

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

E. M. Epperlein and R. W. Short, "Nonlocal Heat Transport Effects on the Filamentation of Light in Plasmas," *Phys. Fluids B* **4**, 2211 (1992).

E. M. Epperlein, R. W. Short, and A. Simon, "Damping of Ion-Acoustic Waves in the Presence of Electron-Ion Collisions," *Phys. Rev. Lett.* **69**, 1765 (1992).

M. J. Guardalben and N. George, "Speckle Observation of Pulsed Laser-Induced Dynamics in a Guest-Host, Smectic-A Liquid Crystal System," *Liq. Cryst.* **12**, 689 (1992).

J. W. Herman and H. E. Elsayed-Ali, "Superheating of Pb(111)," *Phys. Rev. Lett.* **69**, 1228 (1992).

S. Krishnamurthy and S.-H. Chen, "A Comparative Study of Helical Sense and Twisting Power in Low Molar Mass and Polymeric Chiral Nematics," *Macromolecules* **25**, 4489 (1992).

S. Krishnamurthy, S.-H. Chen, and T. N. Blanton, "Mesomorphic Behavior of Side-Chain Copolymers Containing Chiral as Well as Nematogenic Moieties Comprising *p*-Phenylene and *trans*-Cyclohexylene Rings," *Macromolecules* **25**, 5119 (1992).

G. G. Luther and C. J. McKinstrie, "Transverse Modulational Instability of Counterpropagating Light Waves," *J. Opt. Soc. Am. B* **9**, 1047 (1992).

R. S. Marjoribanks, M. C. Richardson, P. A. Jaanimagi, and R. Epstein, "Electron Temperature Measurement in Laser-Produced Plasmas by the Ratio of Isoelectronic Line Intensities," *Phys. Rev. A* **46**, 1747 (1992).

C. J. McKinstrie and R. Bingham, "Stimulated Raman Forward Scattering and the Relativistic Modulational Instability of Light Waves in Rarefied Plasma," *Phys. Fluids B* **4**, 2626 (1992).

J. Peatross, M. V. Fedorov, and D. D. Meyerhofer, "Laser Temporal and Spatial Effects on Ionization Suppression," *J. Opt. Soc. Am. B* **9**, 1234 (1992).

W. Seka, R. E. Bahr, R. W. Short, A. Simon, R. S. Craxton, D. L. Montgomery, and A. E. Rubenchik, "Nonlinear Laser-Matter Interaction Processes in Long-Scale-Length Plasmas," *Phys. Fluids B* **4**, 2232 (1992).

L. J. Shaw-Klein, S. D. Jacobs, S. J. Burns, and J. C. Lambropoulos, "Microstructural Control of Thin-Film Thermal Conductivity," in *Laser-Induced Damage in Optical Materials: 1991* (SPIE, Bellingham, WA, 1991), Vol. 1624, pp. 346–361.

L. J. Shaw-Klein, T. K. Hatwar, S. J. Burns, S. D. Jacobs, and J. C. Lambropoulos, "Thermal Conductivity of Amorphous Rare Earth-Transition Metal Thin Films for Magneto-Optic Recording," *Thin Solid Films* **216**, 181 (1992).

M. M. Tedrow, J. H. Kelly, M. J. Shoup III, R. Juhala, A. Reynolds, L. Allen, and G. Dubé, "Characterization of a Diode-Pumped, 3.8-cm Clear Aperture, High-Gain, Active-Mirror Laser Amplifier Using CR:Nd:GSGG and Nd:GGG," in *OSA Proceedings on Advanced Solid State Lasers*, edited by L. L. Chase and A. A. Pinto (OSA, Washington, DC, 1992), Vol. 13, pp. 223–226.

Forthcoming Publications

S. Alexandrou, R. Sobolewski, and T. Y. Hsiang, "Time-Domain Characterization of Bent Coplanar Waveguides," to be published in the *IEEE Journal of Quantum Electronics*.

S. Alexandrou, R. Sobolewski, C.-C. Wang, and T. Y. Hsiang, "Subpicosecond Electrical Pulse Generation in GaAs by Nonuniform Illumination of Series and Parallel Transmission Line Gaps," to be published in the *Proceedings of Ultrafast Electronics & Optoelectronics*, San Francisco, CA, 25–27 January 1993.

J. J. Armstrong and T. J. Kessler, "Holographic Generation of Ultra-High-Efficiency Large-Aperture Transmission Diffraction Gratings," to be published in the *Proceedings of SPIE's 1992 International Symposium on Optical Applied Science and Engineering*, San Diego, CA, 19–24 July 1992.

C. Bamber, W. R. Donaldson, E. Lincke, and A. C. Melissinos, "Electron Acceleration Using Laser-Driven Photoconductive Switching," to be published in *Nuclear Instruments & Methods A*.

