Publications and Conference Presentations

Publications

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Forthcoming Publications

X. Bian and H. Aluie, "Decoupled Cascades of Kinetic and Magnetic Energy in Magnetohydrodynamic Turbulence," to be published in Physical Review Letters.

D. Broege and J. Bromage, "Measurements of Heat Flow from Surface Defects in Lithium Triborate," to be published in Optics Express.

D. Broege, S. Fochs, G. Brent, J. Bromage, C. Dorrer, R. F. Earley, M. J. Guardalben, J. A. Marozas, R. G. Roides, J. Sethian, X. Wang, D. Weiner, J. Zweiback, and J. D. Zuegel, "The Dynamic Compression Sector Laser: A 100-J UV Laser for Dynamic Compression Research," to be published in Review of Scientific Instruments.

M. Chorel, S. Papernov, A. A. Kozlov, B. N. Hoffman, J. B. Oliver, S. G. Demos, T. Lanternier, É. Lavastre, L. Lamaignère, N. Roquin, B. Bousquet, N. Bonod, and J. Néauport, "The Influence of Absorption-Edge Properties on Subpicosecond Intrinsic Laser-Damage Threshold at 1053 nm in Hafnia and Silica Monolayers," to be published in Optics Express.

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L. Divol, D. P. Turnbull, T. Chapman, C. Goyon, and P. Michel, "An Analytical Study of Non-Resonant Transient Cross-Beam Power Transfer Relevant to Recent Progress in Plasma Photonics," to be published in Physics of Plasmas.

C. Dorrer, "Spatiotemporal Metrology of Broadband Optical Pulses," to be published in IEEE Journal on Selected Topics in Quantum Electronics.

C. Fagan, M. Sharpe, W. T. Shmayda, and W. U. Schröder, "Tritium Retention in Hexavalent Chromate-Conversion–Coated Aluminum Alloy," to be published in Fusion Science and Technology.

R. Ghosh, O. Swart, S. Westgate, B. L. Miller, and M. Z. Yates, "Antibacterial Copper–Hydroxyapatite Composite Coatings via Electrochemical Synthesis," to be published in Langmuir.

K. R. P. Kafka and S. G. Demos, "Interaction of Short Laser Pulses with Model Contamination Microparticles on a High Reflector," to be published in Optics Letters.

V. V. Karasiev, S. B. Trickey, and J. W. Dufty, "Status of Free-Energy Representations for Homogeneous Electron Gas," to be published in Physical Review B.

S. Le Pape, L. Divol, A. Macphee, J. McNaney, M. Hohenberger, D. Froula, V. Glebov, O. L. Landen, C. Stoeckl, E. Dewald, S. Khan, C. Yeamans, P. Michel, M. Schneider, J. Knauer, J. Kilkenny, and A. J. Mackinnon, "Optimization of High Energy X Ray Production Through Laser Plasma Interaction," to be published in High Energy Density Physics.

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S. Papernov, "Spectroscopic Setup for Submicrometer-Resolution Mapping of Low-Signal Absorption and Luminescence Using Photothermal Heterodyne Imaging and Photon-Counting Techniques," to be published in Applied Optics.

S. Sampat, T. Z. Kosc, K. A. Bauer, R. D. Dean, W. R. Donaldson, J. Kwiatkowski, R. Moshier, A. L. Rigatti, M. H. Romanofsky, L. J. Waxer, and J. H. Kelly, "Power Balancing a Multibeam Laser," to be published in the Proceedings of SPIE.

J. P. Sauppe, B. M. Haines, S. Palaniyappan, P. A. Bradley, S. H. Batha, E. N. Loomis, and J. L. Kline, "Modeling of Direct-Drive Cylindrical Implosion Experiments with an Eulerian Radiation-Hydrodynamics Code," to be published in Physics of Plasmas.

R. Sobolewski, "Optical Sensors," to be published in the Handbook of Superconducting Materials.

M. Stoeckl and A. A. Solodov, "Refining Instrument Response Functions with 3-D Monte Carlo Simulations of Differential Hard X-Ray Spectrometers," to be published in Nuclear Instruments and Methods in Physics Research, A.

