

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

W. R. Donaldson, A. M. Kadin, P. H. Ballentine, and R. Sobolewski, "Interaction of Picosecond Optical Pulses with High T_c Superconducting Films," *Appl. Phys. Lett.* **54**, 2470-2472 (1989).

R. L. McCrory and J. M. Soures, "Inertially Confined Fusion," in *Laser-Induced Plasmas and Applications*, edited by L. J. Radziemski and D. A. Cremers (Marcel Dekker, Inc., New York, 1989), pp. 207-268.

R. L. McCrory, J. M. Soures, C. P. Verdon, F. J. Marshall, S. A. Letzring, T. J. Kessler, J. P. Knauer, H. Kim, R. L. Kremens, S. Skupsky, R. L. Keck, D. K. Bradley, W. D. Seka, P. A. Jaanimagi, J. A. Delettrez, and P. W. McKenty, "High-Density, Direct-Drive Implosion Experiments," in *Laser Interaction With Matter*, edited by G. Velarde, E. Minguez, and J. M. Perlado (World Scientific, Singapore, New Jersey, London, and Hong Kong, 1989), pp. 73-78.

A. Simon and R. W. Short, "Energy and Nonlinearity Considerations for the Enhanced Plasma Wave Model of Raman Scattering," *Phys. Fluids B* **1**, 1073-1081 (1989).

A. Simon and R. W. Short, "Comments on 'Studies of Raman Scattering from Overdense Targets Irradiated of Several Kilojoules of 0.53- μm Laser Light'," *Phys. Fluids B* **1**, 1341-1342 (1989).

M. D. Skeldon and R. W. Boyd, "Transverse-Mode Structure of a Phase-Conjugate Oscillator Based on Brillouin-Enhanced Four-Wave Mixing," *IEEE J. Quantum Electron.* **25**, 588-594 (1989).

J. P. Apruzese, P. G. Burkhalter, J. E. Rogerson, J. Davis, J. F. Seely, C. M. Brown, D. A. Newman, R. W. Clark, J. P. Knauer, and D. K. Bradley, "Enhanced Excitation and Ionization of Neonlike Silver in Laser-Produced Plasmas Simultaneously Irradiated by Two Wavelengths," *Phys. Rev. A* **39**, 5697-5704 (1989).

Y. F. Maa and S. H. Chen, "Synthesis of Thermotropic Liquid Crystalline Side-Chain Polymers via Chemical Modification of Polymeric Carboxylic Acids," *Macromolecules* **22**, 2036-2039 (1989).

E. J. Miller, M. D. Skeldon, and R. W. Boyd, "Spatial Evolution of Laser Beam Profiles in an SBS Amplifier," *Appl. Opt.* **28**, 92-96 (1989).

G. J. Rickard, A. R. Bell, and E. M. Epperlein, "2D Fokker-Planck Simulations of Short-Pulse Laser-Plasma Interactions," *Phys. Rev. Lett.* **62**, 2687-2690 (1989).

M. L. Tsai, S. H. Chen, and S. D. Jacobs, "Optical Notch Filter Using Thermotropic Liquid Crystalline Polymers," *Appl. Phys. Lett.* **54**, 2395-2397 (1989).

Forthcoming Publications

S. Augst, D. Strickland, D. D. Meyerhofer, S. L. Chin, and J. H. Eberly, "Tunneling Ionization of Noble Gases in a High Intensity Laser Field," to be published in *Physical Review Letters*.

S. H. Batha, D. D. Meyerhofer, and A. Simon, "Enhanced Scattering from Laser-Plasma Interactions," to be published in *Physical Review*.

B. Boswell, D. Shvarts, T. Boehly, and B. Yaakobi, "X-Ray Laser Beam Propagation in Double-Foil Targets," to be published in *Physics of Fluids*.

P. C. Cheng, V. H-K. Chen, H. G. Kim, and R. E. Pearson, "A Real-Time EPI-Fluorescent Confocal Microscope," to be published in the *Journal of Microscopy*.

