

J Ryan Rygg

List of Publications by Year in descending order

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Version: 2024-02-01

133
papers

6,087
citations

50276

46
h-index

76900

74
g-index

138
all docs

138
docs citations

138
times ranked

2990
citing authors

| # | ARTICLE | IF | CITATIONS |
|----|---|------|-----------|
| 1 | Measuring the melting curve of iron at super-Earth core conditions. <i>Science</i> , 2022, 375, 202-205. | 12.6 | 39 |
| 2 | Species separation in polystyrene shock release evidenced by molecular-dynamics simulations and laser-drive experiments. <i>Physical Review Research</i> , 2022, 4, . | 3.6 | 0 |
| 3 | Diamond formation in double-shocked epoxy to 150â€‰GPa. <i>Journal of Applied Physics</i> , 2022, 131, . | 2.5 | 6 |
| 4 | Structure and density of silicon carbide to 1.5 TPa and implications for extrasolar planets. <i>Nature Communications</i> , 2022, 13, 2260. | 12.8 | 11 |
| 5 | Structural complexity in ramp-compressed sodium to 480â€‰GPa. <i>Nature Communications</i> , 2022, 13, 2534. | 12.8 | 14 |
| 6 | Emission phases of implosion sources for x-ray absorption fine structure spectroscopy. <i>Physics of Plasmas</i> , 2022, 29, . | 1.9 | 5 |
| 7 | Planar, longitudinal, compressive waves in solids: Thermodynamics and uniaxial strain restrictions. <i>Journal of Applied Physics</i> , 2022, 131, 215904. | 2.5 | 1 |
| 8 | Evidence for Dissociation and Ionization in Shock Compressed Nitrogen to 800ÅGPa. <i>Physical Review Letters</i> , 2022, 129, . | 7.8 | 7 |
| 9 | A case study of using x-ray Thomson scattering to diagnose the in-flight plasma conditions of DT cryogenic implosions. <i>Physics of Plasmas</i> , 2022, 29, 072703. | 1.9 | 7 |
| 10 | Metastability of diamond ramp-compressed to 2 terapascals. <i>Nature</i> , 2021, 589, 532-535. | 27.8 | 79 |
| 11 | Implications of the iron oxide phase transition on the interiors of rocky exoplanets. <i>Nature Geoscience</i> , 2021, 14, 121-126. | 12.9 | 28 |
| 12 | Equation-of-state, sound speed, and reshock of shock-compressed fluid carbon dioxide. <i>Physics of Plasmas</i> , 2021, 28, . | 1.9 | 5 |
| 13 | Shock-compressed silicon: Hugoniot and sound speed up to 2100 GPa. <i>Physical Review B</i> , 2021, 103, . | 3.2 | 13 |
| 14 | High-energy-density-physics measurements in implosions using Bayesian inference. <i>Physics of Plasmas</i> , 2021, 28, . | 1.9 | 8 |
| 15 | Evidence of hydrogenâ”helium immiscibility at Jupiter-interior conditions. <i>Nature</i> , 2021, 593, 517-521. | 27.8 | 41 |
| 16 | Polymorphism of gold under laser-based ramp compression to 690 GPa. <i>Physical Review B</i> , 2021, 103, . | 3.2 | 11 |
| 17 | Melting of Tantalum at Multimegabar Pressures on the Nanosecond Timescale. <i>Physical Review Letters</i> , 2021, 126, 255701. | 7.8 | 11 |
| 18 | Melting of magnesium oxide up to two terapascals using double-shock compression. <i>Physical Review B</i> , 2021, 104, . | 3.2 | 11 |

