

J Ryan Rygg

List of Publications by Year in descending order

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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	Nanosecond X-ray diffraction of shock-compressed superionic water ice. <i>Nature</i> , 2019, 569, 251-255.	27.8	215
2	Spectrometry of charged particles from inertial-confinement-fusion plasmas. <i>Review of Scientific Instruments</i> , 2003, 74, 975-995.	1.3	214
3	Measuring E and B Fields in Laser-Produced Plasmas with Monoenergetic Proton Radiography. <i>Physical Review Letters</i> , 2006, 97, 135003.	7.8	192
4	Experimental evidence for a phase transition in magnesium oxide at exoplanet pressures. <i>Nature Geoscience</i> , 2013, 6, 926-929.	12.9	170
5	Experimental evidence for superionic water ice using shock compression. <i>Nature Physics</i> , 2018, 14, 297-302.	16.7	165
6	Proton Radiography of Inertial Fusion Implosions. <i>Science</i> , 2008, 319, 1223-1225.	12.6	157
7	2D X-Ray Radiography of Imploding Capsules at the National Ignition Facility. <i>Physical Review Letters</i> , 2014, 112, 195001.	7.8	154
8	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
9	The high-foot implosion campaign on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, .	1.9	149
10	Solid Iron Compressed Up to 560 GPa. <i>Physical Review Letters</i> , 2013, 111, 065501.	7.8	137
11	Implosion dynamics measurements at the National Ignition Facility. <i>Physics of Plasmas</i> , 2012, 19, .	1.9	125
12	Neutron spectrometry – An essential tool for diagnosing implosions at the National Ignition Facility (invited). <i>Review of Scientific Instruments</i> , 2012, 83, 10D308.	1.3	117
13	First High-Convergence Cryogenic Implosion in a Near-Vacuum Hohlraum. <i>Physical Review Letters</i> , 2015, 114, 175001.	7.8	117
14	High-density carbon ablator experiments on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, .	1.9	116
15	Insulator-metal transition in dense fluid deuterium. <i>Science</i> , 2018, 361, 677-682.	12.6	108
16	Measurement of Charged-Particle Stopping in Warm Dense Plasma. <i>Physical Review Letters</i> , 2015, 114, 215002.	7.8	107
17	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
18	Extended data set for the equation of state of warm dense hydrogen isotopes. <i>Physical Review B</i> , 2012, 86, .	3.2	95

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19	Laser-Driven Magnetic-Flux Compression in High-Energy-Density Plasmas. <i>Physical Review Letters</i> , 2009, 103, 215004.	7.8	91
20	Compressing magnetic fields with high-energy lasers. <i>Physics of Plasmas</i> , 2010, 17, .	1.9	89
21	Monoenergetic-Proton-Radiography Measurements of Implosion Dynamics in Direct-Drive Inertial-Confinement Fusion. <i>Physical Review Letters</i> , 2008, 100, 225001.	7.8	85
22	Effect of the mounting membrane on shape in inertial confinement fusion implosions. <i>Physics of Plasmas</i> , 2015, 22, .	1.9	85
23	Powder diffraction from solids in the terapascal regime. <i>Review of Scientific Instruments</i> , 2012, 83, 113904.	1.3	84
24	Diagnosing implosion performance at the National Ignition Facility (NIF) by means of neutron spectrometry. <i>Nuclear Fusion</i> , 2013, 53, 043014.	3.5	84
25	of <i>Plasmas</i> , 2015, 22, 056315.	1.9	82
26	Dynamic symmetry of indirectly driven inertial confinement fusion capsules on the National Ignition Facility. <i>Physics of Plasmas</i> , 2014, 21, .	1.9	81
27	of <i>Plasmas</i> , 2015, 22, 056318.	1.9	80
28	Metastability of diamond ramp-compressed to 2 terapascals. <i>Nature</i> , 2021, 589, 532-535.	27.8	79
29	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
30	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
31	Observations of Electromagnetic Fields and Plasma Flow in Hohlräume with Proton Radiography. <i>Physical Review Letters</i> , 2009, 102, 205001.	7.8	69
32	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
33	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
34	Evidence for Stratification of Deuterium-Tritium Fuel in Inertial Confinement Fusion Implosions. <i>Physical Review Letters</i> , 2012, 108, 075002.	7.8	61
35	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
36	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