P. C. Cheng, V. H-K. Chen, H. G. Kim, and R. E. Pearson, "An EPI-Fluorescent Spinning-Disk Confocal Microscope," to be published in the *Proceedings of the 47th Annual Meeting of Electron Microscopy Society of America (EMSA)*, Austin, TX, 14-18 August 1989.

J. M. Chwalek, D. R. Dykaar, J. F. Whitaker, R. Sobolewski, S. Gupta, T. Y. Hsiang, and G. A. Mourou, "Ultrafast Response of Superconducting Transmission Lines," to be published in *Ultrafast Phenomena VI*.

J. M. Chwalek, D. R. Dykaar, J. F. Whitaker, T. Y. Hsiang, G. A. Mourou, D. K. Lathrop, S. E. Russek, and R. A. Buhrman, "Picosecond Transient Propagation Studies on Thin-Film Y-Ba-Cu-O Transmission Lines," to be published in *Ultrafast Phenomena VI*.

W. R. Donaldson, "Picosecond and Femtosecond Laser Systems for Particle Accelerator Applications," to be published as a Brookhaven Report.

W. R. Donaldson, A. M. Kadin, P. H. Ballentine, and M. Shoup III, "Optically Activated High Temperature Superconductor Opening Switches," to be published in the *Proceedings of the 7th IEEE Pulsed Power Conference*, Monterey, CA, 11-14, June 1989.

D. R. Dykaar, R. Sobolewski, and T. Y. Hsiang, "Picosecond Switching Dynamics of a Josephson Tunnel Junction," to be published in *Ultrafast Phenomena VI*.

M. Y. Frankel and T. Y. Hsiang, "Picosecond Transient Behavior of Pseudomorphic High Electron Mobility Transistor-Simulations," to be published in *IEEE Transactions on Electron Devices*.

M. Y. Frankel, D. R. Dykaar, T. Y. Hsiang, K. H. Duh, and P. C. Chao, "Non-Invasive, Picosecond Transient Characterization of Pseudomorphic High Electron Mobility Transistor (HEMT)," to be published in *IEEE Transactions on Electron Devices*.

R. L. McCrory, "Energy Supply and Demand in the Twenty-First Century," to be published in the *Journal of Fusion Energy*.

R. L. McCrory, "Progress and Plans for Inertial Confinement Fusion at the University of Rochester," to be published in *Journal of Fusion Energy*.

R. L. McCrory and C. P. Verdon, "Computer Modeling and Simulation in Inertial Confinement Fusion," to be published in *Il Nuovo Cimento*.

R. L. McCrory, J. M. Soures, C. P. Verdon, S. Skupsky, T. J. Kessler, S. A. Letzring, W. Seka, R. S. Craxton, R. Short, P. A. Jaanimagi, M. Skeldon, D. K. Bradley, J. Delettrez, R. L. Keck, H. Kim, J. P. Knauer, R. L. Kremens, and F. J. Marshall, "Laser Compression and Stability in Inertial Confinement Fusion," to be published in *Plasma Physics and Controlled Fusion*.

Conference Presentations

W. R. Donaldson, "Ultrafast High Power Switching: Techniques and Applications," presented at Electro '89, New York, NY, 11-13 April 1989.

The following presentations were made at the CLEO '89 Conference, Baltimore, MD, 24-28 April 1989:

W. Donaldson, P. Ballentine, and A. Kadin, "Electrical Switching in Superconducting YBCO Thin Films Using Picosecond Optical Pulses."

T. Kessler, S. Letzring, S. Skupsky, M. Skeldon, S. Morse, and P. Jaanimagi, "Broadband Phase Conversion of the Frequency Tripled OMEGA Laser."