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|----|--|------|-----------|
| 19 | Density evolution after shock release from laser-driven polystyrene (CH) targets in inertial confinement fusion. <i>Physics of Plasmas</i> , 2021, 28, . | 1.9 | 2 |
| 20 | Improved first-principles equation-of-state table of deuterium for high-energy-density applications. <i>Physical Review B</i> , 2021, 104, . | 3.2 | 8 |
| 21 | Equation of State of CO_2 Shock Compressed to 1 \AA TPa. <i>Physical Review Letters</i> , 2020, 125, 165701. | 1.3 | 2 |
| 22 | Energy Flow in Thin Shell Implosions and Explosions. <i>Physical Review Letters</i> , 2020, 125, 215001. | 7.8 | 8 |
| 23 | Saturn-ring proton backlighters for the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2020, 91, 093505. | 1.3 | 2 |
| 24 | Constraining physical models at gigabar pressures. <i>Physical Review E</i> , 2020, 102, 053210. | 2.1 | 11 |
| 25 | Localized mix-induced radiative cooling in a capsule implosion at the National Ignition Facility. <i>Physical Review E</i> , 2020, 101, 033205. | 2.1 | 25 |
| 26 | X-ray diffraction at the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2020, 91, 043902. | 1.3 | 42 |
| 27 | Experimental study of energy transfer in double shell implosions. <i>Physics of Plasmas</i> , 2019, 26, . | 1.9 | 32 |
| 28 | Nanosecond X-ray diffraction of shock-compressed superionic water ice. <i>Nature</i> , 2019, 569, 251-255. | 27.8 | 215 |
| 29 | Response to Comment on "Insulator-metal transition in dense fluid deuterium". <i>Science</i> , 2019, 363, . | 12.6 | 5 |
| 30 | Breakdown of Fermi Degeneracy in the Simplest Liquid Metal. <i>Physical Review Letters</i> , 2019, 122, 085001. | 7.8 | 6 |
| 31 | Optimized x-ray sources for x-ray diffraction measurements at the Omega Laser Facility. <i>Review of Scientific Instruments</i> , 2019, 90, 125113. | 1.3 | 25 |
| 32 | A boundary condition for Guderley's converging shock problem. <i>Physics of Fluids</i> , 2019, 31, . | 4.0 | 12 |
| 33 | Measuring the shock impedance mismatch between high-density carbon and deuterium at the National Ignition Facility. <i>Physical Review B</i> , 2018, 97, . | 3.2 | 21 |
| 34 | Crystal structure and equation of state of Fe-Si alloys at super-Earth core conditions. <i>Science Advances</i> , 2018, 4, eaao5864. | 10.3 | 56 |
| 35 | Experimental evidence for superionic water ice using shock compression. <i>Nature Physics</i> , 2018, 14, 297-302. | 16.7 | 165 |
| 36 | First demonstration of improved capsule implosions by reducing radiation preheat in uranium vs gold hohlraums. <i>Physics of Plasmas</i> , 2018, 25, . | 1.9 | 17 |

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|----|---|------|-----------|
| 37 | Using a 2-shock 1D platform at NIF to measure the effect of convergence on mix and symmetry. <i>Physics of Plasmas</i> , 2018, 25, 102702. | 1.9 | 6 |
| 38 | Implosion shape control of high-velocity, large case-to-capsule ratio beryllium ablaters at the National Ignition Facility. <i>Physics of Plasmas</i> , 2018, 25, 072708. | 1.9 | 16 |
| 39 | Conceptual design for time-resolved x-ray diffraction in a single laser-driven compression experiment. <i>AIP Conference Proceedings</i> , 2018, , . | 0.4 | 4 |
| 40 | X-ray diffraction of ramp-compressed aluminum to 475â€‰GPa. <i>Physics of Plasmas</i> , 2018, 25, . | 1.9 | 17 |
| 41 | Insulator-metal transition in dense fluid deuterium. <i>Science</i> , 2018, 361, 677-682. | 12.6 | 108 |
| 42 | Examining the radiation drive asymmetries present in the high foot series of implosion experiments at the National Ignition Facility. <i>Physics of Plasmas</i> , 2017, 24, . | 1.9 | 31 |
| 43 | The role of hot spot mix in the low-foot and high-foot implosions on the NIF. <i>Physics of Plasmas</i> , 2017, 24, . | 1.9 | 49 |
| 44 | Symmetry control of an indirectly driven high-density-carbon implosion at high convergence and high velocity. <i>Physics of Plasmas</i> , 2017, 24, . | 1.9 | 106 |
| 45 | Measurement of Body-Centered-Cubic Aluminum at 475ÂˆGPa. <i>Physical Review Letters</i> , 2017, 119, 175702. | 7.8 | 37 |
| 46 | Performance of beryllium targets with full-scale capsules in low-fill 6.72-mm hohlraums on the National Ignition Facility. <i>Physics of Plasmas</i> , 2017, 24, . | 1.9 | 14 |
| 47 | Hugoniot and release measurements in diamond shocked up to 26 Mbar. <i>Physical Review B</i> , 2017, 95, . | 3.2 | 32 |
| 48 | Use of ⁴¹ Ar production to measure ablator areal density in NIF beryllium implosions. <i>Physics of Plasmas</i> , 2017, 24, . | 1.9 | 2 |
| 49 | A novel method to recover DD fusion proton CR-39 data corrupted by fast ablator ions at OMEGA and the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2016, 87, 11D812. | 1.3 | 2 |
| 50 | Control of Be capsule low mode implosions symmetry at the National Ignition Facility. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012033. | 0.4 | 2 |
| 51 | NIF Rugby High Foot Campaign from the design side. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012035. | 0.4 | 4 |
| 52 | Development of a WDM platform for charged-particle stopping experiments. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012118. | 0.4 | 4 |
| 53 | Capsule Ablator Inflight Performance Measurements Via Streaked Radiography Of ICF Implosions On The NIF*. <i>Journal of Physics: Conference Series</i> , 2016, 688, 012014. | 0.4 | 9 |
| 54 | X-ray scattering measurements of dissociation-induced metallization of dynamically compressed deuterium. <i>Nature Communications</i> , 2016, 7, 11189. | 12.8 | 27 |

