

PUBLICATIONS AND CONFERENCE PRESENTATIONS

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," *Phys. Rev. Lett.* **63**, 2212–2215 (1989).

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," in *Ultrafast Phenomena VI*, Vol. 48, edited by T. Yajima, K. Yoshihara, C. B. Harris, and S. Shionoya (Springer-Verlag, Berlin, Heidelberg, 1988), pp. 201–204.

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" (invited paper), in *Proceedings of the 1989 International Superconductivity Electronics Conference (ISEC '89)*, Tokyo, Japan, 13 June 1989, pp. 510–515.

S. D. Jacobs, T. E. Gunderman, and K. L. Marshall, "Liquid Crystal Optics," *Opt. News*, 39 (1989).

A. M. Kadin, W. R. Donaldson, P. H. Ballentine, and R. Sobolewski, "Nonequilibrium Hot-Electron Transport in Optically Irradiated YBCO Films," *PHYSICA C* **162-164**, 387–388 (1989).

H.-J. Kong, M. D. Wittman, and H. Kim, "New Shearing Interferometer for Real-Time Characterization of Cryogenic Laser Fusion Targets," *Appl. Phys. Lett.* **55**, 2274–2276 (1989).

J. C. Lambropoulos, M. R. Jolly, C. A. Amsden, S. E. Gilman, M. J. Sinicropi, D. Diakomihalis, and S. D. Jacobs, "Thermal Conductivity of Dielectric Thin Films," *J. Appl. Phys.* **66**, 4230–4242 (1989).

F. J. Marshall, S. A. Letzring, C. P. Verdon, S. Skupsky, R. L. Keck, J. P. Knauer, R. L. Kremens, D. K. Bradley, T. Kessler, J. Delettrez, H. Kim, J. M. Soures, and R. L. McCrory, "Cryogenic-Laser-Fusion-Target Implosion Studies Performed with the OMEGA UV Laser System," *Phys. Rev. A* **40**, 2547–2557 (1989).

R. L. McCrory and C. P. Verdon, "Computer Modeling and Simulation in Inertial Confinement Fusion," *Inertial Confinement Fusion*, edited by A. Caruso and E. Sindoni (Societa Italiana di Fisica, Italy, 1989), pp. 83–124.

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," *Plasma Phys. and Controlled Fusion* **31**, 1517–1533 (1989).

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," *J. Appl. Phys.* **66**, 3456–3462 (1989).

F. W. Smith, S. Gupta, H. Q. Le, M. Frankel, V. Diadiuk, M. A. Hollis, D. R. Dykaar, G. A. Mourou, T. Y. Hsiang, and A. R. Calawa, "Picosecond GaAs-Based Photoconductive Optoelectronic Detectors," *Appl. Phys. Lett.* **54**, 890–892 (1989).

J. F. Whitaker, T. B. Norris, G. Mourou, T. C. Sollner, W. D. Goodhue, X. J. Song, and L. F. Eastman, "Tunneling-Time Measurements of a Resonant Tunneling Diode," in *Ultrafast Phenomena VI*, Vol. 48, edited by T. Yajima, K. Yoshihara, C. B. Harris, and S. Shionoya (Springer-Verlag, Berlin, Heidelberg, 1988), pp. 185–188.

X. Zhou, T. Y. Hsiang, and R. J. D. Miller, "Monte Carlo Study of Photo-Generated Carrier Transport in GaAs Surface Space Charge Fields," *J. Appl. Phys.* **66**, 3066–3073 (1989).

Forthcoming Publications

G. Banas, H. E. Elsayed-Ali, F. V. Lawrence, Jr., and J. M. Rigsbee, "Laser Shock-Induced Mechanical and Microstructural Modification of Welded Maraging Steel," to be published in *Journal of Applied Physics*.

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

T. Boehly, B. Yaakobi, D. Shvarts, D. Meyerhofer, P. Audebert, J. Wang, M. Russotto, B. Boswell, R. Epstein, R. S. Craxton, and J. M. Soures, "X-Ray Laser Experiments Using Double Foil Nickel Targets," to be published in *Applied Physics*.

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*.

H. C. Chen, G. Mourou, and R. Knox, "Time-Resolved Electron Diffraction from Pulse-Excited Crystalline Gold Films," to be published in the *Proceedings of 1989 Materials Research Society Fall Meeting: Beam-Solid Interactions*, Boston, MA, 27 November - 2 December 1989; and in *Physical Review Letters*.

P. C. Cheng, V. H-K. Chen, H. 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.

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.

W. R. Donaldson, L. Kingsley, M. Weiner, A. Kim, and R. Zeto, "Electro-Optic Imaging of the Internal Fields in a GaAs Photoconductive Switch," to be published in *Applied Physics Letters*.