L. E. Kingsley and W. R. Donaldson, "Two-Dimensional Electro-Optic Imaging."

J. C. Lee, S. D. Jacobs, T. J. Kessler, and N. Van Lieu, "Profile Tunable Laser Beam Apodizer."

M. Pessot and G. Mourou, "Amplification of 100 fsec Pulses in Alexandrite Using Chirped Pulse Techniques."

W. Seka, S. Morse, S. Letzring, R. Kremens, T. Kessler, P. Jaanimagi, R. Keck, C. Verdon, and D. Brown, "Power Balancing of Multi-Beam Laser Fusion Lasers."

M. J. Shoup III and J. H. Kelly, "A High-Energy, Short-Pulse, Multiwavelength, Slab-Geometry Nd:Phosphate Glass Laser Source."

M. D. Skeldon, T. Kessler, R. S. Craxton, S. Skupsky, W. Seka, and J. M. Soures, "Efficient Third-Harmonic Generation with a Broadband Laser."

A. L. Gaeta, M. D. Skeldon, and R. W. Boyd, "Observation of Instabilities of Laser Beams Due to the Brillouin Interaction."

The following presentations were made at the QELS '89 Conference, Baltimore, MD, 24-28 April 1989:

S. Augst, D. Strickland, S. L. Chin, J. H. Eberly, and D. D. Meyerhofer, "High Intensity Multiphoton Ionization Experiments at 1053 nm and 527 nm."

H. E. Elsayed-Ali, "An Ultrahigh Vacuum Laser-Driven Picosecond Diffraction Facility."

T. B. Norris, G. A. Mourou, N. Vodjdani, B. Vinter, C. Weisbuch, X. J. Song, and L. F. Eastman, "Time-Resolved Studies of Tunneling in Single and Double Quantum Well Structure."

S. Uchida, M. C. Richardson, H. Chen, Y. Chuang, P. A. Jaanimagi, D. D. Meyerhofer, B. Yaakobi, and R. S. Marjoribanks, "Picosecond Laser Plasma X-Ray Source."

A. Lindquist, S. D. Jacobs, and V. Plotsker, "Chemo-Mechanical Prepolish of Phosphate Laser Glass for Reducing Subsurface Damage," presented at the American Society for Precision Engineering (ASPE) Conference on Sub-Surface Damage in Glass, Tucson, AZ, 25-27 April 1989.

M. Pessot, J. Squier, G. Mourou, and D. J. Harter, "Amplification of 100 fsec mJ Pulses in Alexandrite Using Chirped Pulse Techniques," presented at the Tunable Solid State Laser Meeting, Cape Cod, MA, 1-3 May 1989.

The following presentations were made at the IEEE International Conference on Plasma Science, Buffalo, NY, 22-24 May 1989:

T. Boehly, B. Yaakobi, R. S. Craxton, R. Epstein, M. C. Richardson, M. Russotto, D. Shvarts, J. M. Soures, and J. Wang, "Recent Developments in X-Ray Laser Research at LLE."

G. G. Luther, C. J. McKinstrie, and R. W. Short, "The Filamentation of Two Counterpropagating Waves."

J. Wang, T. Boehly, B. Yaakobi, D. Shvarts, R. Epstein, D. Meyerhofer, M. C. Richardson, M. Russotto, and J. M. Soures, "Analysis of Multiple-Foil XRL Targets Using X-Ray Spectroscopy."

C. J. McKinstrie and G. G. Luther, "The Modulational Instability of Linear Waves," presented at Spring College on Plasma Physics, International Center for Theoretical Physics, Trieste, Italy, 22-26 May 1989.

The following presentations were made at the Seventh IEEE Pulsed Power Conference, Monterey, CA, 11-14 June 1989:

W. R. Donaldson, A. M. Kadin, P. H. Ballentine, and M. Shoup III, "Optically Activated High Temperature Superconductor Opening Switches."

L. E. Kingsley and W. R. Donaldson, "Electro-Optics Surface Field Imaging System."

J. F. Whitaker, J. A. Valdmanis, T. A. Jackson, K. A. Bhasin, B. Romanofsky, and G. A. Mourou, "External Electro-Optic Probing of Millimeter-Wave Integrated Circuits," presented at the 1989 IEEE Microwave Theory and Techniques Symposium, Long Beach, CA, 12-13 June 1989.

