lasers '92 (the Fifteenth International Conference on Lasers and Applications), Houston, TX, 7–11 December 1992.

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