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|----|---|-----|-----------|
| 55 | First beryllium capsule implosions on the National Ignition Facility. <i>Physics of Plasmas</i> , 2016, 23, 056310. | 1.9 | 37 |
| 56 | Resolving hot spot microstructure using x-ray penumbral imaging (invited). <i>Review of Scientific Instruments</i> , 2016, 87, 11E201. | 1.3 | 38 |
| 57 | The near vacuum hohlraum campaign at the NIF: A new approach. <i>Physics of Plasmas</i> , 2016, 23, . | 1.9 | 51 |
| 58 | Effects of fuel-capsule shimming and drive asymmetry on inertial-confinement-fusion symmetry and yield. <i>Physics of Plasmas</i> , 2016, 23, . | 1.9 | 17 |
| 59 | Experimental room temperature hohlraum performance study on the National Ignition Facility. <i>Physics of Plasmas</i> , 2016, 23, . | 1.9 | 6 |
| 60 | X-ray diffraction of molybdenum under ramp compression to 1 TPa. <i>Physical Review B</i> , 2016, 94, . | 3.2 | 33 |
| 61 | Development of Improved Radiation Drive Environment for High Foot Implosions at the National Ignition Facility. <i>Physical Review Letters</i> , 2016, 117, 225002. | 7.8 | 61 |
| 62 | X-ray drive of beryllium capsule implosions at the National Ignition Facility. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012058. | 0.4 | 3 |
| 63 | Symmetry tuning of a near one-dimensional 2-shock platform for code validation at the National Ignition Facility. <i>Physics of Plasmas</i> , 2016, 23, . | 1.9 | 33 |
| 64 | X-ray diffraction of molybdenum under shock compression to 450 GPa. <i>Physical Review B</i> , 2015, 92, . | 3.2 | 38 |
| 65 | X-Ray Diffraction of Solid Tin to 1.2 \hat{A} TPa. <i>Physical Review Letters</i> , 2015, 115, 075502. | 7.8 | 52 |
| 66 | Analysis of laser shock experiments on precompressed samples using a quartz reference and application to warm dense hydrogen and helium. <i>Journal of Applied Physics</i> , 2015, 118, . | 2.5 | 69 |
| 67 | Note: A monoenergetic proton backlighter for the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2015, 86, 116104. | 1.3 | 23 |
| 68 | Overview of Performance and Progress with Inertially Confined Fusion Implosions on the National Ignition Facility. , 2015, , . | | 0 |
| 69 | 2015, 22, 056314. | 1.9 | 49 |
| 70 | First High-Convergence Cryogenic Implosion in a Near-Vacuum Hohlraum. <i>Physical Review Letters</i> , 2015, 114, 175001. | 7.8 | 117 |
| 71 | Cryogenic tritium-hydrogen-deuterium and deuterium-tritium layer implosions with high density carbon ablaters in near-vacuum hohlraums. <i>Physics of Plasmas</i> , 2015, 22, 062703. | 1.9 | 62 |
| 72 | of Plasmas, 2015, 22, 056315. | 1.9 | 82 |

