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## Publications and Conference Presentations

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### Publications

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- A. Antikainen and G. P. Agrawal, “Supercontinuum Generation in Seven-Core Fibers,” *J. Opt. Soc. Am. B* **36**, 2927 (2019).
- Y. Arikawa, M. Ota, M. Nakajima, T. Shimizu, S. Segawa, T. N. K. Phan, Y. Sakawa, Y. Abe, A. Morace, S. R. Mirfayzi, A. Yogo, S. Fujioka, M. Nakai, H. Shiraga, H. Azechi, R. Kodama, K. Kan, J. Frenje, M. Gatu Johnson, A. Bose, N. V. Kabadi, G. D. Sutcliffe, P. Adrian, C. Li, F. H. Séguin, and R. Petrasso, “The Conceptual Design of 1-ps Time Resolution Neutron Detector for Fusion Reaction History Measurement at OMEGA and the National Ignition Facility,” *Rev. Sci. Instrum.* **91**, 063304 (2020).
- M. Bailly-Grandvaux, D. Kawahito, C. McGuffey, J. Strehlow, B. Edghill, M. S. Wei, N. Alexander, A. Haid, C. Brabetz, V. Bagnoud, R. Hollinger, M. G. Capeluto, J. J. Rocca, and F. N. Beg, “Ion Acceleration from Microstructured Targets Irradiated by High-Intensity Picosecond Laser Pulses,” *Phys. Rev. E* **102**, 021201(R) (2020).
- M. Bailly-Grandvaux, J. Kim, C. M. Krauland, S. Zhang, M. Dozières, M. S. Wei, W. Theobald, P. E. Grabowski, S. S. Santos, Ph. Nicolaï, P. McKenna, M. P. Desjarlais, and F. N. Beg, “Transport of kJ-Laser-Driven Relativistic Electron Beams in Cold and Shock-Heated Vitreous Carbon and Diamond,” *New J. Phys.* **22**, 033031 (2020).
- K. L. Baker, C. A. Thomas, D. T. Casey, M. Hohenberger, S. Khan, B. K. Spears, O. L. Landen, R. Nora, D. T. Woods, J. L. Milovich, R. L. Berger, D. Strozzi, C. Weber, D. Clark, O. A. Hurricane, D. A. Callahan, A. L. Kritcher, B. Bachmann, L. R. Benedetti, R. Bionta, P. M. Celliers, D. Fittinghoff, C. Goyon, R. Hatarik, N. Izumi, M. Gatu Johnson, G. Kyrala, T. Ma, K. Meaney, M. Millot, S. R. Nagel, P. K. Patel, D. Turnbull, P. L. Volegov, C. Yeamans, and C. Wilde, “Hotspot Parameter Scaling with Velocity and Yield for High-Adiabatic Layered Implosions at the National Ignition Facility,” *Phys. Rev. E* **102**, 023210 (2020).
- D. H. Barnak, J. R. Davies, J. P. Knauer, and P. M. Kozlowski, “Soft X-Ray Spectrum Unfold of K-Edge Filtered X-Ray Diode Arrays Using Cubic Splines,” *Rev. Sci. Instrum.* **91**, 073102 (2020).
- K. A. Bauer, M. Heimbueger, J. Kwiatkowski, S. Sampat, L. J. Waxer, E. C. Cost, J. H. Kelly, V. Kobilansky, S. F. B. Morse, D. Nelson, D. Weiner, G. Weselak, and J. Zou, “Optical Characterization of the On-Target OMEGA Focal Spot at High Energy Using the Full-Beam In-Tank Diagnostic,” *Appl. Opt.* **59**, 7994 (2020).
- X. Bian, H. Aluie, D. Zhao, H. Zhang, and D. Livescu, “Revisiting the Late-Time Growth of Single-Mode Rayleigh–Taylor Instability and the Role of Vorticity,” *Physica D* **403**, 132250 (2020).
- P. T. Campbell, D. Canning, A. E. Hussein, K. D. W. Ratnayaka, A. G. R. Thomas, K. Krushelnick, and L. Willingale, “Proton Beam Emittance Growth in Multipicosecond Laser-Solid Interactions,” *New J. Phys.* **21**, 103021 (2019).
- P. T. Campbell, C. A. Walsh, B. K. Russell, J. P. Chittenden, A. Crilly, G. Fiksel, P. M. Nilson, A. G. R. Thomas, K. Krushelnick, and L. Willingale, “Magnetic Signatures of Radiation-Driven Double Ablation Fronts,” *Phys. Rev. Lett.* **125**, 145001 (2020).
- S. H. Cao, R. Yan, H. Wen, J. Li, and C. Ren, “Cogeneration of Hot Electrons from Multiple Laser-Plasma Instabilities,” *Phys. Rev. E* **101**, 053205 (2020).
- L. Ceurvorst, R. Betti, A. Casner, V. Gopalaswamy, A. Bose, S. X. Hu, E. M. Campbell, S. P. Regan, C. A. McCoy, M. Karasik, J. L. Peebles, M. Tabak, and W. Theobald, “Hybrid Target Design for Imprint Mitigation in Direct-Drive Inertial Confinement Fusion,” *Phys. Rev. E* **101**, 063207 (2020).
- L. E. Chen, A. F. A. Bott, P. Tzeferacos, A. Rigby, A. Bell, R. Bingham, C. Graziani, J. Katz, M. Koenig, C. K. Li, R. Petrasso, H.-S. Park, J. S. Ross, D. Ryu, T. G. White, B. Reville, J. Matthews, J. Meinecke, F. Miniati, E. G. Zweibel, S. Sarkar, A. A. Schekochihin, D. Q. Lamb, D. H. Froula, and G. Gregori, “Transport of High-Energy Charged Particles Through Spatially Intermittent Turbulent Magnetic Fields,” *Astrophys. J.* **892**, 114 (2020).

- Y.-H. Chen, J. R. Peterson, L. A. Johnson, T. G. Jones, B. Hafizi, A. B. Stamm, A. C. Ting, J. P. Palastro, M. H. Helle, and D. Kaganovich, "Nonlinear Underwater Propagation of Picosecond Ultraviolet Laser Beams," *Opt. Lett.* **45**, 4344 (2020).
- A. R. Christopherson, R. Betti, S. Miller, V. Gopalaswamy, O. M. Mannion, and D. Cao, "Theory of Ignition and Burn Propagation in Inertial Fusion Implosions," *Phys. Plasmas* **27**, 052708 (2020).
- A. S. Davies, D. Haberberger, J. Katz, S. Bucht, J. P. Palastro, R. K. Follett, and D. H. Froula, "Investigation of Picosecond Thermodynamics in a Laser-Produced Plasma Using Thomson Scattering," *Plasma Phys. Control. Fusion* **62**, 014012 (2020).
- S. Depierreux, C. Neuville, V. Tassin, M.-C. Monteil, P.-E. Masson-Laborde, C. Baccou, P. Fremerye, F. Philippe, P. Seytor, D. Teychenne, J. Katz, R. Bahr, M. Casanova, N. Borisenko, L. Borisenko, A. Orekhov, A. Colaïtis, A. Debayle, G. Duchateau, A. Heron, S. Huller, P. Loiseau, P. Nicolai, C. Riconda, G. Tran, C. Stoeckl, W. Seka, V. Tikhonchuk, D. Pesme, and C. Labaune, "Experimental Investigation of the Collective Stimulated Brillouin and Raman Scattering of Multiple Laser Beams in Inertial Confinement Fusion Experiments," *Plasma Phys. Control. Fusion* **62**, 014024 (2020).
- C. Dorrer, E. M. Hill, and J. D. Zuegel, "High-Energy Parametric Amplification of Spectrally Incoherent Broadband Pulses," *Opt. Express* **28**, 451 (2020).
- M. Dozières, S. Hansen, P. Forestier-Colleoni, C. McGuffey, D. Kawahito, M. Bailly-Grandvaux, K. Bhutwala, C. M. Krauland, M. S. Wei, P. Gourdain, J. R. Davies, K. Matsuo, S. Fujioka, E. M. Campbell, J. L. Peebles, J. J. Santos, D. Batani, S. Zhang, and F. N. Beg, "Characterization of an Imploding Cylindrical Plasma for Electron Transport Studies Using X-Ray Emission Spectroscopy," *Phys. Plasmas* **27**, 023302 (2020).
- D. J. Erskine, "Forward Modeling of Doppler Velocity Interferometer System for Improved Shockwave Measurements," *Rev. Sci. Instrum.* **91**, 043103 (2020).
- C. Fagan, M. Sharpe, W. T. Shmayda, and W. U. Schröder, "A Thin Alumina Film as a Tritium Adsorption Inhibitor for Stainless Steel 316," *Fusion Sci. Technol.* **76**, 424 (2020).
- C. Fagan, M. Sharpe, W. T. Shmayda, and W. U. Schröder, "Tritium Retention in Hexavalent Chromate-Conversion-Coated Aluminum Alloy," *Fusion Sci. Technol.* **75**, 1058 (2019).
- S. R. Fairchild, Y. Liu, J. Palastro, and J. Peñano, "Laser Filamentation and Applications: Introduction," *J. Opt. Soc. Am. B* **36**, LFA1 (2019).
- K. Falk, C. J. Fontes, C. L. Fryer, C. W. Greeff, M. Holec, H. M. Johns, D. S. Montgomery, D. W. Schmidt, and M. M. Šmíd, "Experimental Observation of Elevated Heating in Dynamically Compressed CH Foam," *Plasma Phys. Control. Fusion* **62**, 074001 (2020).
- W. A. Farmer, C. Bruulsema, G. F. Swadling, M. W. Sherlock, M. D. Rosen, W. Rozmus, D. H. Edgell, J. Katz, B. B. Pollock, and J. S. Ross, "Validation of Heat Transport Modeling Using Directly Driven Beryllium Spheres," *Phys. Plasmas* **27**, 082701 (2020).
- F. Fiuza, G. F. Swadling, A. Grassi, H. G. Rinderknecht, D. P. Higginson, D. D. Ryutov, C. Bruulsema, R. P. Drake, S. Funk, S. Glenzer, G. Gregori, C. K. Li, B. B. Pollock, B. A. Remington, J. S. Ross, W. Rozmus, Y. Sakawa, A. Spitkovsky, S. Wilks, and H.-S. Park, "Electron Acceleration in Laboratory-Produced Turbulent Collisionless Shocks," *Nat. Phys.* **16**, 916 (2020).
- R. K. Follett, J. G. Shaw, J. F. Myatt, D. H. Froula, and J. P. Palastro, "Multibeam Absolute Stimulated Raman Scattering and Two-Plasmon Decay," *Phys. Rev. E* **101**, 043214 (2020).
- Y. Frank, G. E. Kemp, E. V. Marley, G. P. Callejo, M. E. Foord, M. B. Schneider, Y. Ehrlich, and M. Fraenkel, "Hydrodynamic Conditions in Laser Irradiated Buried Layer Experiments," *Phys. Plasmas* **27**, 063301 (2020).
- P. Franke, D. Turnbull, J. Katz, J. P. Palastro, I. A. Begishev, J. Bromage, J. L. Shaw, R. Boni, and D. H. Froula, "Measurement and Control of Large Diameter Ionization Waves of Arbitrary Velocity," *Opt. Express* **27**, 31978 (2019).
- M. Gatu Johnson, P. J. Adrian, K. S. Anderson, B. D. Appelbe, J. P. Chittenden, A. J. Crilly, D. Edgell, C. J. Forrest, J. A. Frenje, V. Yu. Glebov, B. M. Haines, I. Igumenshchev, D. Jacobs-Perkins, R. Janezic, N. V. Kabadi, J. P. Knauer, B. Lahmann, O. M. Mannion, F. J. Marshall, T. Michel, F. H. Séguin, R. Shah, C. Stoeckl, C. A. Walsh, and R. D. Petrasso, "Impact of Stalk on Directly Driven Inertial Confinement Fusion Implosions," *Phys. Plasmas* **27**, 032704 (2020).
- M. Gatu Johnson, B. M. Haines, P. J. Adrian, C. Forrest, J. A. Frenje, V. Yu. Glebov, W. Grimble, R. Janezic, J. P. Knauer, B. Lahmann, F. J. Marshall, T. Michel, F. H. Séguin, C. Stoeckl,