H. E. Elsayed-Ali, "Hot Electron Relaxation in Metals," to be published in *High Energy Density Physics with Subpicosecond Laser Pulses* (Optical Society of America, Washington, DC, 1989).

H. E. Elsayed-Ali, "Comments on 'Thermal Response of Metals to Ultrashort-Pulse Laser Excitation'," to be published in *Physical Review Letters*.

H. E. Elsayed-Ali and J. W. Herman, "An Ultrahigh Vacuum Picosecond Laser-Driven Electron Diffraction System," to be published in *Review of Scientific Instruments*.

E. M. Epperlein, "Electron Kinetics in Laser-Driven Inertial Confinement Fusion," to be published in the *Proceedings of the Topical Conference on Research Trends in Nonlinear and Relativistic Effects in Plasmas*, San Diego, CA, 5-8 February 1990.

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. Q. Gram, M. D. Wittman, C. Immesoete, H. Kim, R. S. Craxton, N. Sampat, S. Swales, G. Pien, J. M. Soures, and H. Kong, "Uniform Liquid-Fuel Layer Produced in a Cryogenic Inertial Fusion Target by a Time-Dependent Thermal Gradient," to be published in *Journal of Vacuum Science and Technology*.

C. Immesoete, L. Forsley, and H. Kim, "Computer-Assisted Microballoon Selection for Laser Fusion Targets," to be published in the *Proceedings of the Forth Conference*, Rochester, NY, 19-23 June 1989.

Conference Presentations

The following presentations were made at the OSA Annual Meeting, Orlando, FL, 15–20 October 1989:

J. E. Hayden and S. D. Jacobs, "Stress Measurements of Transparent Optical Materials Using a Beam Scanning Modulated Transmission Ellipsometer."

T. Kessler and S. Skupsky, "Laser Beam Smoothing by Exploitation of Light Parameters."

The following presentations were made at the American Vacuum Society 36th National Symposium & Topical Conference, Boston, MA, 23–27 October 1989:

R. Q. Gram, M. D. Wittman, C. Immesoete, H. Kim, R. S. Craxton, N. Sampat, S. Swales, G. Pien, J. M. Soures, and H.-J. Kong, "Uniform Liquid-Fuel Layer Produced in a Cryogenic Inertial Fusion Target by a Time-Dependent Thermal Gradient."

C. Immesoete, S. Scarantino, H. Kim, and L. Forsley, "Computer-Assisted Microballoon Selection for Inertial Confinement Targets."

M. D. Wittman, H. Kim and H.-J. Kong, "New Shearing Interferometer for Real-Time Characterization of Cryogenic Laser Fusion Targets."

S. D. Jacobs, "Thin Films for High Power Lasers," presented at a Physics Department seminar, Arizona State University, Tempe, AZ, 3 November 1989.

J. C. Lambropoulos and S. -S. Hwang, "Film Thermal Conductivity and Laser Damage Resistance of Optical Thin Films," presented at the symposium on Electro-Optics and Nonlinear Optics, 1st International Ceramic Science and Technology Congress, Anaheim, CA, 31 October – 3 November 1989.

The following presentations were made at the Ninth Workshop of Laser Interaction and Related Plasma Phenomena Matter, Monterey, CA, 6–10 November 1989.

T. Boehly, J. Wang, B. Yaakobi, R. S. Craxton, and R. Epstein, "Observation of Gain in Ne-Like Germanium and Other X-Ray Laser Developments at LLE."

D. K. Bradley, T. Boehly, D. L. Brown, J. Delettrez, W. Seka, and D. Smith, "Early-Time 'Shine-Through' in Laser Irradiated Targets."

The following presentations were made at the Thirty-First Annual Meeting of the Division of Plasma Physics of the American Physical Society, Anaheim, CA, 13–17 November 1989:

T. Boehly, D. Bradley, D. L. Brown, J. Knauer, W. Seka, D. Smith, and C. P. Verdon, "'Shine-Through' Early-Time Phenomena in Laser Fusion Targets."

D. K. Bradley, J. Delettrez, P. A. Jaanimagi, C. P. Verdon, J. D. Kilkenny, and P. Bell, "Time-Resolved X-Ray Imaging of Implosion Experiments on the OMEGA Laser System."

D. L. Brown, W. Seka, and T. Boehly, "Self-Focusing and Dielectric Laser Breakdown."

R. S. Craxton, C. Darrow, G. E. Busch, and E. F. Gabl, "Image Distortion as a Diagnostic of Refraction in Long-Scale-Length Plasmas."

J. Delettrez, C. P. Verdon, D. K. Bradley, and P. A. Jaanimagi, "The Role of the Rayleigh-Taylor Instability in Spherical Burnthrough Experiments at 0.35 μm ."

