G W Collins

List of Publications by Year
in descending order

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133 papers	8,788 citations	25034 57 h-index	45317 90 g-index
133 all docs	133 docs citations	133 times ranked	3532 citing authors

#	Article	IF	Citations
1	Line-imaging velocimeter for shock diagnostics at the OMEGA laser facility. Review of Scientific Instruments, 2004, 75, 4916-4929.	1.3	394
2	Absolute Equation of State Measurements on Shocked Liquid Deuterium up to 200 GPa (2 Mbar). Physical Review Letters, 1997, 78, 483-486.	7.8	342
3	Measurements of the Equation of State of Deuterium at the Fluid Insulator-Metal Transition. , 1998, 281, 1178-1181.		326
4	Direct Observation of theÎ±â^'ÎµTransition in Shock-Compressed Iron via Nanosecond X-Ray Diffraction. Physical Review Letters, 2005, 95, 075502.	7.8	270
5	Progress towards ignition on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	259
6	Melting temperature of diamond at ultrahighÂpressure. Nature Physics, 2010, 6, 40-43.	16.7	210
7	Shock-Induced Transformation of Liquid Deuterium into a Metallic Fluid. Physical Review Letters, 2000, 84, 5564-5567.	7.8	202
8	Ramp compression of diamond to five terapascals. Nature, 2014, 511, 330-333.	27.8	195
9	Experimental evidence for a phase transition in magnesium oxide at exoplanet pressures. Nature Geoscience, 2013, 6, 926-929.	12.9	170
10	Dissociation of Liquid Silica at High Pressures and Temperatures. Physical Review Letters, 2006, 97, 025502.	7.8	158
11	Phase Transformations and Metallization of Magnesium Oxide at High Pressure and Temperature. Science, 2012, 338, 1330-1333.	12.6	156
12	Diamond at 800ÂGPa. Physical Review Letters, 2009, 102, 075503.	7.8	155
13	2D X-Ray Radiography of Imploding Capsules at the National Ignition Facility. Physical Review Letters, 2014, 112, 195001.	7.8	154
14	The experimental plan for cryogenic layered target implosions on the National Ignition Facilityâ€"The inertial confinement approach to fusion. Physics of Plasmas, 2011, 18, .	1.9	148
15	Laser-driven single shock compression of fluid deuterium from 45 to 220 GPa. Physical Review B, 2009, 79, .	3.2	138
16	Solid Iron Compressed Up to 560 GPa. Physical Review Letters, 2013, 111, 065501.	7.8	137
17	Hot-Spot Mix in Ignition-Scale Inertial Confinement Fusion Targets. Physical Review Letters, 2013, 111, 045001.	7.8	135
18	MASS-RADIUS RELATIONSHIPS FOR EXOPLANETS. Astrophysical Journal, 2012, 744, 59.	4.5	134

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19	Capsule implosion optimization during the indirect-drive National Ignition Campaign. Physics of Plasmas, 2011, 18, .	1.9	131
20	Implosion dynamics measurements at the National Ignition Facility. Physics of Plasmas, 2012, 19, .	1.9	125
21	Shock compression of stishovite and melting of silica at planetary interior conditions. Science, 2015, 347, 418-420.	12.6	123
22	High-precision measurements of the equation of state of hydrocarbons at 1â€“10 Mbar using laser-driven shock waves. Physics of Plasmas, 2010, 17, .	1.9	119
23	Accurate measurement of laser-driven shock trajectories with velocity interferometry. Applied Physics Letters, 1998, 73, 1320-1322.	3.3	113
24	High strain-rate plastic flow in Al and Fe. Journal of Applied Physics, 2011, 110, .	2.5	110
25	Hot-spot mix in ignition-scale implosions on the NIF. Physics of Plasmas, 2012, 19, .	1.9	107
26	Measurement of Charged-Particle Stopping in Warm Dense Plasma. Physical Review Letters, 2015, 114, 215002.	7.8	107
27	Ultrafast visualization of crystallization and grain growth in shock-compressed SiO2. Nature Communications, 2015, 6, 8191.	12.8	106
28	Achieving high-density states through shock-wave loading of precompressed samples. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 9172-9177.	7.1	103
29	Hugoniot Data for Helium in the Ionization Regime. Physical Review Letters, 2008, 100, 124503.	7.8	103
30	Tripled yield in direct-drive laser fusion through statistical modelling. Nature, 2019, 565, 581-586.	27.8	103
31	Shock-Induced Transformation ofAl2O3and LiF into Semiconducting Liquids. Physical Review Letters, 2003, 91, 035502.	7.8	97
32	Electronic conduction in shock-compressed water. Physics of Plasmas, 2004, 11, L41-L44.	1.9	96
33	Coupling static and dynamic compressions: first measurements in dense hydrogen. High Pressure Research, 2004, 24, 25-31.	1.2	96
34	Cryogenic thermonuclear fuel implosions on the National Ignition Facility. Physics of Plasmas, 2012, 19, .	1.9	95
35	Extended data set for the equation of state of warm dense hydrogen isotopes. Physical Review B, 2012, 86, .	3.2	95
36	Insulator-to-Conducting Transition in Dense Fluid Helium. Physical Review Letters, 2010, 104, 184503.	7.8	93