- and R. D. Petrasso “3D xRAGE Simulation of Inertial Confinement Fusion Implosion with Imposed Mode 2 Laser Drive Asymmetry,” *High Energy Density Phys.* **36**, 100825 (2020).
- V. N. Goncharov, I. V. Igumenshchev, D. R. Harding, S. F. B. Morse, S. X. Hu, P. B. Radha, D. H. Froula, S. P. Regan, T. C. Sangster, and E. M. Campbell, “Novel Hot-Spot Ignition Designs for Inertial Confinement Fusion with Liquid-Deuterium-Tritium Spheres,” *Phys. Rev. Lett.* **125**, 065001 (2020).
- T. Gong, H. Habara, K. Sumioka, M. Yoshimoto, Y. Hayashi, S. Kawazu, T. Otsuki, T. Matsumoto, T. Minami, K. Abe, K. Aizawa, Y. Enmei, Y. Fujita, A. Ikegami, H. Makiyama, K. Okazaki, K. Okida, T. Tsukamoto, Y. Arikawa, S. Fujioka, Y. Iwasa, S. Lee, H. Nagatomo, H. Shiraga, K. Yamanoi, M. S. Wei, and K. A. Tanaka, “Direct Observation of Imploded Core Heating via Fast Electrons with Super-Penetration Scheme,” *Nat. Commun.* **10**, 5614 (2019).
- M. J. Guardalben, M. Barczys, B. E. Kruschwitz, M. Spilatro, L. J. Waxer, and E. M. Hill, “Laser-System Model for Enhanced Operational Performance and Flexibility on OMEGA EP,” *High Power Laser Sci. Eng.* **8**, e8 (2020).
- G. Guidarelli, J. Nordhaus, L. Chamandy, Z. Chen, E. G. Blackman, A. Frank, J. Carroll-Nellenback, and B. Liu, “Hydrodynamic Simulations of Disrupted Planetary Accretion Discs Inside the Core of an AGB Star,” *Mon. Not. R. Astron. Soc.* **490**, 1179 (2019).
- D. Haberberger, A. Shvydky, V. N. Goncharov, D. Cao, J. Carroll-Nellenback, S. X. Hu, S. T. Ivancic, V. V. Karasiev, J. P. Knauer, A. V. Maximov, and D. H. Froula, “Plasma Density Measurements of the Inner Shell Release,” *Phys. Rev. Lett.* **123**, 235001 (2019).
- B. M. Haines, D. E. Keller, J. A. Marozas, P. W. McKenty, K. S. Anderson, T. J. B. Collins, W. W. Dai, M. L. Hall, S. Jones, M. D. McKay Jr., R. M. Rauenzahn, and D. N. Woods, “Coupling Laser Physics to Radiation-Hydrodynamics,” *Comput. Fluids* **201**, 104478 (2020).
- B. M. Haines, R. C. Shah, J. M. Smidt, B. J. Albright, T. Cardenas, M. R. Douglas, C. Forrest, V. Yu. Glebov, M. A. Gunderson, C. E. Hamilton, K. C. Henderson, Y. Kim, M. N. Lee, T. J. Murphy, J. A. Oertel, R. E. Olson, B. M. Patterson, R. B. Randolph, and D. W. Schmidt, “Observation of Persistent Species Temperature Separation in Inertial Confinement Fusion Mixtures,” *Nat. Commun.* **11**, 544 (2020).
- A. M. Hansen, D. Turnbull, J. Katz, and D. H. Froula, “Mitigation of Self-Focusing in Thomson Scattering Experiments,” *Phys. Plasmas* **26**, 103110 (2019).
- E. C. Hansen, J. R. Davies, D. H. Barnak, R. Betti, E. M. Campbell, V. Yu. Glebov, J. P. Knauer, L. S. Leal, J. L. Peebles, A. B. Sefkow, and K. M. Woo, “Neutron Yield Enhancement and Suppression by Magnetization in Laser-Driven Cylindrical Implosions,” *Phys. Plasmas* **27**, 062703 (2020) (invited).
- M. H. Helle, G. DiComo, S. Gregory, A. Mamonau, D. Kaganovich, R. Fischer, J. Palastro, S. Melis, and J. Peñano, “Beating Optical-Turbulence Limits Using High-Peak-Power Lasers,” *Phys. Rev. Appl.* **12**, 054043 (2019).
- J. Hinz, V. V. Karasiev, S. X. Hu, M. Zaghoo, D. Mejía-Rodríguez, S. B. Trickey, and L. Calderín, “Fully Consistent Density Functional Theory Determination of the Insulator-Metal Transition Boundary in Warm Dense Hydrogen,” *Phys. Rev. Res.* **2**, 032065(R) (2020).
- B. N. Hoffman, A. A. Kozlov, N. Liu, H. Huang, J. B. Oliver, A. L. Rigatti, T. J. Kessler, A. A. Shestopalov, and S. G. Demos, “Mechanisms of Picosecond Laser-Induced Damage in Common Multilayer Dielectric Gratings,” *Opt. Express* **28**, 24,928 (2020).
- S. X. Hu, R. Epstein, W. Theobald, H. Xu, H. Huang, V. N. Goncharov, S. P. Regan, P. W. McKenty, R. Betti, E. M. Campbell, and D. S. Montgomery, “Direct-Drive Double-Shell Implosion: A Platform for Burning-Plasma Physics Studies,” *Phys. Rev. E* **100**, 063204 (2019).
- S. X. Hu, V. V. Karasiev, V. Recoules, P. M. Nilson, N. Brouwer, and M. Torrent, “Interspecies Radiative Transition in Warm and Superdense Plasma Mixtures,” *Nat. Commun.* **11**, 1989 (2020).
- K. D. Humbird, J. L. Peterson, B. K. Spears, and R. G. McClarren, “Transfer Learning to Model Inertial Confinement Fusion Experiments,” *IEEE Trans. Plasma Sci.* **48**, 61 (2020).
- V. V. Ivanov, A. V. Maximov, A. L. Astanovitskiy, I. A. Begishev, R. Betti, J. R. Davies, C. Mileham, J. D. Moody, C. Stoeckl, K. J. Swanson, N. L. Wong, and J. Bromage, “Study of Laser-Driven Magnetic Fields with a Continuous Wave Faraday Rotation Diagnostic,” *Phys. Plasmas* **27**, 033102 (2020).
- A. Kar, S. X. Hu, G. Duchateau, J. Carroll-Nellenback, and P. B. Radha, “Implementing a Microphysics Model in Hydro-

dynamic Simulations to Study the Initial Plasma Formation in Dielectric Ablator Materials for Direct-Drive Implosions,” *Phys. Rev. E* **101**, 063202 (2020).

P. R. C. Kent, A. Annaberdiyev, A. Benali, M. C. Bennett, E. J. L. Borda, P. Doak, H. Hao, K. D. Jordan, J. T. Krogel, I. Kylänpää, J. Lee, Y. Luo, F. D. Malone, C. A. Melton, L. Mitas, M. A. Morales, E. Neuscamman, F. A. Reboredo, B. Rubenstein, K. Saritas, S. Upadhyay, G. Wang, S. Zhang, and L. Zhao, “QMCPACK: Advances in the Development, Efficiency, and Application of Auxiliary Field and Real-Space Variational and Diffusion Quantum Monte Carlo,” *J. Chem. Phys.* **152**, 174105 (2020).

T. Z. Kosc, H. Huang, T. J. Kessler, A. Maltsev, and S. G. Demos, “Measurement of the Angular Dependence of the Spontaneous Raman Scattering in Anisotropic Crystalline Materials Using Spherical Samples: Potassium Dihydrogen Phosphate as a Case Example,” *Rev. Sci. Instrum.* **91**, 015101 (2020).

T. Z. Kosc, A. A. Kozlov, S. Papernov, K. R. P. Kafka, K. L. Marshall, and S. G. Demos, “Investigation of Parameters Governing Damage Resistance of Nematic Liquid Crystals for High-Power or Peak-Intensity Laser Applications,” *Sci. Rep.* **9**, 16435 (2019).

N. S. Krasheninnikova, M. J. Schmitt, K. Molvig, S. C. Hsu, B. S. Scheiner, D. W. Schmidt, V. Geppert-Kleinrath, P. W. McKenty, D. T. Michel, D. H. Edgell, F. J. Marshall, and H. Huang, “Development of a Directly Driven Multi-Shell Platform: Laser Drive Energetics,” *Phys. Plasmas* **27**, 022706 (2020).

A. L. Kritcher, D. C. Swift, T. Döppner, B. Bachmann, L. X. Benedict, G. W. Collins, J. L. DuBois, F. Elsner, G. Fontaine, J. A. Gaffney, S. Hamel, A. Lazicki, W. R. Johnson, N. Kostinski, D. Kraus, M. J. MacDonald, B. Maddox, M. E. Martin, P. Neumayer, A. Nikroo, J. Nilsen, B. A. Remington, D. Saumon, P. A. Sterne, W. Sweet, A. A. Correa, H. D. Whitley, R. W. Falcone, and S. H. Glenzer, “A Measurement of the Equation of State of Carbon Envelopes of White Dwarfs,” *Nature* **584**, 51 (2020).

B. Lahmann, M. Gatu Johnson, J. A. Frenje, V. Yu. Glebov, H. G. Rinderknecht, F. H. Séguin, G. Sutcliffe, and R. D. Petrasso, “CR-39 Nuclear Track Detector Response to Inertial Confinement Fusion Relevant Ions,” *Rev. Sci. Instrum.* **91**, 053502 (2020).

L. S. Leal, A. V. Maximov, R. Betti, A. B. Sefkow, and V. V. Ivanov, “Modeling Magnetic Confinement of Laser-Generated

Plasma in Cylindrical Geometry Leading to Disk-Shaped Structures,” *Phys. Plasmas* **27**, 022116 (2020).

J. Levesque, C. Kuranz, T. Handy, M. Manuel, and F. Fiuza, “Characterizing Filamentary Magnetic Structures in Counter-Streaming Plasmas by Fourier Analysis of Proton Images,” *Phys. Plasmas* **26**, 102303 (2019).

J. Li, S. Zhang, C. M. Krauland, H. Wen, F. N. Beg, C. Ren, and M. S. Wei, “Pump Depletion and Hot-Electron Generation in Long-Density-Scale-Length Plasma with Shock-Ignition High-Intensity Laser,” *Phys. Rev. E* **101**, 033206 (2020).

Y. Lu, S. Li, H. Li, K. A. Flippo, D. Barnak, A. Birkel, B. Lahmann, C. K. Li, A. M. Rasmus, K. Kelso, A. Zylstra, E. Liang, P. Tzeferacos, and D. Lamb, “Modeling Hydrodynamics, Magnetic Fields, and Synthetic Radiographs for High-Energy-Density Plasma Flows in Shock-Shear Targets,” *Phys. Plasmas* **27**, 012303 (2020).