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|----|--|-----|-----------|
| 73 | Measurement of Charged-Particle Stopping in Warm Dense Plasma. <i>Physical Review Letters</i> , 2015, 114, 215002. | 7.8 | 107 |
| 74 | Thin Shell, High Velocity Inertial Confinement Fusion Implosions on the National Ignition Facility. <i>Physical Review Letters</i> , 2015, 114, 145004. | 7.8 | 56 |
| 75 | of Plasmas, 2015, 22, 056318. | 1.9 | 80 |
| 76 | Effect of the mounting membrane on shape in inertial confinement fusion implosions. <i>Physics of Plasmas</i> , 2015, 22, . | 1.9 | 85 |
| 77 | In-flight observations of low-mode $\langle i \rangle / i \rangle R$ asymmetries in NIF implosions. <i>Physics of Plasmas</i> , 2015, 22, . | 1.9 | 24 |
| 78 | Investigation of ion kinetic effects in direct-drive exploding-pusher implosions at the NIF. <i>Physics of Plasmas</i> , 2014, 21, 122712. | 1.9 | 33 |
| 79 | The effect of shock dynamics on compressibility of ignition-scale National Ignition Facility implosions. <i>Physics of Plasmas</i> , 2014, 21, . | 1.9 | 20 |
| 80 | A magnetic particle time-of-flight (MagPTOF) diagnostic for measurements of shock- and compression-bang time at the NIF (invited). <i>Review of Scientific Instruments</i> , 2014, 85, 11D901. | 1.3 | 12 |
| 81 | Reconstruction of 2D x-ray radiographs at the National Ignition Facility using pinhole tomography (invited). <i>Review of Scientific Instruments</i> , 2014, 85, 11E503. | 1.3 | 13 |
| 82 | Kinetic mix mechanisms in shock-driven inertial confinement fusion implosions. <i>Physics of Plasmas</i> , 2014, 21, . | 1.9 | 15 |
| 83 | 2D X-Ray Radiography of Imploding Capsules at the National Ignition Facility. <i>Physical Review Letters</i> , 2014, 112, 195001. | 7.8 | 154 |
| 84 | Dynamic symmetry of indirectly driven inertial confinement fusion capsules on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, . | 1.9 | 81 |
| 85 | X-ray area backlighter development at the National Ignition Facility (invited). <i>Review of Scientific Instruments</i> , 2014, 85, 11D502. | 1.3 | 22 |
| 86 | High-density carbon ablator experiments on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, . | 1.9 | 116 |
| 87 | The high-foot implosion campaign on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, . | 1.9 | 149 |
| 88 | Reduced instability growth with high-adiabat high-foot implosions at the National Ignition Facility. <i>Physical Review E</i> , 2014, 90, 011102. | 2.1 | 77 |
| 89 | Solid Iron Compressed Up to 560 GPa. <i>Physical Review Letters</i> , 2013, 111, 065501. | 7.8 | 137 |
| 90 | Tâ€™T Neutron Spectrum from Inertial Confinement Implosions. <i>Few-Body Systems</i> , 2013, 54, 1599-1602. | 1.5 | 0 |