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37	The magnetic recoil spectrometer for measurements of the absolute neutron spectrum at OMEGA and the NIF. Review of Scientific Instruments, 2013, 84, 043506.	1.3	59
38	Monoenergetic proton backlighter for measuring E and B fields and for radiographing implosions and high-energy density plasmas (invited). Review of Scientific Instruments, 2006, 77, 10E725.	1.3	58
39	Thin Shell, High Velocity Inertial Confinement Fusion Implosions on the National Ignition Facility. Physical Review Letters, 2015, 114, 145004.	7.8	56
40	Crystal structure and equation of state of Fe-Si alloys at super-Earth core conditions. Science Advances, 2018, 4, eaao5864.	10.3	56
41	X-Ray Diffraction of Solid Tin to 1.2ÅTPa. Physical Review Letters, 2015, 115, 075502.	7.8	52
42	The near vacuum hohlraum campaign at the NIF: A new approach. Physics of Plasmas, 2016, 23, .	1.9	51
43	2015, 22, 056314.	1.9	49
44	The role of hot spot mix in the low-foot and high-foot implosions on the NIF. Physics of Plasmas, 2017, 24, .	1.9	49
45	Observation of the Decay Dynamics and Instabilities of Megagauss Field Structures in Laser-Produced Plasmas. Physical Review Letters, 2007, 99, 015001.	7.8	48
46	D3He-proton emission imaging for inertial-confinement-fusion experiments (invited). Review of Scientific Instruments, 2004, 75, 3520-3525.	1.3	46
47	Lorentz Mapping of Magnetic Fields in Hot Dense Plasmas. Physical Review Letters, 2009, 103, 085001.	7.8	43
48	X-ray diffraction at the National Ignition Facility. Review of Scientific Instruments, 2020, 91, 043902.	1.3	42
49	Measuring shock-bang timing and IR evolution of D3He implosions at OMEGA. Physics of Plasmas, 2004, 11, 2798-2805.	1.9	41
50	Evidence of hydrogen-helium immiscibility at Jupiter-interior conditions. Nature, 2021, 593, 517-521.	27.8	41
51	Measuring Implosion Dynamics through IR Evolution in Inertial-Confinement Fusion Experiments. Physical Review Letters, 2003, 90, 095002.	7.8	39
52	Measuring the melting curve of iron at super-Earth core conditions. Science, 2022, 375, 202-205.	12.6	39
53	Time evolution of filamentation and self-generated fields in the coronae of directly driven inertial-confinement fusion capsules. Physics of Plasmas, 2012, 19, .	1.9	38
54	Charged-particle spectroscopy for diagnosing shock IR and strength in NIF implosions. Review of Scientific Instruments, 2012, 83, 10D901.	1.3	38

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55	A novel particle time of flight diagnostic for measurements of shock- and compression-bang times in D3He and DT implosions at the NIF. Review of Scientific Instruments, 2012, 83, 10D902.	1.3	38
56	X-ray diffraction of molybdenum under shock compression to 450 GPa. Physical Review B, 2015, 92, .	3.2	38
57	Resolving hot spot microstructure using x-ray penumbral imaging (invited). Review of Scientific Instruments, 2016, 87, 11E201.	1.3	38
58	First beryllium capsule implosions on the National Ignition Facility. Physics of Plasmas, 2016, 23, 056310.	1.9	37
59	Measurement of Body-Centered-Cubic Aluminum at 475ÅGPa. Physical Review Letters, 2017, 119, 175702.	7.8	37
60	Investigation of ion kinetic effects in direct-drive exploding-pusher implosions at the NIF. Physics of Plasmas, 2014, 21, 122712.	1.9	33
61	X-ray diffraction of molybdenum under ramp compression to 1 TPa. Physical Review B, 2016, 94, .	3.2	33
62	Symmetry tuning of a near one-dimensional 2-shock platform for code validation at the National Ignition Facility. Physics of Plasmas, 2016, 23, .	1.9	33
63	Hugoniot and release measurements in diamond shocked up to 26 Mbar. Physical Review B, 2017, 95, .	3.2	32
64	Experimental study of energy transfer in double shell implosions. Physics of Plasmas, 2019, 26, .	1.9	32
65	Proton radiography of dynamic electric and magnetic fields in laser-produced high-energy-density plasmas. Physics of Plasmas, 2009, 16, .	1.9	31
66	Examining the radiation drive asymmetries present in the high foot series of implosion experiments at the National Ignition Facility. Physics of Plasmas, 2017, 24, .	1.9	31
67	Implications of the iron oxide phase transition on the interiors of rocky exoplanets. Nature Geoscience, 2021, 14, 121-126.	12.9	28
68	Measurements of the $\langle T \rangle$ Neutron Spectrum at Low Reactant Energies from Inertial Confinement Implosions. Physical Review Letters, 2012, 109, 025003.	7.8	27
69	X-ray scattering measurements of dissociation-induced metallization of dynamically compressed deuterium. Nature Communications, 2016, 7, 11189.	12.8	27
70	Optimized x-ray sources for x-ray diffraction measurements at the Omega Laser Facility. Review of Scientific Instruments, 2019, 90, 125113.	1.3	25
71	Localized mix-induced radiative cooling in a capsule implosion at the National Ignition Facility. Physical Review E, 2020, 101, 033205.	2.1	25
72	Time-Dependent Nuclear Measurements of Mix in Inertial Confinement Fusion. Physical Review Letters, 2007, 98, 215002.	7.8	24