K. Luo, V. V. Karasiev, and S. B. Trickey, “Towards Accurate Orbital-Free Simulations: A Generalized Gradient Approximation for the Noninteracting Free Energy Density Functional,” *Phys. Rev. B* **101**, 075116 (2020).

S. MacNally, C. Smith, J. Spaulding, J. Foster, and J. B. Oliver, “Glancing-Angle-Deposited Silica Films for Ultraviolet Wave Plates,” *Appl. Opt.* **59**, A155 (2020).

O. M. Mannion, J. P. Knauer, V. Yu. Glebov, C. J. Forrest, A. Liu, Z. L. Mohamed, M. H. Romanofsky, T. C. Sangster, C. Stoeckl, and S. P. Regan, “A Suite of Neutron Time-of-Flight Detectors to Measure Hot-Spot Motion in Direct-Drive Inertial Confinement Fusion Experiments on OMEGA,” *Nucl. Instrum. Methods Phys. Res. A* **964**, 163774 (2020).

A. V. Maximov, J. G. Shaw, and J. P. Palastro, “Nonlinear Transmission of Laser Light Through Coronal Plasma Due to Self-Induced Incoherence,” *Phys. Rev. E* **102**, 023205 (2020).

D. I. Mihaylov, V. V. Karasiev, and S. X. Hu, “Thermal Hybrid Exchange-Correlation Density Functional for Improving the Description of Warm Dense Matter,” *Phys. Rev. B* **101**, 245141 (2020).

A. L. Milder, H. P. Le, M. Sherlock, P. Franke, J. Katz, S. T. Ivancic, J. L. Shaw, J. P. Palastro, A. M. Hansen, I. A. Begishev, W. Rozmus, and D. H. Froula, “Evolution of the Electron Distribution Function in the Presence of Inverse Bremsstrahlung

- Heating and Collisional Ionization,” *Phys. Rev. Lett.* **124**, 025001 (2020).
- M. Millot, S. Zhang, D. E. Fratanduono, F. Coppari, S. Hamel, B. Militzer, D. Simonova, S. Shcheka, N. Dubrovinskaia, L. Dubrovinsky, and J. H. Eggert, “Recreating Giants Impacts in the Laboratory: Shock Compression of MgSiO<sub>3</sub> Bridgmanite to 14 Mbar,” *Geophys. Res. Lett.* **47**, e2019GL085476 (2020).
- J. F. Myatt, J. G. Shaw, R. K. Follett, D. H. Edgell, D. H. Froula, J. P. Palastro, and V. N. Goncharov, “LPSE: A 3-D Based Model of Cross-Beam Energy Transfer in Laser-Irradiated Plasmas,” *J. Comp. Phys.* **399**, 108916 (2019).
- J. M. Ngoko Djiokap, A. V. Meremianin, N. L. Manakov, L. B. Madsen, S. X. Hu, and A. F. Starace, “Molecular Symmetry-Mixed Dichroism in Double Photoionization of H<sub>2</sub>,” *Phys. Rev. Lett.* **123**, 143202 (2019).
- J. Nilsen, A. L. Kritcher, M. E. Martin, R. E. Tipton, H. D. Whitley, D. C. Swift, T. Döppner, B. L. Bachmann, A. E. Lazicki, N. B. Kostinski, B. R. Maddox, G. W. Collins, S. H. Glenzer, and R. W. Falcone, “Understanding the Effects of Radiative Preheat and Self-Emission from Shock Heating on Equation of State Measurement at 100s of Mbar Using Spherically Converging Shock Waves in a NIF Hohlraum,” *Matter Radiat. Extremes* **5**, 018401 (2020).
- J. B. Oliver, A. L. Rigatti, T. Noll, J. Spaulding, J. Hettrick, V. Gruschow, G. Mitchell, D. Sadowski, C. Smith, and B. Charles, “Large-Aperture Coatings for Fusion-Class Laser Systems,” *Appl. Opt.* **59**, A7 (2020).
- J. B. Oliver, J. Spaulding, and B. Charles, “Stress Compensation by Deposition of a Nonuniform Corrective Coating,” *Appl. Opt.* **59**, A54 (2020).
- J. P. Palastro, J. L. Shaw, P. Franke, D. Ramsey, T. T. Simpson, and D. H. Froula, “Dephasingless Laser Wakefield Acceleration,” *Phys. Rev. Lett.* **124**, 134802 (2020).
- C. E. Parker, J. A. Frenje, O. H. W. Siegmund, C. J. Forrest, V. Yu. Glebov, J. D. Kendrick, C. W. Wink, M. Gatu Johnson, T. J. Hilsabeck, S. T. Ivancic, J. Katz, J. D. Kilkenny, B. Lahmann, C. K. Li, F. H. Séguin, C. M. Sorce, C. Trosseille, and R. D. Petrasso, “Response of a Lead-Free Borosilicate-Glass Microchannel Plate to 14-MeV Neutrons and  $\gamma$ -Rays,” *Rev. Sci. Instrum.* **90**, 103306 (2019).
- P. K. Patel, P. T. Springer, C. R. Weber, L. C. Jarrott, O. A. Hurricane, B. Bachmann, K. L. Baker, L. F. Berzak Hopkins, D. A. Callahan, D. T. Casey, C. J. Cerjan, D. S. Clark, E. L. Dewald, L. Divol, T. Döppner, J. E. Field, D. Fittinghoff, J. Gaffney, V. Geppert-Kleinrath, G. P. Grim, E. P. Hartouni, R. Hatarik, D. E. Hinkel, M. Hohenberger, K. Humbird, N. Izumi, O. S. Jones, S. F. Khan, A. L. Kritcher, M. Kruse, O. L. Landen, S. Le Pape, T. Ma, S. A. MacLaren, A. G. MacPhee, L. P. Masse, N. B. Meezan, J. L. Milovich, R. Nora, A. Pak, J. L. Peterson, J. Ralph, H. F. Robey, J. D. Salmonson, V. A. Smalyuk, B. K. Spears, C. A. Thomas, P. L. Volegov, A. Zylstra, and M. J. Edwards, “Hotspot Conditions Achieved in Inertial Confinement Fusion Experiments on the National Ignition Facility,” *Phys. Plasmas* **27**, 050901 (2020).
- R. Paul, S. X. Hu, and V. V. Karasiev, “Crystalline Phase Transitions and Vibrational Spectra of Silicon up to Multiterapascal Pressures,” *Phys. Rev. B* **100**, 144101 (2019).
- R. Paul, S. X. Hu, V. V. Karasiev, S. A. Bonev, and D. N. Polsin, “Thermal Effects on the Electronic Properties of Sodium Electride Under High Pressures,” *Phys. Rev. B* **102**, 094103 (2020).
- J. L. Peebles, J. R. Davies, D. H. Barnak, T. Cracium, M. J. Bonino, and R. Betti, “Axial Proton Probing of Magnetic and Electric Fields Inside Laser-Driven Coils,” *Phys. Plasmas* **27**, 063109 (2020).
- A. Pineau, B. Chimier, S. X. Hu, and G. Duchateau, “Modeling the Electron Collision Frequency During Solid-to-Plasma Transition of Polystyrene Ablator for Direct-Drive Inertial Confinement Fusion Applications,” *Phys. Plasmas* **27**, 092703 (2020).
- H. G. Rinderknecht, D. T. Casey, R. Hatarik, R. M. Bionta, B. J. MacGowan, P. Patel, O. L. Landen, E. P. Hartouni, and O. A. Hurricane, “Azimuthal Drive Asymmetry in Inertial Confinement Fusion Implosions on the National Ignition Facility,” *Phys. Rev. Lett.* **124**, 145002 (2020).
- M. J. Rosenberg, A. A. Solodov, W. Seka, R. K. Follett, J. F. Myatt, A. V. Maximov, C. Ren, S. Cao, P. Michel, M. Hohenberger, J. P. Palastro, C. Goyon, T. Chapman, J. E. Ralph, J. D. Moody, R. H. H. Scott, K. Glize, and S. P. Regan, “Stimulated Raman Scattering Mechanisms and Scaling Behavior in Planar Direct-Drive Experiments at the National Ignition Facility,” *Phys. Plasmas* **27**, 042705 (2020).
- J. J. Ruby, J. R. Rygg, J. A. Gaffney, B. Bachmann, and G. W. Collins, “A Boundary Condition for Guderley’s Converging Shock Problem,” *Phys. Fluids* **31**, 126104 (2019).