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37	Shock vaporization of silica and the thermodynamics of planetary impact events. Journal of Geophysical Research, 2012, 117, .	3.3	91
38	Shock compression of quartz in the high-pressure fluid regime. Physics of Plasmas, 2005, 12, 082702.	1.9	89
39	Strength effects in diamond under shock compression from 0.1 to 1 TPa. Physical Review B, 2010, 81, .	3.2	87
40	Temperature Measurements of Shock Compressed Liquid Deuterium up to 230 GPa. Physical Review Letters, 2001, 87, 165504.	7.8	86
41	Absolute Equation-of-State Data in the 10â€“40 Mbar (1â€“4 TPa) Regime. Physical Review Letters, 1998, 80, 1248-1251.	7.8	85
42	Powder diffraction from solids in the terapascal regime. Review of Scientific Instruments, 2012, 83, 113904.	1.3	84
43	High-precision measurements of the diamond Hugoniot in and above the melt region. Physical Review B, 2008, 78, .	3.2	82
44	Demonstration of the shock-timing technique for ignition targets on the National Ignition Facility. Physics of Plasmas, 2009, 16, .	1.9	82
45	Shock Compressing Diamond to a Conducting Fluid. Physical Review Letters, 2004, 93, 195506.	7.8	81
46	Convergent ablator performance measurements. Physics of Plasmas, 2010, 17, .	1.9	80
47	Metastability of diamond ramp-compressed to 2 terapascals. Nature, 2021, 589, 532-535.	27.8	79
48	Systematic uncertainties in shock-wave impedance-match analysis and the high-pressure equation of state of Al. Journal of Applied Physics, 2005, 98, 113529.	2.5	75
49	Time-dependence of the alpha to epsilon phase transformation in iron. Journal of Applied Physics, 2013, 114, .	2.5	75
50	Nuclear imaging of the fuel assembly in ignition experiments. Physics of Plasmas, 2013, 20, 056320.	1.9	65
51	Direct Observation of Melting in Shock-Compressed Bismuth With Femtosecond X-ray Diffraction. Physical Review Letters, 2015, 115, 095701.	7.8	64
52	Evidence for a Phase Transition in Silicate Melt at Extreme Pressure and Temperature Conditions. Physical Review Letters, 2012, 108, 065701.	7.8	61
53	Absolute measurements of the equations of state of low-Z materials in the multi-Mbar regime using laser-driven shocks. Physics of Plasmas, 1997, 4, 1857-1861.	1.9	58
54	Properties of fluid deuterium under double-shock compression to several Mbar. Physics of Plasmas, 2004, 11, L49-L52.	1.9	58

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55	Refractive index of lithium fluoride ramp compressed to 800 GPa. Journal of Applied Physics, 2011, 109, .	2.5	58
56	Ultrafast Dynamic Compression Technique to Study the Kinetics of Phase Transformations in Bismuth. Physical Review Letters, 2008, 101, 065701.	7.8	57
57	Assembly of High-Areal-Density Deuterium-Tritium Fuel from Indirectly Driven Cryogenic Implosions. Physical Review Letters, 2012, 108, 215005.	7.8	57
58	Equation of state of CH<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mrow><mml:mn>1.36</mml:mn></mml:mrow></mml:msub></mml:math>: First-principles molecular dynamics simulations and shock-and-release wave speed measurements. Physical Review B, 2012, 86, .	3.2	57
59	Velocity and Timing of Multiple Spherically Converging Shock Waves in Liquid Deuterium. Physical Review Letters, 2011, 106, 195005.	7.8	54
60	X-Ray Diffraction of Solid Tin to 1.2ÂTPa. Physical Review Letters, 2015, 115, 075502.	7.8	52
61	A high-resolution two-dimensional imaging velocimeter. Review of Scientific Instruments, 2010, 81, 035101.	1.3	51
62	Capsule performance optimization in the National Ignition Campaign. Physics of Plasmas, 2010, 17, .	1.9	51
63	Ultrafast X-Ray Diffraction Studies of the Phase Transitions and Equation of State of Scandium Shock Compressed to 82ÂGPa. Physical Review Letters, 2017, 118, 025501.	7.8	50
64	The direct measurement of ablation pressure driven by 351-nm laser radiation. Journal of Applied Physics, 2011, 110, .	2.5	43
65	Equation of state measurements of hydrogen isotopes on Nova. Physics of Plasmas, 1998, 5, 1864-1869.	1.9	42
66	X-ray diffraction at the National Ignition Facility. Review of Scientific Instruments, 2020, 91, 043902.	1.3	42
67	Evidence of hydrogenâ˜helium immiscibility at Jupiter-interior conditions. Nature, 2021, 593, 517-521.	27.8	41
68	Precision equation-of-state measurements on National Ignition Facility ablator materials from 1 to 12 Mbar using laser-driven shock waves. Journal of Applied Physics, 2012, 111, .	2.5	40
69	Large elastic wave amplitude and attenuation in shocked pure aluminum. Journal of Applied Physics, 2009, 105, .	2.5	39
70	Absolute Equation-of-State Measurement for Polystyrene from 25 to 60ÂMbar Using a Spherically Converging Shock Wave. Physical Review Letters, 2018, 121, 025001.	7.8	39
71	Charged-particle spectroscopy for diagnosing shock ÏR and strength in NIF implosions. Review of Scientific Instruments, 2012, 83, 10D901.	1.3	38
72	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