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73	In-flight observations of low-mode $\ell=1$ R asymmetries in NIF implosions. Physics of Plasmas, 2015, 22, .	1.9	24
74	Observations of the collapse of asymmetrically driven convergent shocks. Physics of Plasmas, 2008, 15, .	1.9	23
75	Progress toward ignition at the National Ignition Facility. Plasma Physics and Controlled Fusion, 2013, 55, 124015.	2.1	23
76	Note: A monoenergetic proton backlighter for the National Ignition Facility. Review of Scientific Instruments, 2015, 86, 116104.	1.3	23
77	X-ray area backlighter development at the National Ignition Facility (invited). Review of Scientific Instruments, 2014, 85, 11D502.	1.3	22
78	Measuring the shock impedance mismatch between high-density carbon and deuterium at the National Ignition Facility. Physical Review B, 2018, 97, .	3.2	21
79	The effect of shock dynamics on compressibility of ignition-scale National Ignition Facility implosions. Physics of Plasmas, 2014, 21, .	1.9	20
80	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
81	Proton core imaging of the nuclear burn in inertial confinement fusion implosions. Review of Scientific Instruments, 2006, 77, 043503.	1.3	17
82	Effects of fuel-capsule shimming and drive asymmetry on inertial-confinement-fusion symmetry and yield. Physics of Plasmas, 2016, 23, .	1.9	17
83	First demonstration of improved capsule implosions by reducing radiation preheat in uranium vs gold hohlraums. Physics of Plasmas, 2018, 25, .	1.9	17
84	X-ray diffraction of ramp-compressed aluminum to 475 GPa. Physics of Plasmas, 2018, 25, .	1.9	17
85	Implosion shape control of high-velocity, large case-to-capsule ratio beryllium ablaters at the National Ignition Facility. Physics of Plasmas, 2018, 25, 072708.	1.9	16
86	Equation of State of CO_2 Shock Compressed to 1 ÅTPa. Physical Review Letters, 2020, 125, 165701.	1.9	16
87	Electron-ion thermal equilibration after spherical shock collapse. Physical Review E, 2009, 80, 026403.	2.1	15
88	Kinetic mix mechanisms in shock-driven inertial confinement fusion implosions. Physics of Plasmas, 2014, 21, .	1.9	15
89	Measured dependence of nuclear burn region size on implosion parameters in inertial confinement fusion experiments. Physics of Plasmas, 2006, 13, 082704.	1.9	14
90	Nuclear measurements of fuel-shell mix in inertial confinement fusion implosions at OMEGA. Physics of Plasmas, 2007, 14, 056306.	1.9	14