- J. R. Rygg, R. F. Smith, A. E. Lazicki, D. G. Braun, D. E. Fratanduono, R. G. Kraus, J. M. McNaney, D. C. Swift, C. E. Wehrenberg, F. Coppari, M. F. Ahmed, M. A. Barrios, K. J. M. Blobaum, G. W. Collins, A. L. Cook, P. Di Nicola, E. G. Dzenitis, S. Gonzales, B. F. Heidl, M. Hohenberger, A. House, N. Izumi, D. H. Kalantar, S. F. Khan, T. R. Kohut, C. Kumar, N. D. Masters, D. N. Polsin, S. P. Regan, C. A. Smith, R. M. Vignes, M. A. Wall, J. Ward, J. S. Wark, T. L. Zobrist, A. Arsenlis, and J. H. Eggert, "X-Ray Diffraction at the National Ignition Facility," *Rev. Sci. Instrum.* **91**, 043902 (2020).
- E. M. Schiesser, S.-W. Bahk, J. Bromage, and J. P. Rolland, "Design and Alignment of an All-Spherical Unobscured Four-Mirror Image Relay for an Ultra-Broadband Sub-Petawatt Laser," *Appl. Opt.* **58**, 9514 (2019).
- E. M. Schiesser, A. Bauer, and J. P. Rolland, "Effect of Freeform Surfaces on the Volume and Performance of Unobscured Three Mirror Imagers in Comparison with Off-Axis Rotationally Symmetric Polynomials," *Opt. Express* **27**, 21750 (2019).
- E. M. Schiesser, A. Bauer, and J. P. Rolland "Estimating Field-Dependent Nodal Aberration Theory Coefficients from Zernike Full-Field Displays by Utilizing Eight-Order Astigmatism," *J. Opt. Soc. Am. A* **36**, 2115 (2019).
- M. Sharpe, C. Fagan, and W. T. Shmayda, "Distribution of Tritium in the Near Surface of Type 316 Stainless Steel," *Fusion Sci. Technol.* **75**, 1053 (2019).
- M. Sharpe, W. T. Shmayda, and K. Glance, "Measurement of Palladium Hydride and Palladium Deuteride Isotherms Between 130 K and 393 K," *Fusion Sci. Technol.* **76**, 642 (2002).
- W. T. Shmayda, C. R. Shmayda, and G. Torres, "Tritium Extraction from Water," *Fusion Sci. Technol.* **75**, 1030 (2019).
- R. W. Short, "Absolute Stimulated Raman Side Scatter in Direct-Drive Laser-Produced Plasmas," *Phys. Plasmas* **27**, 042703 (2020).
- D. B. Sinars, M. A. Sweeney, C. S. Alexander, D. J. Ampleford, T. Ao, J. P. Apruzese, C. Aragon, D. J. Armstrong, K. N. Austin, T. J. Awe, A. D. Baczewski, J. E. Bailey, K. L. Baker, C. R. Ball, H. T. Barclay, S. Beatty, K. Beckwith, K. S. Bell, J. F. Benage, Jr., N. L. Bennett, K. Blaha, D. E. Bliss, J. J. Boerner, C. J. Bourdon, B. A. Branch, J. L. Brown, E. M. Campbell, R. B. Campbell, D. G. Chacon, G. A. Chandler, K. Chandler, P. J. Christenson, M. D. Christison, E. B. Christner, R. C. Clay III, K. R. Cochrane, A. P. Colombo, B. M. Cook, C. A. Coverdale, M. E. Cuneo, J. S. Custer, A. Dasgupta, J.-P. Davis, M. P. Desjarlais, D. H. Dolan III, J. D. Douglass, G. S. Dunham, S. Duwal, A. D. Edens, M. J. Edwards, E. G. Evstatiev, B. G. Farfan, J. R. Fein, E. S. Field, J. A. Fisher, T. M. Flanagan, D. G. Flicker, M. D. Furnish, B. R. Galloway, P. D. Gard, T. A. Gardiner, M. Geissel, J. L. Giuliani, M. E. Glinksy, M. R. Gomez, G. P. Grim, K. D. Hahn, T. A. Haill, N. D. Hamlin, J. H. Hammer, S. B. Hansen, H. L. Hanshaw, E. C. Harding, A. J. Harvey-Thompson, D. Headley, M. C. Herrmann, M. H. Hess, C. Highstrete, O. A. Hurricane, B. T. Hutsel, C. A. Jennings, O. M. Johns, D. Johnson, M. D. Johnston, B. M. Jones, M. C. Jones, P. A. Jones, P. E. Kalita, R. J. Kamm, J. W. Kellogg, M. L. Kiefer, M. W. Kimmel, P. F. Knapp, M. D. Knudson, A. Kreft, G. R. Laity, P. W. Lake, D. C. Lampa, W. L. Langston, J. S. Lash, K. R. LeChien, J. J. Leckbee, R. J. Leeper, G. T. Leifeste, R. W. Lemke, W. Lewis, S. A. Lewis, G. P. Loisel, Q. M. Looker, A. J. Lopez, D. J. Lucero, S. A. MacLaren, R. J. Magyar, M. A. Mangan, M. R. Martin, T. R. Mattsson, M. K. Matzen, A. J. Maurer, M. G. Mazarakis, R. D. McBride, H. S. McLean, C. A. McCoy, G. R. McKee, J. L. McKenney, A. R. Miles, J. A. Mills, M. D. Mitchell, N. W. Moore, C. E. Myers, T. Nagayama, G. Natoni, A. C. Owen, S. Patel, K. J. Peterson, T. D. Pointon, J. L. Porter, A. J. Porwitzky, S. Radovich, K. S. Raman, P. K. Rambo, W. D. Reinhart, G. K. Robertson, G. A. Rochau, S. Root, D. V. Rose, D. C. Rovang, C. L. Ruiz, D. E. Ruiz, D. Sandoval, M. E. Savage, M. E. Sceiford, M. A. Schaeuble, P. F. Schmit, M. S. Schollmeier, J. Schwarz, C. T. Seagle, A. B. Sefkow, D. B. Seidel, G. A. Shipley, J. Shores, L. Shulenburg, S. C. Simpson, S. A. Slutz, I. C. Smith, C. S. Speas, P. E. Specht, M. J. Speir, D. C. Spencer, P. T. Springer, A. M. Steiner, B. S. Stolfus, W. A. Stygar, J. Ward Thornhill, J. A. Torres, J. P. Townsend, C. Tyler, R. A. Vesey, P. E. Wakeland, T. J. Webb, E. A. Weinbrecht, M. R. Weis, D. R. Welch, J. L. Wise, M. Wu, D. A. Yager-Elorriaga, A. Yu, and E. P. Yu, "Review of Pulsed Power-Driven High Energy Density Physics Research on Z at Sandia," *Phys. Plasmas* **27**, 070501 (2020).
- V. A. Smalyuk, C. R. Weber, O. L. Landen, S. Ali, B. Bachmann, P. M. Celliers, E. L. Dewald, A. Fernandez, B. A. Hammel, G. Hall, A. G. MacPhee, L. Pickworth, H. F. Robey, N. Alfonso, K. L. Baker, L. F. Berzak Hopkins, L. Carlson, D. T. Casey, D. S. Clark, J. Crippen, L. Divol, T. Döppner, M. J. Edwards, M. Farrell, S. Felker, J. E. Field, S. W. Haan, A. V. Hamza, M. Havre, M. C. Herrmann, W. W. Hsing, S. Khan, J. Kline, J. J. Kroll, S. LePape, E. Loomis, B. J. MacGowan, D. Martinez, L. Masse, M. Mauldin, J. L. Milovich, A. S. Moore, A. Nikroo, A. Pak, P. K. Patel, J. L. Peterson, K. Raman, B. A. Remington,

- N. Rice, M. Schoff, and M. Stadermann, “Review of Hydrodynamic Instability Experiments in Inertially Confined Fusion Implosions on National Ignition Facility,” *Plasma Phys. Control. Fusion* **62**, 014007 (2020).
- C. Smith, S. MacNally, and J. B. Oliver, “Ellipsometric Modeling of Serially Bi-Deposited Glancing-Angle-Deposition Coatings,” *Appl. Opt.* **59**, A26 (2020).
- A. A. Solodov, M. J. Rosenberg, W. Seka, J. F. Myatt, M. Hohenberger, R. Epstein, C. Stoeckl, R. W. Short, S. P. Regan, P. Michel, T. Chapman, R. K. Follett, J. P. Palastro, D. H. Froula, P. B. Radha, J. D. Moody, and V. N. Goncharov, “Hot-Electron Generation at Direct-Drive Ignition-Relevant Plasma Conditions at the National Ignition Facility,” *Phys. Plasmas* **27**, 052706 (2020).
- F. Soubiran, F. González-Cataldo, K. P. Driver, S. Zhang, and B. Militzer, “Magnesium Oxide at Extreme Temperatures and Pressures Studied with First-Principles Simulations,” *J. Chem. Phys.* **151**, 214104 (2019).
- R. B. Spielman and A. B. Sefkow, “Modeling Variable-Impedance, Magnetically Insulated, Transmission Lines,” in *2019 IEEE Pulsed Power & Plasma Science (PPPS)* (IEEE, Piscataway, NJ, 2020).
- G. F. Swadling, C. Bruulsema, F. Fiuza, D. P. Higginson, C. M. Huntington, H.S. Park, B. B. Pollock, W. Rozmus, H. G. Rinderknecht, J. Katz, A. Birkel, and J. S. Ross, “Measurement of Kinetic-Scale Current Filamentation Dynamics and Associated Magnetic Fields in Interpenetrating Plasmas,” *Phys. Rev. Lett.* **124**, 215001 (2020).
- L. L. Taylor, J. Xu, M. Pomerantz, T. R. Smith, J. C. Lambropoulos, and J. Qiao, “Femtosecond Laser Polishing of Germanium,” *Opt. Mater. Express* **9**, 4165 (2019) (invited).
- W. Theobald, C. Sorce, W. R. Donaldson, R. Epstein, R. L. Keck, C. Kellogg, T. J. Kessler, J. Kwiatkowski, F. J. Marshall, S. Sampat, W. Seka, R. C. Shah, A. Shvydky, C. Stoeckl, L. J. Waxer, and S. P. Regan, “Inferred UV Fluence Focal-Spot Profiles from Soft X-Ray Pinhole-Camera Measurements on OMEGA,” *Rev. Sci. Instrum.* **91**, 023505 (2020).
- S. Tochitsky, A. Pak, F. Fiuza, D. Haberberger, N. Lemos, A. Link, D. H. Froula, and C. Joshi, “Laser-Driven Collisionless Shock Acceleration of Ions from Near-Critical Plasmas,” *Phys. Plasmas* **27**, 083102 (2020).
- D. Turnbull, A. Colaïtis, A. M. Hansen, A. L. Milder, J. P. Palastro, J. Katz, C. Dorrer, B. E. Kruschwitz, D. J. Strozzi, and D. H. Froula, “Impact of the Langdon Effect on Crossed-Beam Energy Transfer,” *Nat. Phys.* **16**, 181 (2020).
- D. Turnbull, A. V. Maximov, D. H. Edgell, W. Seka, R. K. Follett, J. P. Palastro, D. Cao, V. N. Goncharov, C. Stoeckl, and D. H. Froula, “Anomalous Absorption by the Two-Plasmon Decay Instability,” *Phys. Rev. Lett.* **124**, 185001 (2020).
- M. P. Valdivia, D. Stutman, C. Stoeckl, C. Mileham, J. Zou, S. Muller, K. Kaiser, C. Sorce, P. A. Keitner, J. R. Fein, M. Trantham, R. P. Drake, and S. P. Regan, “Implementation of a Talbot–Lau X-Ray Deflectometer Diagnostic Platform for the OMEGA EP Laser,” *Rev. Sci. Instrum.* **91**, 023511 (2020).
- T. Walton, J. L. Sebold, I. E. Golovkin, J. J. MacFarlane, V. N. Golovkina, A. A. Solodov, P. M. Nilson, and R. Epstein, “Parameterizing Hot Electron Energy Distributions for Tabular Emissivities and Opacities,” *High Energy Density Phys.* **35**, 100730 (2020).
- H. Wen, A. V. Maximov, R. Yan, J. Li, C. Ren, and F. S. Tsung, “Three-Dimensional Particle-in-Cell Modeling of Parametric Instabilities Near the Quarter-Critical Density in Plasmas,” *Phys. Rev. E* **100**, 041201(R) (2019).
- K. Werner, V. Gruzdev, N. Talisa, K. Kafka, D. Austin, C. M. Liebig, and E. Chowdhury, “Single-Shot Multi-Stage Damage and Ablation of Silicon by Femtosecond Mid-infrared Laser Pulses,” *Sci. Rep.* **9**, 19993 (2019).
- K. M. Woo, R. Betti, O. M. Mannion, C. J. Forrest, J. P. Knauer, V. N. Goncharov, P. B. Radha, D. Patel, V. Gopalaswamy, and V. Yu. Glebov, “Inferring Thermal Ion Temperature and Residual Kinetic Energy from Nuclear Measurements in Inertial Confinement Fusion Implosions,” *Phys. Plasmas* **27**, 062702 (2020) (invited).
- J. Zhang, R. Wei, M. ElKabbash, E. M. Campbell, and C. Guo, “Thin-Film Perfect Infrared Absorbers over Single- and Dual-Band Atmospheric Windows,” *Opt. Lett.* **45**, 2800 (2020).
- S. Zhang and S. X. Hu, “Species Separation and Hydrogen Streaming upon Shock Release from Polystyrene Under Inertial Confinement Fusion Conditions,” *Phys. Rev. Lett.* **125**, 105001 (2020).
- S. Zhang, C. M. Krauland, J. Peebles, J. Li, F. N. Beg, N. Alexander, W. Theobald, R. Betti, D. Haberberger, E. M.

Campbell, R. Yan, E. Borwick, C. Ren, and M. S. Wei, “Experimental Study of Hot Electron Generation in Shock Ignition Relevant High-Intensity Regime with Large Scale Hot Plasmas,” *Phys. Plasmas* **27**, 023111 (2020).

Y. Zhao and W. R. Donaldson, “Ultrafast UV AlGaIn Metal–Semiconductor–Metal Photodetector with a Response Time Below 25 ps,” *IEEE J. Quantum Electron.* **56**, 4000607 (2020).