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|-----|---|------|-----------|
| 109 | Electron-ion thermal equilibration after spherical shock collapse. <i>Physical Review E</i> , 2009, 80, 026403. | 2.1 | 15 |
| 110 | Observations of Electromagnetic Fields and Plasma Flow in Hohlräume with Proton Radiography. <i>Physical Review Letters</i> , 2009, 102, 205001. | 7.8 | 69 |
| 111 | Proton radiography of dynamic electric and magnetic fields in laser-produced high-energy-density plasmas. <i>Physics of Plasmas</i> , 2009, 16, . | 1.9 | 31 |
| 112 | Diagnosing ablator IR and IR asymmetries in capsule implosions using charged-particle spectrometry at the National Ignition Facility. <i>Physics of Plasmas</i> , 2009, 16, 022702. | 1.9 | 10 |
| 113 | Study of direct-drive capsule implosions in inertial confinement fusion with proton radiography. <i>Plasma Physics and Controlled Fusion</i> , 2009, 51, 014003. | 2.1 | 5 |
| 114 | Proton Radiography of Inertial Fusion Implosions. <i>Science</i> , 2008, 319, 1223-1225. | 12.6 | 157 |
| 115 | Monoenergetic-Proton-Radiography Measurements of Implosion Dynamics in Direct-Drive Inertial-Confinement Fusion. <i>Physical Review Letters</i> , 2008, 100, 225001. | 7.8 | 85 |
| 116 | Observations of the collapse of asymmetrically driven convergent shocks. <i>Physics of Plasmas</i> , 2008, 15, . | 1.9 | 23 |
| 117 | An accelerator based fusion-product source for development of inertial confinement fusion nuclear diagnostics. <i>Review of Scientific Instruments</i> , 2008, 79, 043302. | 1.3 | 9 |
| 118 | First measurements of the absolute neutron spectrum using the magnetic recoil spectrometer at OMEGA (invited). <i>Review of Scientific Instruments</i> , 2008, 79, 10E502. | 1.3 | 78 |
| 119 | Nuclear measurements of fuel-shell mix in inertial confinement fusion implosions at OMEGA. <i>Physics of Plasmas</i> , 2007, 14, 056306. | 1.9 | 14 |
| 120 | Observation of the Decay Dynamics and Instabilities of Megagauss Field Structures in Laser-Produced Plasmas. <i>Physical Review Letters</i> , 2007, 99, 015001. | 7.8 | 48 |
| 121 | Observation of Megagauss-Field Topology Changes due to Magnetic Reconnection in Laser-Produced Plasmas. <i>Physical Review Letters</i> , 2007, 99, 055001. | 7.8 | 151 |
| 122 | Time-Dependent Nuclear Measurements of Mix in Inertial Confinement Fusion. <i>Physical Review Letters</i> , 2007, 98, 215002. | 7.8 | 24 |
| 123 | Monoenergetic proton backlighter for measuring E and B fields and for radiographing implosions and high-energy density plasmas (invited). <i>Review of Scientific Instruments</i> , 2006, 77, 10E725. | 1.3 | 58 |
| 124 | Measured dependence of nuclear burn region size on implosion parameters in inertial confinement fusion experiments. <i>Physics of Plasmas</i> , 2006, 13, 082704. | 1.9 | 14 |
| 125 | Tests of the hydrodynamic equivalence of direct-drive implosions with different D2 and He3 mixtures. <i>Physics of Plasmas</i> , 2006, 13, 052702. | 1.9 | 60 |
| 126 | Proton core imaging of the nuclear burn in inertial confinement fusion implosions. <i>Review of Scientific Instruments</i> , 2006, 77, 043503. | 1.3 | 17 |

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|-----|--|-----|-----------|
| 127 | Measuring E and B Fields in Laser-Produced Plasmas with Monoenergetic Proton Radiography. Physical Review Letters, 2006, 97, 135003. | 7.8 | 192 |
| 128 | Using nuclear data and Monte Carlo techniques to study areal density and mix in D2 implosions. Physics of Plasmas, 2005, 12, 032703. | 1.9 | 18 |
| 129 | Measuring shock-bang timing and IR evolution of D3He implosions at OMEGA. Physics of Plasmas, 2004, 11, 2798-2805. | 1.9 | 41 |
| 130 | D3He-proton emission imaging for inertial-confinement-fusion experiments (invited). Review of Scientific Instruments, 2004, 75, 3520-3525. | 1.3 | 46 |
| 131 | Spectrometry of charged particles from inertial-confinement-fusion plasmas. Review of Scientific Instruments, 2003, 74, 975-995. | 1.3 | 214 |
| 132 | Measuring Implosion Dynamics through IR Evolution in Inertial-Confinement Fusion Experiments. Physical Review Letters, 2003, 90, 095002. | 7.8 | 39 |
| 133 | Capsule-areal-density asymmetries inferred from 14.7-MeV deuterium-helium protons in direct-drive OMEGA implosions. Physics of Plasmas, 2003, 10, 1919-1924. | 1.9 | 13 |