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91	An imaging proton spectrometer for short-pulse laser plasma experiments. Review of Scientific Instruments, 2010, 81, 10D314.	1.3	14
92	Observation of strong electromagnetic fields around laser-entrance holes of ignition-scale hohlraums in inertial-confinement fusion experiments at the National Ignition Facility. New Journal of Physics, 2013, 15, 025040.	2.9	14
93	Performance of beryllium targets with full-scale capsules in low-fill 6.72-mm hohlraums on the National Ignition Facility. Physics of Plasmas, 2017, 24, .	1.9	14
94	Structural complexity in ramp-compressed sodium to 480â€‰GPa. Nature Communications, 2022, 13, 2534.	12.8	14
95	Capsule-area-density asymmetries inferred from 14.7-MeV deuteriumâ€‰helium protons in direct-drive OMEGA implosions. Physics of Plasmas, 2003, 10, 1919-1924.	1.9	13
96	Reconstruction of 2D x-ray radiographs at the National Ignition Facility using pinhole tomography (invited). Review of Scientific Instruments, 2014, 85, 11E503.	1.3	13
97	Shock-compressed silicon: Hugoniot and sound speed up to 2100 GPa. Physical Review B, 2021, 103, .	3.2	13
98	A magnetic particle time-of-flight (MagPTOF) diagnostic for measurements of shock- and compression-bang time at the NIF (invited). Review of Scientific Instruments, 2014, 85, 11D901.	1.3	12
99	A boundary condition for Guderleyâ€™s converging shock problem. Physics of Fluids, 2019, 31, .	4.0	12
100	Constraining physical models at gigabar pressures. Physical Review E, 2020, 102, 053210.	2.1	11
101	Polymorphism of gold under laser-based ramp compression to 690 GPa. Physical Review B, 2021, 103, .	3.2	11
102	Melting of Tantalum at Multimegabar Pressures on the Nanosecond Timescale. Physical Review Letters, 2021, 126, 255701.	7.8	11
103	Melting of magnesium oxide up to two terapascals using double-shock compression. Physical Review B, 2021, 104, .	3.2	11
104	Structure and density of silicon carbide to 1.5 TPa and implications for extrasolar planets. Nature Communications, 2022, 13, 2260.	12.8	11
105	Diagnosing ablator IR and IR asymmetries in capsule implosions using charged-particle spectrometry at the National Ignition Facility. Physics of Plasmas, 2009, 16, 022702.	1.9	10
106	An accelerator based fusion-product source for development of inertial confinement fusion nuclear diagnostics. Review of Scientific Instruments, 2008, 79, 043302.	1.3	9
107	Capsule Ablator Inflight Performance Measurements Via Streaked Radiography Of ICF Implosions On The NIF*. Journal of Physics: Conference Series, 2016, 688, 012014.	0.4	9
108	Energy Flow in Thin Shell Implosions and Explosions. Physical Review Letters, 2020, 125, 215001.	7.8	8

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109	High-energy-density-physics measurements in implosions using Bayesian inference. <i>Physics of Plasmas</i> , 2021, 28, .	1.9	8
110	Improved first-principles equation-of-state table of deuterium for high-energy-density applications. <i>Physical Review B</i> , 2021, 104, .	3.2	8
111	Evidence for Dissociation and Ionization in Shock Compressed Nitrogen to 800ÅGPa. <i>Physical Review Letters</i> , 2022, 129, .	7.8	7
112	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
113	Experimental room temperature hohlraum performance study on the National Ignition Facility. <i>Physics of Plasmas</i> , 2016, 23, .	1.9	6
114	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
115	Breakdown of Fermi Degeneracy in the Simplest Liquid Metal. <i>Physical Review Letters</i> , 2019, 122, 085001.	7.8	6
116	Diamond formation in double-shocked epoxy to 150â€™GPa. <i>Journal of Applied Physics</i> , 2022, 131, .	2.5	6
117	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
118	Response to Comment on â€™insulator-metal transition in dense fluid deuteriumâ€™. <i>Science</i> , 2019, 363, .	12.6	5
119	Equation-of-state, sound speed, and reshock of shock-compressed fluid carbon dioxide. <i>Physics of Plasmas</i> , 2021, 28, .	1.9	5
120	Emission phases of implosion sources for x-ray absorption fine structure spectroscopy. <i>Physics of Plasmas</i> , 2022, 29, .	1.9	5
121	NIF Rugby High Foot Campaign from the design side. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012035.	0.4	4
122	Development of a WDM platform for charged-particle stopping experiments. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012118.	0.4	4
123	Conceptual design for time-resolved x-ray diffraction in a single laser-driven compression experiment. <i>AIP Conference Proceedings</i> , 2018, , .	0.4	4
124	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
125	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
126	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

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127	Use of ^{41}Ar production to measure ablator areal density in NIF beryllium implosions. <i>Physics of Plasmas</i> , 2017, 24, .	1.9	2
128	Saturn-ring proton backlighters for the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2020, 91, 093505.	1.3	2
129	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
130	Planar, longitudinal, compressive waves in solids: Thermodynamics and uniaxial strain restrictions. <i>Journal of Applied Physics</i> , 2022, 131, 215904.	2.5	1
131	Tâ€™T Neutron Spectrum from Inertial Confinement Implosions. <i>Few-Body Systems</i> , 2013, 54, 1599-1602.	1.5	0
132	Overview of Performance and Progress with Inertially Confined Fusion Implosions on the National Ignition Facility. , 2015, , .		0
133	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