A. B. Zylstra, R. S. Craxton, J. R. Rygg, C.-K. Li, L. Carlson, M. J.-E. Manuel, E. L. Alfonso, M. Mauldin, L. Gonzalez, K. Youngblood, E. M. Garcia, L. T. Browning, S. Le Pape, N. Candeias Lemos, B. Lahmann, M. Gatu Johnson, H. Sio, and N. Kabadi, “Saturn-Ring Proton Backlighters for the National Ignition Facility,” *Rev. Sci. Instrum.* **91**, 093505 (2020).

A. B. Zylstra, H. W. Herrmann, Y. H. Kim, A. McEvoy, J. A. Frenje, M. Gatu Johnson, R. D. Petrasso, V. Yu. Glebov,

C. Forrest, J. Delettrez, S. Gales, and M. Rubery, “ ${}^2\text{H}(p,\gamma){}^3\text{He}$  Cross Section Measurement Using High-Energy-Density Plasmas,” *Phys. Rev. C* **101**, 042802(R) (2020).

A. B. Zylstra, H. W. Herrmann, Y. H. Kim, A. McEvoy, K. Meaney, V. Yu. Glebov, C. Forrest, and M. Rubery, “Improved Calibration of the OMEGA Gas Cherenkov Detector,” *Rev. Sci. Instrum.* **90**, 123504 (2019).

A. B. Zylstra, H. G. Rinderknecht, J. A. Frenje, C. K. Li, and R. D. Petrasso, “Modified Parameterization of the Li-Petrasso Charged-Particle Stopping Power Theory,” *Phys. Plasmas* **26**, 122703 (2019).

A. B. Zylstra, J. R. Rygg, G. W. Collins, C. K. Li, J. A. Frenje, R. D. Petrasso, S. R. Nagel, P. Fitzsimmons, and H. Reynolds, “Platform Development for  $dE/dx$  Measurements on Short-Pulse Laser Facilities,” *High Energy Density Phys.* **35**, 100731 (2020).

### Conference Presentations

W. Theobald, “Review of the LLE-CELIA Shock-Ignition Collaboration over the Last Ten Years,” presented at the CELIA Anniversary, Talence, France, 1 October 2019.

C. Dorrer and S.-W. Bahk, “Characterization of Spatiotemporal Coupling with Multispectral Hartmann Wavefront Sensor,” presented at Ultrafast Optics XII, Bol, Croatia, 6–11 October 2019.

M. S. Wei, J. D. Zuegel, H. G. Rinderknecht, J. Bromage, P. M. Nilson, S. X. Hu, D. H. Froula, F. Albert, B. M. Hegelich, M. Roth, and E. M. Campbell, “EP OPAL: A Multibeam Ultrahigh-Intensity Laser User Facility for New Frontiers in High-Energy-Density and Relativistic Physics,” presented at the First ELI-NP User Workshop, Magurele, Romania, 7–11 October 2019.

M. S. Wei, “LaserNetUS,” presented at Laserlab Conference, Florence, Italy, 11 October 2019.

C. J. Forrest, V. Yu. Glebov, J. P. Knauer, O. M. Mannion, Z. Mohamed, P. B. Radha, S. P. Regan, T. C. Sangster, A. Schwemmlin, C. Stoeckl, W. U. Schröder, and G. M. Hale, “Inelastic Reaction of 14-MeV Neutrons with  ${}^7\text{Li}$ ,” presented at APS Division of Nuclear Physics Fall Meeting, Arlington, VA, 14–17 October 2019.

The following presentations were made at the 61st Meeting of the American Physical Society Division of Plasma Physics, Fort Lauderdale, FL, 21–25 October 2019:

K. S. Anderson, J. A. Marozas, D. Cao, C. J. Forrest, O. M. Mannion, R. C. Shah, P. B. Radha, F. J. Marshall, T. J. B. Collins, J. P. Knauer, V. N. Goncharov, and M. Gatu Johnson, “Cross-Beam Energy Transfer in Offset Implosions on OMEGA.”

Z. Barfield, D. H. Froula, and J. L. Peebles, “The Study of Thermal Transport in Magnetized Laser-Produced Plasmas.”

D. Barnak, K. Flippo, C. Kawaguchi, K. Kelso, H. Li, S. Li, E. Loomis, Y. Lu, N. Vazirani, A. Birkel, B. Lahmann, and C. K. Li, “Impact of Self-Generated B-Fields on High-Energy-Density Experiments.”



- G. Bruhaug, H. G. Rinderknecht, M. S. Wei, G. W. Collins, J. R. Rygg, and J. L. Shaw, “An Investigation of Monoenergetic Electron Beams for High-Energy-Density and Inertial Confinement Fusion Diagnostics.”
- D. Cao, D. Patel, M. J. Rosenberg, W. Theobald, C. Stoeckl, A. R. Christopherson, I. V. Igumenshchev, V. Gopalaswamy, S. P. Regan, C. Thomas, P. B. Radha, R. Betti, and V. N. Goncharov, “Implosion Designs Varying Hot-Electron Production for Direct-Drive Inertial Confinement Fusion Implosions on OMEGA.”
- A. R. Christopherson, R. Betti, W. Theobald, C. J. Forrest, M. Wei, E. M. Campbell, J. Howard, M. J. Rosenberg, A. A. Solodov, D. Patel, J. A. Delettrez, C. Stoeckl, D. Edgell, W. Seka, V. Yu. Glebov, A. K. Davis, J. L. Peebles, A. V. Maximov, R. Simpson, M. Gatu Johnson, W. Scullin, V. Gopalaswamy, D. Cao, V. N. Goncharov, P. B. Radha, S. P. Regan, and R. Epstein, “Direct Measurements of Hot-Electron Preheat in the Dense Fuel of Inertial Confinement Fusion Implosions” (invited).
- T. J. B. Collins, C. Stoeckl, R. Epstein, S. Miller, J. A. Marozas, K. S. Anderson, D. Cao, O. M. Mannion, R. Betti, J. A. Delettrez, W. A. Bittle, C. J. Forrest, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, I. V. Igumenshchev, D. W. Jacobs-Perkins, R. T. Janezic, J. H. Kelly, T. Z. Kosc, C. Mileham, D. T. Michel, R. L. McCrory, P. W. McKenty, F. J. Marshall, S. F. B. Morse, P. B. Radha, S. P. Regan, B. Rice, T. C. Sangster, M. J. Shoup III, W. T. Shmayda, C. Sorce, W. Theobald, J. Ulreich, M. D. Wittman, J. A. Frenje, M. Gatu Johnson, and R. D. Petrasso, “Mixing at the Fuel-Ablator Interface in Backlit OMEGA Cryogenic Implosions.”
- R. S. Craxton, A. Sharma, Y. Yang, R. F. Heeter, Y. P. Opachich, T. Cardenas, H. M. Johns, and T. S. Perry, “Simulations of Double Cone-in-Shell Implosions for an X-Ray Backlighting Source at the National Ignition Facility.”
- J. R. Davies, D. H. Barnak, R. Betti, T. Cracium, and J. L. Peebles, “Current Transients in Laser-Driven Coils.”
- D. H. Edgell, R. E. Bahr, J. Katz, and D. H. Froula, “Absorption and Scattered-Light Asymmetry in OMEGA Implosions.”
- R. Epstein, C. Stoeckl, P. B. Radha, T. J. B. Collins, D. Cao, R. C. Shah, D. Cliche, and R. C. Mancini, “Self-Radiography of Imploded Shells on OMEGA Based on Additive-Free Multi-Monochromatic Continuum Spectral Analysis.”
- R. K. Follett, J. G. Shaw, D. H. Edgell, D. H. Froula, C. Dorrer, J. Bromage, E. M. Hill, T. J. Kessler, A. V. Maximov, A. A. Solodov, E. M. Campbell, J. P. Palastro, J. F. Myatt, J. W. Bates, and J. L. Weaver, “Broadband Mitigation of Laser-Plasma Instabilities.”
- P. Franke, J. P. Palastro, D. Turnbull, and D. H. Froula, “Frequency Conversion of Laser Pulses Reflected from Ionization Waves of Arbitrary Velocity.”
- D. H. Froula, C. Dorrer, E. M. Hill, J. Bromage, T. J. Kessler, J. D. Zuegel, R. K. Follett, L. Nguyen, A. A. Solodov, J. P. Palastro, D. Turnbull, D. H. Edgell, J. G. Shaw, A. M. Hansen, A. L. Milder, J. Katz, R. Boni, V. N. Goncharov, M. Sherlock, H. Le, D. Strozzi, P. Michel, L. Divol, J. F. Myatt, W. Rozmus, J. W. Bates, A. Schmitt, J. Weaver, A. Colaritis, L. Yin, and B. Albright, “Fourth-Generation Laser for Ultra-Broadband Experiments—Expanding the ICF Design Space Through Mitigation of Laser Plasma Instabilities.”
- F. Garcia-Rubio, R. Betti, H. Aluie, and J. Sanz, “The Effect of Self-Generated Magnetic Fields on Ablative Rayleigh–Taylor Instability Dynamics.”
- V. Yu. Glebov, C. J. Forrest, J. P. Knauer, O. M. Mannion, S. P. Regan, M. H. Romanofsky, T. C. Sangster, and C. Stoeckl, “New Fast Neutron Time-of-Flight Detectors with Subnanosecond Instrument Response Function for DT Implosions on OMEGA.”
- V. N. Goncharov, S. C. Miller, and P. B. Radha, “A Survey of Different Perturbation Amplification Mechanisms in the Early Stages of Inertial Confinement Fusion Implosions.”
- V. Gopalaswamy, R. Betti, J. P. Knauer, A. Lees, D. Patel, A. R. Christopherson, K. M. Woo, O. M. Mannion, Z. L. Mohamed, F. J. Marshall, C. Stoeckl, V. Yu. Glebov, S. P. Regan, R. C. Shah, D. H. Edgell, D. Cao, V. N. Goncharov, I. V. Igumenshchev, P. B. Radha, T. J. B. Collins, T. C. Sangster, E. M. Campbell, M. Gatu Johnson, R. D. Petrasso, C. K. Li, and J. A. Frenje, “Improved Predictive Models and Further Progress in the Cryogenic Optimization Campaign on OMEGA.”
- D. Haberberger, A. Shvydky, V. N. Goncharov, D. Cao, J. Carroll-Nellenback, S. X. Hu, S. T. Ivancic, V. V. Karasiev, J. P. Knauer, A. V. Maximov, and D. H. Froula, “Density Measurements of the Inner Shell Release.”
- A. M. Hansen, D. Turnbull, R. K. Follett, J. Katz, A. L. Milder, J. P. Palastro, K. L. Nguyen, D. Mastrosimone, D. H.

Froula, L. Yin, and B. Albright, “Cross-Beam Energy Transfer Experiments at High Ion-Acoustic Wave Amplitudes.”

E. C. Hansen, J. R. Davies, D. H. Barnak, R. Betti, E. M. Campbell, V. Yu. Glebov, J. P. Knauer, J. L. Peebles, A. B. Sefkow, and K. M. Woo, “Neutron Yield Enhancement and Suppression by Magnetization in Laser-Driven Cylindrical Implosions” (invited).

J. Hinz, V. V. Karasiev, S. X. Hu, M. Zaghoo, and D. Mejia-Rodriguez, “First Principles Investigation of the Insulator–Metal Transition in Liquid Hydrogen with a Recently Developed Deorbitalized meta-GGA Exchange-Correlation Functional.”