S. Zhang, A. Lazicki, B. Militzer, L. H. Yang, K. Caspersen, J. A. Gaffney, M. W. Däne, J. E. Pask, W. R. Johnson, A.Sharma, P. Suryanarayana, D. D. Johnson, A. V. Smirnov, P. A. Sterne, D. Erskine, R. A. London, F. Coppari, D. Swift, J. Nilsen, A. J. Nelson, and H. D. Whitley, "Equation of State of Boron Nitride Combining Computation, Modeling, and Experiment," to be published in Physical Review B.

Conference Presentations

M. Wei, "LaserNetUS Facility Readiness—Omega Laser Facility," presented at the LaserNetUS PI Meeting, Rockville, MD, 16 January 2019.

The following presentations were made at the Japan–U.S. Symposium, Washington, DC, 23–24 January 2019:

G. W. Collins, "Forging a New Frontier of HED Science Through Japan–U.S. Collaborations."

D. H. Froula, "Japan–U.S. Collaborations—Future Collaborations and the Direction of LLE Laser Science and Plasma Physics Research."

E. M. Campbell, "Fusion: Making a Star on Earth and the Quest for the Ultimate Energy Source to Power the Planet," presented at the Cornell University Seminar, Ithaca, NY, 31 January 2019.

The following presentations were made at LASE 2019, San Francisco, CA, 2–7 February 2019:

K. A. Bauer, M. Heimbueger, S. Sampat, L. J. Waxer, E. C. Cost, J. H. Kelly, V. Kobilansky, J. Kwiatkowski, S. F. B. Morse, D. Nelson, D. Weiner, G. Weselak, and J. Zou, "Comparison of On-Shot, In-Tank, and Equivalent-Target-Plane Measurements of the OMEGA Laser System Focal Spot."

W. R. Donaldson and A. Consentino, "Co-Timing UV and IR Laser Pulses on the OMEGA EP Laser System."

B. E. Kruschwitz, J. Kwiatkowski, C. Dorrer, M. Barczys, A. Consentino, D. H. Froula, M. J. Guardalben, E. M. Hill, D. Nelson, M. J. Shoup III, D. Turnbull, L. J. Waxer, and D. Weiner, "Tunable UV Upgrade on OMEGA EP."

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The following presentations were made at Photonics West, San Francisco, CA, 2–7 February 2019:

I. A. Begishev, M. H. Romanofsky, S. Carey, R. Chapman, G. Brent, M. J. Shoup III, J. D. Zuegel, and J. Bromage, "High-Efficiency, Large-Aperture Fifth-Harmonic–Generation of

211-nm Pulses in Ammonium Dihydrogen Phosphate Crystals for Fusion Diagnostics."

K. Kopp and S. G. Demos, "Microscopy with Ultraviolet Surface Excitation (MUSE) Enables Translation of Optical Biopsy Principles to Enhance Life Science Education."

T. Z. Kosc, T. J. Kessler, H. Huang, R. A. Negres, and S. G. Demos, "Raman Scattering Cross-Section Measurements Using KDP Polished Crystal Spheres to Understand Transverse Stimulated Raman Scattering."