E. M. Epperlein, C. J. McKinstrie, and G. G. Luther, "Laser Beam Filamentation in Direct-Drive ICF Targets."

R. Epstein, S. Skupsky, T. J. Kessler, W. P. Castle, N. Sampat, and S. Swales, "Anticipated Improvement in Laser Beam Uniformity Using Distributed Phase Plates with Quasi-Random Patterns."

P. A. Jaanimagi, J. Kelly, R. Keck, W. Seka, and R. Saunders, "Pulse Shape and Power Balance Measurements on OMEGA."

R. L. Keck, J. P. Knauer, S. Letzring, S. Morse, W. D. Seka, and J. M. Soures, "Improvements to Energy and Power Balance on OMEGA."

J. P. Knauer, R. L. McCrory, J. M. Soures, C. P. Verdon, F. J. Marshall, S. A. Letzring, S. Skupsky, T. J. Kessler, R. L. Kremens, H. Kim, J. Delettrez, R. L. Keck, and D. K. Bradley, "Implosion of Gas Filled Glass Microballoons with the OMEGA Laser."

R. Kremens and M. Russotto, "A Small Array of Single-Hit Neutron Detectors."

S. Letzring, C. P. Verdon, J. P. Knauer, S. Skupsky, and R. Kremens, "Effects on Target Implosion Experiments on OMEGA with Variations in Laser Bandwidth Utilizing Smoothing by Spectral Dispersion (SSD)."

G. G. Luther and C. J. McKinstrie, "Ponderomotive Filamentation In Counter-Propagating Geometry."

F. J. Marshall, S. A. Letzring, C. P. Verdon, J. P. Knauer, J. M. Soures, R. L. McCrory, M. Wittman, H. Kim, R. L. Keck, D. K. Bradley, P. A. Jaanimagi, W. Seka, T. Kessler, and S. Skupsky, "Cryogenic Target Experiments Performed with the OMEGA UV Laser System."

P. W. McKenty, S. Skupsky, D. K. Bradley, W. Seka, and C. P. Verdon, "Numerical Determination of the Effects of Laser Power Balance on the Levels of Illumination Nonuniformities."

C. J. McKinstrie and G. G. Luther, "The Filamentation of Counter-Propagating Waves in a Finite Collisional Plasma."

D. Meyerhofer, S. H. Batha, H. Chen, Y. -H. Chuang, J. Delettrez, R. Epstein, M. C. Richardson, S. Uchida, and B. Yaakobi, "Characterization of Plasmas Produced By Intense, 1-ps, Laser Pulses."

G. Pien, F. J. Marshall, S. A. Letzring, C. Dulnikowski, and A. Hauer, "Positioner for Laser Fusion Diagnostics Used on the OMEGA."

M. Russotto and R. Kremens, "Analysis of Current-Mode Neutron Time-of-Flight Detector Data for ICF Implosions."

W. Seka, D. L. Brown, T. Boehly, D. Bradley, T. Balasubramanian, R. Bahr, "Self-Focusing in Glass and Transparent Plastic Coatings in Multi-Layer Targets Relevant to Laser Fusion."

R. W. Short, "Self-Focusing and Smoothing by Spectral Dispersion."

A. Simon, "Studies of the Saturated Plasma Wave Regime in the Enhanced Thomson Model of Raman Scattering."

S. Skupsky, "Highly Smooth Laser Beams for ICF, Using Bandwidth Dispersion Techniques," (invited talk).

J. M. Soures, J. Kelly, S. Morse, J. Knauer, S. Letzring, R. L. McCrory, and W. Seka, "The Influence of Amplifier Gain Saturation on OMEGA Power Balance."

C. P. Verdon, J. P. Knauer, D. K. Bradley, J. Delettrez, P. A. Jaanimagi, R. L. Keck, R. L. Kremens, S. Letzring, F. J. Marshall, R. L. McCrory, S. Skupsky, and J. M. Soures, "Theoretical Interpretation of OMEGA Glass Ablator Implosion Experiments."

B. Yaakobi, T. Boehly, J. Wang, R. Epstein, and R. S. Craxton, "Observation of X-Ray Gain in Collisionally Excited Germanium Targets."

The following presentations were made at the Materials Research Society Fall Meeting, Boston, MA, 27 November – 2 December 1989:

H. C. Chen, G. A. Mourou, and R. Knox, "Time-Resolved Electron Diffraction from Pulse-Excited Crystalline Gold Films," Symposium A: Beam-Solid Interactions: Physical Phenomena.

S. H. Chen, M. L. Tsai, and S. D. Jacobs, "Thermotropic Chiral Nematic Polymers as Optical Materials."

D. Y. Park, W. Seka, and L. Ying, "Mono-Mode Operation of an Imaging Unstable Resonator Using Nd:YLF as Active Medium," presented at the International Conference on Lasers '89, New Orleans, LA, 3–8 December 1989.

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