S. X. Hu, R. C. Shah, J. Baltazar, D. Cao, S. P. Regan, V. N. Goncharov, P. B. Radha, J. L. Peebles, W. Theobald, R. Betti, E. M. Campbell, G. Duchateau, A. Casner, and V. T. Tikhonchuk, “Understanding Laser-Imprint Effects on Cryogenic DT Implosions on OMEGA.”

I. V. Igumenshchev, R. Betti, E. M. Campbell, D. Cao, C. J. Forrest, V. N. Goncharov, V. Gopalaswamy, J. P. Knauer, O. M. Mannion, D. Patel, S. P. Regan, R. C. Shah, and A. Shvydky, “Three-Dimensional Hydrodynamic Modeling of OMEGA Direct-Drive Cryogenic Implosions with the Highest Fusion Yield.”

S. T. Ivancic, F. J. Marshall, W. Theobald, C. Sorce, D. Cao, I. V. Igumenshchev, S. P. Regan, R. C. Shah, J. P. Knauer, V. N. Goncharov, R. Betti, and T. C. Sangster, “Three Dimensional Gated Hot-Spot X-Ray Imaging on OMEGA.”

V. V. Ivanov, A. L. Astanovitskiy, N. L. Wong, K. J. Swanson, I. A. Begishev, J. Bromage, J. R. Davies, A. V. Maximov, C. Mileham, and C. Stoeckl, “Study of Laser Driven Magnetic Fields in the Coil Target.”

V. V. Karasiev, S. X. Hu, and L. Calderin, “Systematic *Ab Initio* Calculations of Optical Properties of Silicon for Inertial Confinement Fusion Applications.”

A. Kish, A. B. Sefkow, J. Giuliani, A. Velikovich, S. Zalesak, and A. Schmitt, “Toward Advanced Modeling of Transport in Magnetized Inertial Confinement Fusion Targets.”

J. P. Knauer, R. Betti, V. Gopalaswamy, D. Cao, I. V. Igumenshchev, A. Shvydky, D. Patel, A. Lees, M. J. Bonino, E. M. Campbell, T. J. B. Collins, C. J. Forrest, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, J. A. Marozas, F. J. Marshall,

P. W. McKenty, P. B. Radha, S. P. Regan, T. C. Sangster, C. Stoeckl, M. Gatu Johnson, J. A. Frenje, and R. D. Petrasso, “The Effect of Laser Bandwidth on High-Performance Cryogenic Implosions.”

L. S. Leal, A. V. Maximov, A. B. Sefkow, R. Betti, and V. V. Ivanov, “Three-Dimensional Modeling of Laser–Plasma Confinement in a Strong Magnetic Field.”

A. Lees, R. Betti, J. P. Knauer, V. Gopalaswamy, D. Patel, A. R. Christopherson, K. M. Woo, O. M. Mannion, Z. L. Mohamed, F. J. Marshall, C. Stoeckl, V. Yu. Glebov, S. P. Regan, R. C. Shah, D. H. Edgell, C. Cao, V. N. Goncharov, I. V. Igumenshchev, P. B. Radha, T. J. B. Collins, T. C. Sangster, E. M. Campbell, M. Gatu Johnson, R. D. Petrasso, C. K. Li, and J. A. Frenje, “Toward Optimizing Cryogenic Inertial Confinement Fusion Implosions.”

O. M. Mannion, C. J. Forrest, D. Cao, V. Yu. Glebov, V. N. Goncharov, V. Gopalaswamy, J. P. Knauer, Z. L. Mohamed, S. P. Regan, T. C. Sangster, C. Stoeckl, A. J. Crilly, B. D. Appelbe, and J. P. Chittenden, “Experimental Analysis of nT Kinematic Edge Data on OMEGA.”

J. A. Marozas, P. W. McKenty, T. J. B. Collins, M. J. Rosenberg, P. B. Radha, S. P. Regan, S. Miller, E. M. Campbell, B. E. Blue, L. Divol, W. W. Hsing, G. E. Kemp, C. B. Yeamans, and H. D. Whitley, “NIF Polar-Drive High DT-Yield Exploder-Pusher Designs Modeled Using Pump-Depletion in *DRACO*.”

F. J. Marshall, S. T. Ivancic, C. Mileham, P. M. Nilson, J. J. Ruby, B. S. Schiener, M. J. Schmitt, and C. A. Wilde, “High-Resolution X-Ray Imaging with Fresnel Zone Plates on the University of Rochester’s OMEGA and OMEGA EP Laser Systems.”

A. V. Maximov, D. Turnbull, J. G. Shaw, R. K. Follett, and J. P. Palastro, “Effect of Multi-Beam Two-Plasmon Decay Instability on Cross-Beam Energy Transfer in Plasmas.”

P. W. McKenty, F. J. Marshall, D. R. Harding, R. S. Craxton, M. J. Rosenberg, J. A. Marozas, T. J. B. Collins, P. B. Radha, E. M. Campbell, B. E. Blue, C. B. Yeamans, W. W. Hsing, and M. Farrell, “Evaluation of Ablator-Shell Contouring to Enhance the Performance of NIF Polar-Drive High Yield Source Experiments.”

A. L. Milder, J. Katz, R. Boni, D. Nelson, J. P. Palastro, K. Daub, R. K. Follett, and D. H. Froula, “Measurements of Arbitrary Electron Distribution Functions Using Angularly Resolved Thomson Scattering.”

- S. C. Miller, P. B. Radha, V. N. Goncharov, T. J. B. Collins, J. A. Marozas, and A. Shvydky, "A Study of Internal Perturbation Evolution in Inertial Confinement Fusion Implosions."
- Z. L. Mohamed, C. J. Forrest, J. P. Knauer, R. Simpson, and M. Gatu Johnson, "Observed Variations in Areal Densities as Measured by Detectors Along Multiple Lines of Sight."
- K. L. Nguyen, L. Lin, B. J. Albright, A. M. Hansen, D. H. Froula, D. Turnbull, and J. P. Palastro, "Simulation Study of Nonlinear Saturation of Cross-Beam Energy Transfer in TOP9 Experiments at the Omega Laser Facility."
- P. M. Nilson, I. V. Igumenshchev, R. Betti, D. H. Froula, L. Gao, J. Matteucci, W. Fox, M. G. Haines, and D. D. Meyerhofer, "Magnetic Reconnection in the High-Energy-Density Regime" (invited).
- J. P. Palastro, J. L. Shaw, D. Ramsey, T. T. Simpson, P. Franke, S. T. Ivancic, K. Daub, and D. H. Froula, "Dephasingless Laser Wakefield Acceleration."
- D. Patel, R. Betti, K. M. Woo, V. Gopalaswamy, J. P. Knauer, R. C. Shah, and A. Bose, "Analysis and Reconstruction of Highest-Performing OMEGA DT Layered Implosion Shot 90288."
- R. Paul, S. X. Hu, V. V. Karasiev, and S. A. Bonev, "Temperature-Induced Changes in hP4-Sodium Electride: An *Ab Initio* Study."
- J. L. Peebles, S. X. Hu, W. Theobald, V. N. Goncharov, N. Whiting, E. M. Campbell, T. R. Boehly, S. P. Regan, P. M. Celliers, S. J. Ali, and G. Duchateau, "Measurements of Laser-Imprint-Induced Shock-Velocity Nonuniformities and Laser-Imprint Mitigation."
- D. N. Polsin, G. W. Collins, L. Crandall, X. Gong, R. Saha, M. Huff, G. Tabak, Z. K. Sprowal, T. R. Boehly, M. Zaghoo, J. R. Rygg, P. M. Celliers, D. E. Fratanduono, Y. Ping, J. H. Eggert, D. H. Munro, A. Lazicki, and D. G. Hicks, "X-Ray Diffraction of Double-Shocked Diamond."
- P. B. Radha, M. J. Rosenberg, A. Shvydky, W. Theobald, D. Turnbull, F. J. Marshall, K. S. Anderson, R. Betti, E. M. Campbell, V. N. Goncharov, T. J. B. Collins, R. S. Craxton, J. A. Marozas, P. W. McKenty, S. P. Regan, T. C. Sangster, C. B. Yeaman, B. E. Blue, W. W. Hsing, and R. Scott, "Validating Direct-Drive Implosion Energetics Based on OMEGA and NIF Experiments."
- D. W. Ramsey, D. H. Froula, and J. P. Palastro, "Vacuum Acceleration in a Flying Focus."
- S. P. Regan, O. M. Mannion, C. J. Forrest, J. P. Knauer, R. Betti, E. M. Campbell, D. Cao, V. Yu. Glebov, V. N. Goncharov, S. T. Ivancic, F. J. Marshall, P. B. Radha, T. C. Sangster, R. C. Shah, C. Sorce, C. Stoeckl, and W. Theobald, "Hot-Spot Flow Velocity in Laser-Direct-Drive Inertial Confinement Fusion Implosions."
- H. G. Rinderknecht, C. J. Forrest, J. P. Knauer, W. Theobald, S. P. Regan, R. Simpson, M. Gatu Johnson, and J. A. Frenje, "Hot Spot and Fuel Imaging Using Nuclear Diagnostics on Direct-Drive Cryogenic Implosions at OMEGA."
- M. J. Rosenberg, A. A. Solodov, W. Seka, R. K. Follett, A. V. Maximov, C. Ren, S. Cao, S. P. Regan, P. B. Radha, T. J. B. Collins, D. H. Froula, J. P. Palastro, V. N. Goncharov, J. F. Myatt, P. A. Michel, M. Hohenberger, G. Swadling, J. S. Ross, R. Scott, and K. Glize, "Hot Electron Generation Mechanisms in Ignition-Scale Direct-Drive Coronal Plasmas on the NIF."
- J. J. Ruby, J. R. Rygg, D. A. Chin, C. J. Forrest, V. Yu. Glebov, C. Stoeckl, G. W. Collins, B. Bachmann, J. A. Gaffney, Y. Ping, N. V. Kabadi, and P. Adrian, "Analysis of Self-Emission from Spherical Shock Experiments."
- A. B. Sefkow, J. G. Shaw, J. Carroll-Nellenback, S. Pai, E. G. Blackman, D. Cao, J. R. Davies, R. K. Follett, A. Frank, J. L. Giuliani, M. Haddad, E. C. Hansen, S. B. Hansen, S. X. Hu, A. Kish, M. Lavell, R. L. McCrory, P. W. McKenty, P. M. Nilson, A. Shvydky, R. B. Spielman, A. Tu, A. Velberg, and A. L. Velikovich, "Introduction to TriForce: A Multi-Physics Code for Hybrid Fluid-Kinetic Simulations."
- R. C. Shah, I. V. Igumenshchev, C. J. Forrest, K. A. Bauer, E. M. Campbell, D. Cao, V. N. Goncharov, S. Sampat, and S. P. Regan, "Influence of In-Flight Shape on Stagnation Performance in Direct-Drive Laser Implosion Experiments."
- J. L. Shaw, M. A. Romo-Gonzales, M. M. McKie, J. P. Palastro, D. H. Froula, P. M. King, N. Lemos, G. J. Williams, H. Chen, and F. Albert, "Microcoulomb-Class Self-Modulated Laser Wakefield Accelerator on OMEGA EP" (invited).
- A. Shvydky, D. Haberberger, J. P. Knauer, S. X. Hu, S. T. Ivancic, J. Carroll-Nellenback, D. Cao, I. V. Igumenshchev, V. V. Karasiev, A. V. Maximov, S. P. Regan, P. B. Radha, T. C. Sangster, B. Boni, P. Nilson, V. N. Goncharov, D. H.