C. Bamber, W. R. Donaldson, E. Lincke, and A. C. Melissinos, "A Pulsed-Power Electron Accelerator Using Laser-Driven Photoconductive Switches," to be published in the *Proceedings of the Third Advanced Accelerator Concepts Workshop*, Port Jefferson, NY, 15–19 June 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," to be published in the *Review of Scientific Instruments*.

- X. D. Cao and C. J. McKinstrie, "Solitary-Wave Stability in Birefringent Optical Fibers," to be published in the *Journal of the Optical Society of America B*.
- 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," to be published in *Applied Physics Letters*.
- Y.-H. Chuang, L. Zheng, and D. D. Meyerhofer, "Propagation of Light Pulses in a Chirped-Pulse-Amplification Laser," to be published in *IEEE Journal of Quantum Electronics*.
- A. Denysenko, S. Alexandrou, C.-C. Wang, R. Sobolewski, T. Hsiang, W. R. Donaldson, and D. K. Bradley, "Dielectric Determination of a Microstrip Channel Plate by Picosecond Electro-Optic Sampling," to be published in the *Proceedings of Ultrafast Electronics & Optoelectronics*, San Francisco, CA, 25–27 January 1993.
- W. R. Donaldson and A. C. Melissinos, "A Novel High Brilliance Electron Source," to be published in the *Proceedings of the Third Advanced Acceleration Concepts Workshop*, Port Jefferson, NY, 15–19 June 1992.
- W. R. Donaldson and L. Mu, "The Effects of Doping on Photoconductive Switches as Determined by Electro-Optic Imaging," to be published in the *Proceedings of SPIE's OE/LASE*, Los Angeles, CA, 20–25 January 1992.
- H. E. Elsayed-Ali and T. Juhasz, "Femtosecond Time-Resolved Thermomodulation of Thin Gold Films with Different Crystal Structures," to be published in *Physical Review B*.
- E. M. Epperlein, "Laser Filamentation in Plasmas," to be published in the *Proceedings of the Topical Conference on Research Trends in Inertial Confinement Fusion*, La Jolla, CA, 4–6 February 1991.
- E. M. Epperlein and R. W. Short, "Comment on 'Modification of Stimulated Brillouin, Saturated Raman Scattering and Strong Langmuir Turbulence by Nonlocal Heat Transport,'" to be published in *Physics of Fluids B*.
- P. M. Fauchet, D. Hulin, A. Mourchid, and R. Vanderhaghen, "Ultrafast Thermal Nonlinearities in Amorphous Silicon," to be published in *Ultrafast Laser Probe Phenomena in Semiconductors and Superconductors*.
- P. M. Fauchet, "Picosecond Spectroscopy in Solids with a Free-Electron Laser," to be published in *Spectroscopic Characterization Techniques for Semiconductor Technology IV* (invited paper).
- P. M. Fauchet and T. Gong, "Femtosecond Dynamics of Hot Carriers in GaAs," to be published in the *Proceedings of SPIE's 1992 Symposium on Compound Semiconductor Physics and Devices*, Somerset, NJ, 22–26 March 1992 (invited paper).
- T. Gong, K. B. Ucer, L. X. Zheng, G. W. Wicks, J. F. Young, P. J. Kelly, and P. M. Fauchet, "Femtosecond Carrier-Carrier Interactions in GaAs," to be published in the *Proceedings of the Eighth International Conference on Ultrafast Phenomena*, Antibes-Juan-Les-Pins, France, 8–12 June 1992.
- T. Gong, P. M. Fauchet, J. F. Young, and P. J. Kelly, "Subpicosecond Hot-Hole Dynamics in Highly Excited GaAs," to be published in *Applied Physics Letters*.

T. Gong, L. X. Zheng, K. B. Ucer, J. F. Young, P. J. Kelly, G. W. Wicks, and P. M. Fauchet, "The Role of Carrier-Carrier Interactions in Relaxation of Hot Carriers Excited at 2 eV in GaAs," to be published in *Physical Review B*.

T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, "Femtosecond Optical Response of Y-Ba-Cu-O Thin Films: The Dependence on Optical Frequency, Excitation Intensity, and Electric Current," to be published in *Physical Review B*.

T. Gong, L. X. Zheng, W. Kula, W. Xiong, R. Sobolewski, and P. M. Fauchet, "Ultrafast Response of Current Carrying Y-Ba-Cu-O Thin-Film Strips," to be published in the *Proceedings of Ultrafast Electronics & Optoelectronics*, San Francisco, CA, 25–27 January 1993.

T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, P. M. Fauchet, J. P. Zheng, H. W. Kwok, and J. R. Gavaler, "Femtosecond Spectroscopy of 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.

Conference Presentations

C. P. Verdon, "Hydrodynamics of Direct-Drive Inertial Confinement Fusion Capsule Implosions," AIAA 23rd Plasmadynamics & Lasers Conference, Nashville, TN, 6–8 July 1992.