T. Y. Hsiang, J. F. Whitaker, R. Sobolewski, S. Martinet, and L. P. Golob, "High-Frequency Characterization of Superconducting Transmission Structures from Picosecond Transient Measurements," presented at the International Superconductive Electronics Conference, Tokyo, Japan, 13 June 1989.

M. Guardalben, A. Schmid, S. Jacobs, and S. H. Chen, "1054-nm Damage Thresholds for Monomeric and Polymeric-Side-Chain Liquid Crystal Systems," presented at the U.S. Army Science Symposium on Nonlinear Optical Polymers, Natick, MA, 13-14 June 1989.

C. Immesoete, L. Forsley, and H. Kim, "Computer-Assisted Microballoon Selection For Laser Fusion Targets," presented at the Forth Conference, Rochester, NY, 19-23 June 1989.

The following presentations were made at the 19th Annual Anomalous Absorption Conference, Durango, CO, 19-23 June 1989:

S. H. Batha, D. D. Meyerhofer, and A. Simon, "Comparison of Enhanced Thomson Scattering from Long and Short Scale-Length Plasmas."

T. Boehly, D. Bradley, and J. Delettrez, "Shine-Through Early-Time Phenomena in Laser Fusion Targets."

Y-H. Chuang, S. H. Batha, H. Chen, D. D. Meyerhofer, M. C. Richardson, and S. Uchida, "Characterization of Plasmas Produced by Intense, 1-ps, Laser Pulses."

- R. S. Craxton, "X-Ray Laser Emission from Long Line-Focus Plasmas."
- J. Delettrez, D. D. Meyerhofer, and M. C. Richardson, "Hydrodynamic Simulations of Ultrashort Laser Pulse Interaction."
- E. M. Epperlein, "Enhanced Laser Penetration and Self-Focusing in Large Scale Underdense Plasmas."
- R. Epstein and S. Skupsky, "Anticipated Improvement in Laser Beam Uniformity Using Distributed Phase Plates with Quasi-Random Patterns."
- R. L. Keck, W. D. Seka, S. Letzring, S. Morse, and J. M. Soures, "Improvements to Energy and Power Balance on OMEGA."
- G. G. Luther, C. J. McKinstrie, and R. W. Short, "The Filamentation of Two Counterpropagating Waves."
- C. J. McKinstrie, "The Relativistic Modulational Instability of Light Waves in Rarefied Plasma."
- D. D. Meyerhofer, Y-H. Chuang, J. Delettrez, and M. C. Richardson, "Calculation of Inverse Bremsstrahlung Absorption of High-Intensity Laser Light in Short Scale Length Plasmas."
- W. Seka, R. L. Keck, S. Letzring, S. Morse, and J. M. Soures, "Energy, Power Balance, and Irradiation Uniformity on OMEGA."
- R. W. Short, "Stimulated Raman Scattering in the Caustic Illumination Sheath Surrounding a Laser Fusion Target."
- A. Simon, "Numerical Studies of X-Ray Emission by Fast Electron Pulses."
- S. Skupsky, R. W. Short, T. Kessler, R. S. Craxton, S. Letzring, and J. M. Soures, "Improved Laser-Beam Uniformity Using the Angular Dispersion of Frequency-Modulated Light."

The following presentations were made at the conference on Super-Intense Laser-Atom Physics, Rochester, NY, 28-30 June 1989:

- S. Augst, D. Strickland, S. L. Chin, J. H. Eberly, and D. D. Meyerhofer, "Multiphoton Ionization of Noble Gases in the Tunneling Limit."
- D. D. Meyerhofer, S. Augst, S. L. Chin, J. H. Eberly, and Q. Su, "High Order Harmonic Generation Using the Tabletop Terawatt Laser."

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