S. P. Regan, R. Epstein, M. Bedzek, R. Betti, T. R. Boehly, M. Bonino, N. Chartier, G. W. Collins, J. A. Delettrez, D. H. Froula, V. Yu. Glebov, V. N. Goncharov, S. X. Hu, I. V. Igumenshchev, D. R. Harding, J. P. Knauer, M. Lawrie, F. J. Marshall, D. T. Michel, P. B. Radha, M. J. Rosenberg, J. R. Rygg, R. Saha, R. C. Shah, M. J. Shoup III, C. Stoeckl, T. C. Sangster, W. Theobald, E. M. Campbell, H. Sawada, R. C. Mancini, K. Falk, E. Rowe, J. Topp-Mugglestone, P. Kozlowski, G. Gregori, J. Wark, J. A. Frenje, M. Gatu Johnson, N. Kabadi, C. K. Li, H. Sio, R. D. Petrasso, P. Keiter, P. X. Belancourt, R. P. Drake, N. Woolsey, I. E. Golovkin, J. J. MacFarlane, S. H. Glenzer, B. A. Hammel, L. J. Suter, S. Ayers, M. A. Barrios, P. M. Bell, D. K. Bradley, M. J. Edwards, K. B. Fournier, S. W. Haan, O. A. Hurricane, C. A. Iglesias, N. Izumi, O. L. Landen, D. Larson, A. Nikroo, M. Schneider, H. A. Scott, T. Ma, P. K. Patel, D. Thorn, B. G. Wilson, D. A. Haynes, D. D. Meyerhofer, H. Huang, J. Jaquez, J. D. Kilkenny, L. Gao, K. Hill, B. Kraus, P. Efthimion, Y. Lu, X. Huang, and P. Fan, "X-Ray Spectroscopy and Inertial Confinement Fusion," presented at the University of Nebraska, Lincoln, NE, 13 February 2019.

E. M. Campbell, "Fusion: Making a Star on Earth and the Quest for the Ultimate Energy Source to Power the Planet," presented at SUNY Geneseo Seminar, Geneseo, NY, 14 February 2019.

E. M. Campbell, "Fusion: Making a Star on Earth and the Quest for the Ultimate Energy Source to Power the Planet," presented at the ASME Student Banquet, Rochester, NY, 15 February 2019.

M. S. Wei, "LaserNetUS-OMEGA EP Laser System and Experimental Capability," presented at LaserNetUS, Virtual Meeting, 15 February 2019.

The following presentations were made at the 59th Sanibel Symposium, St. Simons Island GA, 17–22 February 2019:

J. Hinz, V. V. Karasiev, S. X. Hu, M. Zaghoo, and D. Mejia-Rodriguez, "Deorbitalized Meta-GGA with the Long-Range van der Waals Exchange-Correlation Functional Calculations of the Insulator–Metal Transition of Hydrogen."

V. V. Karasiev, S. X. Hu, M. Zaghoo, T. R. Boehly, S. B. Trickey, and J. W. Dufty, "Exchange-Correlation Thermal Effects: Softening the Deuterium Hugoniot and Thermophysical Properties."

R. Paul, V. V. Karasiev, and S. X. Hu, "High-Pressure Phases and Spectral Properties of Silicon."

J. L. Peebles, J. R. Davies, R. Moshier, M. Bradley, T. Nguyen, G. Weselak, G. Fiksel, R. Shapovalov, R. Spielman, G. Brent, D. W. Jacobs-Perkins, A. Bose, M. Gatu Johnson, C. K. Li, J. A. Frenje, R. D. Petrasso, and R. Betti, "Magnetizing 60-Beam Spherical Implosions on OMEGA," presented at the 2019 Stewardship Science Academic Programs Symposium, Albuquerque, NM, 19–20 February 2019.

E. M. Campbell, "LLE Priorities FY2020–FY2021," presented at the ICF Executives Meeting, Albuquerque, NM, 21–22 February 2019.

G. W. Collins, "Extreme Matters: A Laboratory Exploration of Planets, Stars, and Quantum Matter," presented at the Phelps Colloquium, Rochester, NY, 27 February 2019.

G. W. Collins, J. R. Rygg, T. R. Boehly, M. Zaghoo, D. N. Polsin, B. J. Henderson, X. Gong, L. Crandall, R. Saha, J. J. Ruby, G. Tabak, M. F. Huff, Z. K. Sprowal, D. A. Chin,

M. K. Ginnane, P. M. Celliers, J. H. Eggert, A. Lazicki, R. F. Smith, R. Hemley, F. Coppari, B. Bachmann, J. Gaffney, D. E. Fratanduono, D. G. Hicks, Y. Ping, D. Swift, D. G. Braun, S. Hamel, M. Millot, M. Gorman, R. Briggs, S. Ali, R. Kraus, P. Loubeyre, S. Brygoo, R. Jeanloz, R. Falcone, M. McMahon, F. N. Beg, C. Bolme, A. Gleason, S. Glenzer, H. Lee, T. Duffy, J. Wang, J. Wark, and G. Gregori, "Laser Focus on Planets: Exploring Planets and Stars Through High Energy Density Science," presented at the APS March Meeting, Boston, MA, 4–8 March 2019.