The following presentations were made at the 22nd Annual Anomalous Absorption Conference, Lake Placid, NY, 12–17 July 1992:

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

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

R. S. Craxton and F. S. Turner, "Refractive Image Distortion—An Alternative to Interferometry for Characterizing Long-Scale-Length Plasmas."

J. A. Delettrez, S. Gutstein, S. Uchida, and D. D. Meyerhofer, "Effect of the Ponderomotive Force on Fast Ions in Short-Scale-Length Laser-Plasma Interactions."

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

E. M. Epperlein, P. Amendt, L. Powers, and L. J. Suter, "Nonlocal Heat Transport in Spherical Plasmas Using the Fokker-Planck Code SPARK."

R. Epstein, B. Yaakobi, and F. J. Marshall, "The Role of Continuum Lowering in Opacity Calculations for Simulations of Diagnostic Spectra."

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

C. J. McKinstrie, X. D. Cao, and J. Li, "The Nonlinear Detuning of Multiwave Interactions."

D. D. Meyerhofer, A. C. Gaeris, and R. W. Short, "The Stimulated Brillouin Scattering Threshold in a Homogeneous CH Plasma."

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

R. W. Short and E. M. Epperlein, "Thermal Stimulated Brillouin Scattering in Laser-Produced Plasmas."

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

S. Uchida, H. Chen, Y.-H. Chuang, J. A. Delettrez, and D. D. Meyerhofer, "Measurements of the P-Polarized Intensity Enhancement in High-Contrast, Picosecond Laser-Produced Plasmas."

J. J. Armstrong and T. J. Kessler, "Holographic Recording of Large-Aperture, High-Efficiency, High-Damage-Threshold, Transmission Diffraction Gratings," SPIE's 1992 International Symposium on Optical Applied Science and Engineering, San Diego, CA, 19-24 July 1992.

D. Gupta, W. R. Donaldson, and A. M. Kadin, "High-Temperature Superconducting Opening Switches," Fifth SDIO/ONR Pulse Power Meeting, 1992, College Park, MD, 17-19 August 1992.

R. L. McCrory, "Physics of Direct-Drive Inertial Confinement Fusion," International Conference on the Physics of Strongly Coupled Plasmas, Rochester, NY, 17-21 August 1992.

The following presentations were made at the 1992 Applied Superconductivity Conference, Chicago, IL, 23-28 August 1992:

D. Gupta, W. R. Donaldson, K. Kortkamp, and A. M. Kadin, "Optically Triggered Switching of Optically Thick YBCO Films."

W. Kula and R. Sobolewski, "Measurements of Low-Magnetic-Field Microwave Absorption in 110-K Superconducting Bi-Sr-Ca-Cu-O Thin Films."

R. Sobolewski, W. Xiong, and W. Kula, "Patterning of Thin-Film High- T_c Circuits by the Laser-Writing Method."

The following presentations were made at the 6th Annual Conference on Superconductivity and Applications, Buffalo, NY, 15-17 September 1992:

T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, P. M. Fauchet, J. P. Zheng, H. W. Kwok, and J. R. Gavaler, "Femtosecond Spectroscopy of Y-Ba-Cu-O Thin Films."

A. M. Kadin, D. Gupta, D. D. Mallory, M. Takahashi, W. R. Donaldson, and J. K. Truman, "Fabrication, Properties, and Applications of *In Situ* Sputtered YBCO Films."

W. Kula and R. Sobolewski, "Influence of the Crystalline Structure of Critical Current Density of Bi(Pb)-Sr-Ca-Cu-O Thin Films Superconducting above 100 K."

W. Xiong, W. Kula, R. Sobolewski, and J. R. Gavaler, "Superconducting Properties of Laser-Annealed Lines Fabricated in Oxygen-Deficient Y-Ba-Cu-O Thin Films."

The following presentations were made at the OSA Annual/ILS '92, Albuquerque, NM, 20–25 September 1992:

Y. Lin, T. J. Kessler, and G. N. Lawrence, "Calculations of Raman Conversions and Beam Quality of High-Intensity Laser Beams Propagated in Air."

D. D. Meyerhofer, S. Augst, B. Buerke, and J. Peatross, "Laser Ionization of Noble Gases with Linear and Circular Polarization."

The following presentations were made at the 20th International Congress on High Speed Photography and Phototonics, Victoria, BC, Canada, 21–25 September 1992:

P. M. Bell, J. D. Kilkenny, O. L. Landen, R. L. Hanks, J. D. Wiedwald, and D. K. Bradley, "The Gating of X-Ray Images in the 30–40-ps Region for Laser Plasma Experiments."

P. A. Jaanimagi and D. K. Bradley, "Neutron Streak and Framing Camera Diagnostics for ICF Implosions."

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," 14th International Atomic Energy Agency (IAEA) International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Wurzburg, Germany, 30 September–7 October 1992.

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