Froula, and V. A. Smalyuk, “Analysis of Shock-Release OMEGA EP Experiments.”

T. T. Simpson, D. H. Froula, and J. P. Palastro, “Nonlinear Self-Focusing of Flying Focus Pulses.”

A. A. Solodov, M. J. Rosenberg, A. R. Christopherson, R. Betti, M. Stoeckl, W. Seka, R. Epstein, R. K. Follett, P. B. Radha, S. P. Regan, D. H. Froula, J. P. Palastro, V. N. Goncharov, J. F. Myatt, M. Hohenberger, B. Bachmann, and P. Michel, “Hot-Electron Preheat and Energy Deposition in Direct-Drive Implosion Experiments at the National Ignition Facility.”

C. Stoeckl, T. J. B. Collins, R. Epstein, V. N. Goncharov, R. K. Jungquist, C. Mileham, P. B. Radha, S. P. Regan, T. C. Sangster, and W. Theobald, “Investigating Small-Scale Mix in Direct-Drive Cryogenic DT Implosions with Radiography on OMEGA.”

W. Theobald, D. Cao, R. C. Shah, K. A. Bauer, R. Betti, M. J. Bonino, E. M. Campbell, A. R. Christopherson, T. J. B. Collins, R. S. Craxton, D. H. Edgell, R. Epstein, C. J. Forrest, R. K. Follett, D. H. Froula, V. Yu. Glebov, V. N. Goncharov, V. Gopalaswamy, D. R. Harding, S. X. Hu, I. V. Igumenshchev, S. T. Ivancic, D. W. Jacobs-Perkins, R. T. Janezic, J. H. Kelly, T. J. Kessler, J. P. Knauer, T. Z. Kosc, O. M. Mannion, J. A. Marozas, F. J. Marshall, P. W. McKenty, Z. L. Mohamed, S. F. B. Morse, P. M. Nilson, J. P. Palastro, D. Patel, J. L. Peebles, P. B. Radha, H. G. Rinderknecht, M. J. Rosenberg, S. Sampat, T. C. Sangster, W. Seka, M. J. Shoup III, W. T. Shmayda, A. Shvydky, C. Sorce, C. Stoeckl, C. Thomas, J. Ulreich, M. D. Wittman, S. P. Regan, B. Rice, M. Gatu Johnson, J. A. Frenje, and R. D. Petrasso, “Enhanced Laser Energy Coupling with Small-Spot Distributed Phase Plates (SG5-650) in OMEGA Cryogenic Implosions.”

C. A. Thomas, K. L. Baker, D. T. Casey, M. Hohenberger, A. L. Kritcher, B. K. Spears, S. Khan, R. Nora, T. Woods, J. L. Milovich, R. L. Berger, D. Strozzi, D. D. Ho, D. Clark, B. Bachmann, R. Benedetti, R. Bionta, P. M. Celliers, D. Fittinghoff, G. Grim, R. Hatarik, N. Izumi, G. Kyrala, T. Ma, M. Millot, S. R. Nagel, P. K. Patel, C. B. Yeamans, M. Tabak, M. Gatu Johnson, P. L. Volegov, and E. M. Campbell, “Review of BigFoot Implosion Data at NIF.”

D. Turnbull, D. Cao, D. H. Edgell, R. K. Follett, D. H. Froula, V. N. Goncharov, A. V. Maximov, J. P. Palastro, W. Seka, C. Stoeckl, and H. Wen, “Anomalous Absorption by the Two-Plasmon-Decay Instability in Directly Driven Inertial Confinement Fusion Experiments.”

D. Turnbull, C. Dorrer, D. H. Edgell, R. K. Follett, D. H. Froula, A. M. Hansen, J. Katz, B. E. Kruschwitz, A. L. Milder, J. P. Palastro, A. Colaïtis, T. Chapman, L. Divol, C. S. Goyon, P. Michel, J. D. Moody, B. B. Pollock, J. S. Ross, and D. J. Strozzi, “Impact of Non-Maxwellian Electron Distribution Functions on Crossed-Beam Energy Transfer” (invited).

H. Wen, B. J. Winjum, F. S. Tsung, and W. B. Mori, “Mitigation of Stimulated Raman Scattering with Laser Bandwidth and an External Magnetic Field.”

J. Wilson, V. N. Goncharov, T. Simpson, D. Ramsey, C. Dorrer, A. Shvydky, D. H. Froula, and J. P. Palastro, “Broadband Smoothing of Laser Pulses for Imprint Reduction in Direct-Drive Inertial Confinement Fusion.”

K. M. Woo, R. Betti, O. M. Mannion, D. Patel, C. J. Forrest, J. P. Knauer, V. N. Goncharov, P. B. Radha, K. S. Anderson, R. Epstein, J. A. Delettrez, M. Charissis, A. Shvydky, I. V. Igumenshchev, V. Gopalaswamy, A. R. Christopherson, Z. L. Mohamed, D. Cao, H. Aluie, E. M. Campbell, R. Yan, P.-Y. Chang, A. Bose, D. Shvarts, and J. Sanz, “Inferring the Thermal Ion Temperature and Residual Kinetic Energy from Nuclear Measurements in Inertial Confinement Fusion” (invited).

S. Zhang, H. Whitley, L. Benedict, L. Yang, K. Caspersen, J. Gaffney, M. Dane, J. Pask, P. Sterne, T. Ogitsu, A. Lazicki, M. Marshall, D. Swift, M. Martin, R. London, A. Kritcher, J. Nilsen, N. Kostinski, B. Maddox, B. Militzer, K. Driver, F. Soubiran, A. Sharma, P. Suryanarayana, D. D. Johnson, A. V. Smirnov, S. X. Hu, and W. Johnson, “Wide-Range EOS of C- and B- Materials from First Principles.”

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M. S. Wei, “Status FY19 OLUG Findings and Recommendations,” presented at APS DPP OLUG Update; Fort Lauderdale, FL, 22 October 2019.

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S. G. Demos, “Optical Materials Research at LLE,” presented at the CEA Seminar, Bordeaux, France, 23 October 2019.

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S. G. Demos, “Relocation of the SPIE Laser Damage Conference to Rochester and Opportunities for Industrial

Partners,” presented at the Institute of Optics 2019 Fall Industrial Associates Symposium, Rochester, NY, 1 November 2019.

The following presentations were made at the 2nd American Physical Society Division of Plasma Physics Community Planning Process Workshop for High Energy Density Physics (HEDP), Palo Alto, CA, 11–14 November 2019:

J. P. Palaastro, D. H. Froula, J. L. Shaw, T. M. Antonsen, J. Vieira, N. Vafaei-Najafabadi, W. Mori, P. Franke, D. Ramsey, T. T. Simpson, K. Daub, M. S. Wei, J. D. Zuegel, and E. M. Campbell, “Spatiotemporally Structured Light for Advanced Accelerators and Radiation Sources.”

J. D. Zuegel, J. Bromage, D. H. Froula, M. S. Wei, H. G. Rinderknecht, P. M. Nilson, S. X. Hu, F. Albert, B. M. Hegelich, M. Roth, and E. M. Campbell, “Frontiers in High-Energy-Density and Relativistic Plasma Physics Enabled by EP OPAL: A Multibeam Ultrahigh-Intensity Laser User Facility.”

K. L. Marshall, T. Z. Kosc, B. N. Hoffman, S. Papernov, A. A. Kozlov, S. G. Demos, J. Shojaie, C. Dorrer, D. Batesky, J. Wallace, S. Jacobs, A. Schmid, K. Richardson, J. Starowitz, S. H. Chen, T. Brown, and N. Tabiryan, “Liquid Crystal Research at LLE: A 35-Year Journey from Information Displays to Laser Fusion and Beyond,” presented at the Rochester OSA/SPIE Student Chapter Lecture Series, Rochester, NY, 12 November 2019.

M. S. Wei, “Overview of Fundamental Science Programs at the Omega Laser Facility,” presented at SUNY Geneseo Colloquium, Geneseo, NY, 21 November 2019.

The following presentations were made at the Materials Research Society Fall Meeting, Boston, MA, 1–6 December 2019:

J. M. Garcia Figueroa and D. R. Harding, “The Relationship Between the Processing Conditions for an Electron Cyclotron Resonance-(ECR) Microwave-(MW) CVD System and the Properties of Vapor Deposited Hydrocarbon Films.”

M. Wang and D. R. Harding, “Mechanical Properties of Micrometer-Size Cellular Foam-Like Auxetic Structures.”

The following presentations were made at the Conference on High Intensity Laser and Attosecond Science in Israel, Tel Aviv, Israel, 9–11 December 2019:

R. Betti, V. Gopaldaswamy, J. P. Knauer, A. R. Christopherson, D. Patel, K. M. Woo, A. Bose, K. S. Anderson, T. J. B. Collins, S. X. Hu, D. T. Michel, C. J. Forrest, R. C. Shah, P. B. Radha, V. N. Goncharov, V. Yu. Glebov, A. V. Maximov, C. Stoeckl, F. J. Marshall, M. J. Bonino, D. R. Harding, R. T. Janezic, J. H. Kelly, S. Sampat, T. C. Sangster, S. P. Regan, E. M. Campbell, M. Gatu Johnson, J. A. Frenje, C. K. Li, and R. D. Petrasso, “Overview of the Cryogenic Implosion Campaign on the OMEGA Laser.”

S. P. Regan, V. N. Goncharov, T. C. Sangster, R. Betti, E. M. Campbell, K. A. Bauer, M. J. Bonino, D. Cao, G. W. Collins, T. J. B. Collins, R. S. Craxton, D. H. Edgell, R. Epstein, C. J. Forrest, J. A. Frenje, D. H. Froula, M. Gatu Johnson, V. Yu. Glebov, V. Gopaldaswamy, D. R. Harding, S. X. Hu, I. V. Igumenshchev, S. T. Ivancic, D. W. Jacobs-Perkins, R. T. Janezic, T. J. Kessler, J. P. Knauer, T. Z. Kosc, J. Kwiatkowski, O. M. Mannion, J. A. Marozas, F. J. Marshall, P. W. McKenty, Z. L. Mohamed, S. F. B. Morse, P. M. Nilson, J. P. Palaastro, D. Patel, J. L. Peebles, R. D. Petrasso, P. B. Radha, H. G. Rinderknecht, M. J. Rosenberg, S. Sampat, W. Seka, R. C. Shah, J. R. Rygg, W. T. Shmayda, M. J. Shoup III, A. Shvydky, A. A. Solodov, C. Sorce, C. Stoeckl, W. Theobald, D. Turnbull, J. Ulreich, M. D. Wittman, and K. M. Woo, “Three-Dimensional Diagnostics for Inertial Confinement Fusion Research on OMEGA” (invited).

T. Z. Kosc, T. J. Kessler, H. Huang, and S. G. Demos, “Raman Polarizability Tensor in Potassium Dihydrogen Phosphate and Deuterated Potassium Dihydrogen Phosphate Crystals,” presented at Photonics West 2020, San Francisco, CA, 1–6 February 2020.

M. K. Ginnane, D. N. Polsin, X. Gong, L. Crandall, T. R. Boehly, J. R. Rygg, G. W. Collins, A. Lazicki, R. Kraus, J. H. Eggert, M. C. Marshall, D. E. Fratanduono, J.-P. Davis,

C. A. McCoy, C. Seagle, and S. Root, “X-Ray Diffraction of Platinum,” presented at NIF User Group, Livermore, CA, 3–5 February 2020.