The following presentations were made at Matter in Extreme Conditions from Material Science to Planetary Physics, Montgenevre, France, 17–23 March 2019:

G. W. Collins, J. R. Rygg, T. R. Boehly, M. Zaghoo, D. N. Polsin, B. J. Henderson, X. Gong, L. E. Crandall, R. Saha, J. J. Ruby, G. Tabak, M. F. Huff, Z. K. Sprowal, D. A. Chin, M. K. Ginnane, P. M. Celliers, J. H. Eggert, A. Lazicki, R. F. Smith, R. Hemley, F. Coppari, B. Bachman, J. Gaffney, D. E. Fratanduono, D. G. Hicks, Y. Ping, D. Swift, D. G. Braun, S. Hamel, M. Millot, M. Gorman, R. Briggs, S. Ali, R. Kraus, P. Loubeyre, S. Brygoo, R. Jeanloz, R. Falcone, M. McMahon, F. N. Beg, C. Bolme, A. Gleason, S. H. Glenzer, H. Lee, T. Duffy, J. Wang, J. Wark, and G. Gregori, "Shock Physicists: Today's Explorers of the Universe."

B. J. Henderson, M. Zaghoo, X. Gong, D. N. Polsin, J. R. Rygg, T. R. Boehly, G. W. Collins, S. Ali, P. M. Celliers, A. E. Lazicki, M. Gorman, M. Millot, J. H. Eggert, and M. McMahon, "Broadband Reflectivity Diagnostic Development for Dynamic Compression Experiments on OMEGA EP."

J. R. Rygg, D. N. Polsin, X. Gong, T. R. Boehly, G. W. Collins, S. P. Regan, C. Sorce, J. H. Eggert, R. Smith, A. Lazicki, M. Ahmed, A. Arsenlis, M. A. Barrios, J. Bernier, K. Blobaum, D. G. Braun, R. Briggs, P. M. Celliers, A. Cook, F. Coppari, D. E. Fratanduono, M. Gorman, B. Heidl, M. Hohenberger, D. H. Kalantar, S. Khan, R. Kraus, J. McNaney, D. Swift, J. Ward, C. Wehrenberg, A. Higginbothom, M. Suggit, J. Wark, J. Wang, T. Duffy, J. Wicks, and M. McMahon, "X-Ray Diffraction in the Terapascal Regime."

W. T. Shmayda, C. Fagan, and R. C. Shmayda, "Reducing Releases from Tritium Facilities," presented at the First Tritium School, Ljubljana, Slovenia, 25–28 March 2019.

The following presentations were made at the International Conference on High Energy Density Science, Oxford, UK, 31 March–5 April 2019:

R. Betti, "Recent Advances in Direct-Drive Laser Fusion."

S. X. Hu, Y. H. Ding, V. V. Karasiev, R. Paul, M. Ghosh, J. Hinz, P. M. Nilson, T. R. Boehly, P. B. Radha, V. N. Goncharov, S. Skupsky, J. R. Rygg, G. W. Collins, S. P. Regan, E. M. Campbell, L. A. Collins, J. D. Kress, A. J. White, O. Certik, and B. Militzer, "Warming Up Density Functional Theory (DFT) for High-Energy-Density Plasmas."

D. N. Polsin, X. Gong, M. F. Huff, L. E. Crandall, G. W. Collins, T. R. Boehly, J. R. Rygg, A. Lazicki, M. Millot, P. M. Celliers, J. H. Eggert, and M. I. McMahon, "High-Pressure Structural and Electronic Properties of Ramp-Compressed Sodium."