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The following presentations were made at the 60th Sanibel Symposium, St. Simons Island GA, 16–21 February 2020:

M. Ghosh, S. Zhang, and S. X. Hu, “Nanodiamond Formation In Hydrocarbons Under Extreme Pressure-Temperature Conditions-Evidence from First Principles.”

V. V. Karasiev, J. Hinz, and S. X. Hu, “Characterization of the Liquid-Liquid Phase Transition in Dense Hydrogen: The Role of Accurate Exchange-Correlation and Nuclear Quantum Effects.”

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D. H. Froula, “Plasma Physics at the University of Rochester Laboratory for Laser Energetics,” presented at the Office of Science, Rochester, NY, 24 February 2020.

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J. L. Peebles, J. R. Davies, D. H. Barnak, T. Cracium, M. J. Bonino, and R. Betti, “Axial Proton Probing of Single and Double Plate Laser-Driven Coils,” presented at the 2020 Stewardship Science Academic Programs Symposium, Washington, DC, 26–27 February 2020.

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M. S. Wei, “OMEGA EP Experimental Capability: First-Year LaserNetUS Experiments and Future Plans,” presented at the LaserNetUS SAB and PI Meeting, Washington, DC, 3–4 March 2020.

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The following presentations were made at the APS April Meeting, virtual, 18–21 April 2020:

C. J. Forrest, G. Hale, W. U. Schröder, J. P. Knauer, P. B. Radha, V. Yu. Glebov, O. M. Mannion, Z. L. Mohamed, S. P. Regan, T. C. Sangster, A. Schwemmlin, and C. Stoeckl, “Evidence for a  ${}^7\text{Li}$  State at  $E_x = 10.2$  MeV from Inelastic Neutron Scattering at 14 MeV.”

A. K. Schwemmlin, W. U. Schröder, C. Stoeckl, C. J. Forrest, J. P. Knauer, and S. P. Regan, “Using the Multi-Terawatt Laser at the Laboratory for Laser Energetics to Generate a High-Yield, 0.5-MeV Deuteron Beam.”

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The following presentations were made at Technology of Fusion Energy (TOFE) 2020, virtual, 20–23 April 2020:

C. Fagan, M. Sharpe, W. T. Shmayda, and W. U. Schröder, “Tritium Concentration Profiles in Stainless-Steel 316 Samples.”

M. Sharpe, W. T. Shmayda, J. Wermer, and C. A. Bond, “Permeation Rate of Deuterium and Tritium Through Iron-Chromium-Aluminum Alloys.”

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The following presentations were made at High Energy Density Science, virtual, 20–24 April 2020:

S. P. Regan, V. N. Goncharov, T. C. Sangster, R. Betti, E. M. Campbell, K. A. Bauer, M. J. Bonino, D. Cao, A. R. Christopherson, G. W. Collins, T. J. B. Collins, R. S. Craxton, D. H. Edgell, R. Epstein, P. Fan, M. Farrell, P. Fitzsimmons, C. J. Forrest, R. K. Follett, J. A. Frenje, D. H. Froula, M. Gatu Johnson, V. Yu. Glebov, V. Gopalaswamy, D. R. Harding, S. X. Hu, H. Huang, I. V. Igumenshchev, Y. Lu, R. Luo, D. W. Jacobs-Perkins, R. T. Janezic, M. Karasik, T. J. Kessler, J. P. Knauer, T. Z. Kosci, A. Lees, O. M. Mannion, J. A. Marozas, F. J. Marshall, P. W. McKenty, Z. L. Mohamed, S. F. B. Morse, P. M. Nilson, S. P. Obenshain, J. P. Palaastro, D. Patel, J. L. Peebles, R. D. Petrasso, P. B. Radha, H. G. Rinderknecht, M. J. Rosenberg, S. Sampat, A. J. Schmitt, W. Seka, R. C. Shah, J. R. Rygg, J. G. Shaw, W. T. Shmayda, M. J. Shoup III, C. Shulberg, A. Shvydkiy, A. A. Solodov, C. Sorce, C. Stoeckl, W. Sweet, W. Theobald, D. Turnbull, J. Ulreich, L. J. Waxer, M. D. Wittman, K. M. Woo, and J. D. Zuegel, “Laser-Direct-Drive Inertial Confinement Fusion Research on OMEGA: Current Status.”

J. J. Ruby, J. R. Rygg, D. A. Chin, C. J. Forrest, V. Yu. Glebov, C. Stoeckl, N. V. Kabadi, P. Adrian, B. Bachmann, Y. Ping, J. A. Gaffney, and G. W. Collins, “Spherical Shock Wave Experiments on the OMEGA Laser.”

G. W. Collins, “Laboratory for Laser Energetics Contributions to the Stockpile Stewardship Mission,” presented at the HEDP Briefing to DOE, virtual, 29 April 2019.

The following presentations were made at CLEO 2020, virtual, 10–15 May 2020:

I. A. Begishev, V. V. Ivanov, S. Patankar, P. S. Datte, S. T. Yang, J. D. Zuegel, and J. Bromage, “Nonlinear Crystals for Efficient High-Energy Fifth-Harmonic Generation of Near-IR Lasers.”

C. Dorrer, I. A. Begishev, S.-W. Bahk, and J. Bromage, “Broadband Parametric-Gain Optimization of Partially Deuterated KDP with Two-Wavelength Tuning Curves.”

C. Dorrer, E. M. Hill, and T. Borger, “Record-Bandwidth Spectrally Incoherent UV Laser Pulses.”

C. Dorrer, E. M. Hill, and J. D. Zuegel, “High-Efficiency Parametric Amplification of Broadband Spectrally Incoherent Pulses.”

D. H. Froula, S.-W. Bahk, I. A. Begishev, R. Boni, J. Bromage, A. Davies, P. Franke, R. K. Follett, D. Haberberger, A. Howard, G. W. Jenkins, J. Katz, T. J. Kessler, J. P. Palastro, J. B. Oliver, D. Ramsey, T. Simpson, J. L. Shaw, D. Turnbull, N. Vafaei-Najafabadi, and J. Vieira, “From Chromatic to Achromatic Flying Foci.”

V. Gruzdev and K. R. P. Kafka, “Ultrafast Multiphoton Absorption in Optical-Coating Materials at Near-Damage-Threshold Fluence.”

E. P. Power, J. Bromage, and J. D. Zuegel, “Integrated-Flow Active Cooling for Thermal Management of Reflective Optics Under High-Average-Power Load.”

E. M. Campbell, “Direct-Drive Laser Fusion, Status, Plans, and the Future,” presented at the Cornell University Talk, virtual, 11 May 2020.

D. H. Froula, J. P. Palastro, S.-W. Bahk, I. V. Begishev, R. Boni, J. Bromage, A. Davies, P. Franke, R. K. Follett, D. Haberberger, A. Howard, G. W. Jenkins, J. Katz, T. J. Kessler, J. B.

Oliver, D. Ramsey, T. Simpson, J. L. Shaw, D. Turnbull, N. Vafaei-Najafabadi, and J. Vieira, “Progress in Flying Focus for Plasma-Based Applications: From Chromatic to Achromatic Flying Foci,” presented at UR Colloquia, virtual, 17 June 2020.

E. M. Campbell, “Laboratory for Laser Energetics (LLE) Contributions to the Stockpile Stewardship Mission,” presented at OES Executives Meeting, virtual, 23 June 2020.

D. R. Harding, S. M. Fess, M. J. Bonino, R. F. Earley, T. C. Sangster, E. M. Campbell, V. N. Goncharov, J. L. Peebles, M. D. Wittman, C. Stoeckl, Y.-F. Lu, P. Fan, and X. Huang, “Laser-Based Microfabrication and Metrology of Laser-Driven Inertial Fusion Targets,” presented at the 21st International Symposium on Laser Precision Microfabrication, virtual, 23–26 June 2020.

G. W. Collins, “High Energy Density (HED) Quantum Matter,” presented at the Office of Science Meeting, virtual, 29 June 2020.

E. M. Campbell, “NIF: An Unexpected Journey and Lessons Learned to Secure ‘Projects of Scale,’” presented at the LLNL Seminar, virtual, 9 July 2020.

S.-W. Bahk, I. A. Begishev, R. Roides, D. H. Froula, J. Bromage, and J. D. Zuegel, “Application of Near-Field and Far-Field Beam Shaping Techniques for High-Power Lasers,” presented at Advanced Photonics Congress, virtual, 13–16 July 2020.

The following presentations were made at the BETHE Kickoff Workshop, virtual, 11–12 August 2020:

V. N. Goncharov, I. V. Igumenshchev, R. K. Follett, and T. J. B. Collins, “Advanced IFE Target Designs with Next-Generation Laser Technologies.”

P. Tzeferacos, A. B. Sefkow, C. Ren, R. Betti, J. R. Davies, and H. Wen, “A Simulation Resource Team for Innovative Fusion Concepts.”

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K. L. Marshall, B. E. Ugur, and J. Travis, “Computational Modeling and Design of Liquid Crystal Materials for Applications in the Terahertz Regime” presented at SPIE Optics and Photonics, Liquid Crystals XXIV, virtual, 24–28 August 2020 (invited).

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T. T. Simpson, D. Ramsey, P. Franke, N. Vafaei-Najafabadi, D. H. Froula, and J. P. Palastro, “The Self-Flying Focus: Nonlinear Spatiotemporal Control of Laser Intensity,” presented at ELI Summer School, virtual, 26–28 August 2020.

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The following presentations were made at 9th EPS-QEOD Europhoton Conference, virtual, 30 August–4 September 2020:

G. W. Jenkins, C. Feng, and J. Bromage, “Overcoming Gas-Ionization Limits with Divided-Pulse Nonlinear Compression.”

B. Webb, S.-W. Bahk, I. A. Begishev, C. Dorrer, C. Feng, C. Jeon, M. Spilatro, R. Roides, J. D. Zuegel, and J. Bromage, “Full-Energy, Vacuum-Compatible, Single-Shot Pulse Characterization Method for Petawatt-Level Ultra-Broad Bandwidth Lasers Using Spatial Sampling.”

The following presentations were made at Laser Damage 2020, virtual, 13–16 September 2020:

E. M. Campbell, “A Vision of the Future for High-Power Lasers.”

V. Gruzdev and K. R. P. Kafka, “Multiphoton Absorption of Ultrashort Laser Pulses in Optical Materials of Multilayer Coatings at Near-Damage-Threshold Fluence.”

H. Huang, K. R. P. Kafka, and S. G. Demos, “Study of Electric-Field Enhancement Caused by Debris on Laser Optics.”

K. R. P. Kafka, B. N. Hoffman, A. A. Kozlov, and S. G. Demos, “Investigation of Excitation Dynamics in HfO<sub>2</sub> and SiO<sub>2</sub> Monolayers Using Subpicosecond Pump-and-Probe Damage Testing.”

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M. S. Wei, “Omega Basic Science User Program Update,” Omega Laser Facility Users Group, virtual, 23–25 September 2020.

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M. Zaghou, H. Pantell, G. Tabak, L. Crandall, M. Huff, J. R. Rygg, G. W. Collins, S. X. Hu, V. V. Karasiev, D. N. Polsin, M. C. Marshall, R. Dias, E. Blackman, H. Aluie, P. M. Celliers, J. H. Eggert, D. E. Fratanduono, and S. Boney, “Constraints from Mineral Physics on Thermal and Magnetic States of Exoplanets,” presented at Carnegie Earth and Planets Laboratory, virtual, 24 September 2020.