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73	Progress in the indirect-drive National Ignition Campaign. Plasma Physics and Controlled Fusion, 2012, 54, 124026.	2.1	38
74	Measurement of Body-Centered-Cubic Aluminum at 475ÂGPa. Physical Review Letters, 2017, 119, 175702.	7.8	37
75	Identification of Phase Transitions and Metastability in Dynamically Compressed Antimony Using Ultrafast X-Ray Diffraction. Physical Review Letters, 2019, 122, 255704.	7.8	36
76	Multiple spherically converging shock waves in liquid deuterium. Physics of Plasmas, 2011, 18, 092706.	1.9	34
77	Absolute calibration of the OMEGA streaked optical pyrometer for temperature measurements of compressed materials. Review of Scientific Instruments, 2016, 87, 114903.	1.3	34
78	Femtosecond diffraction studies of solid and liquid phase changes in shock-compressed bismuth. Scientific Reports, 2018, 8, 16927.	3.3	33
79	Hugoniot and release measurements in diamond shocked up to 26 Mbar. Physical Review B, 2017, 95, .	3.2	32
80	Shock-timing experiments using double-pulse laser irradiation. Physics of Plasmas, 2006, 13, 056303.	1.9	31
81	Refraction-enhanced x-ray radiography for density profile measurements at CH/Be interface. Journal of Instrumentation, 2011, 6, P09004-P09004.	1.2	30
82	Orientation and rate dependence in high strain-rate compression of single-crystal silicon. Physical Review B, 2012, 86, .	3.2	28
83	Thermodynamic properties of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mi>MgSiO</mml:mi><mml:msub><mml:mrow /><mml:mn>3</mml:mn></mml:msub></mml:math> at super-Earth mantle conditions. Physical Review B, 2018, 97, .	3.2	28
84	X-ray scattering measurements of dissociation-induced metallization of dynamically compressed deuterium. Nature Communications, 2016, 7, 11189.	12.8	27
85	A review on ab initio studies of static, transport, and optical properties of polystyrene under extreme conditions for inertial confinement fusion applications. Physics of Plasmas, 2018, 25, .	1.9	27
86	Equation of State and Material Property Measurements of Hydrogen Isotopes at the Highâ€Pressure, Highâ€Temperature Insulatorâ€Metal Transition. Astrophysical Journal, Supplement Series, 2000, 127, 267-273.	7.7	26
87	Shock Compression of Liquid Deuterium up to 1ÂTPa. Physical Review Letters, 2019, 122, 255702.	7.8	26
88	Equation of state, adiabatic sound speed, and GrÃ¼neisen coefficient of boron carbide along the principal Hugoniot to 700 GPa. Physical Review B, 2016, 94, .	3.2	24
89	Heterogeneous flow and brittle failure in shock-compressed silicon. Journal of Applied Physics, 2013, 114, .	2.5	23
90	Progress toward ignition at the National Ignition Facility. Plasma Physics and Controlled Fusion, 2013, 55, 124015.	2.1	23

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91	Hugoniot experiments with unsteady waves. Journal of Applied Physics, 2014, 116, .	2.5	23
92	X-ray area backlighter development at the National Ignition Facility (invited). Review of Scientific Instruments, 2014, 85, 11D502.	1.3	22
93	Simulating x-ray Thomson scattering signals from high-density, millimetre-scale plasmas at the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	21
94	Measuring the shock impedance mismatch between high-density carbon and deuterium at the National Ignition Facility. Physical Review B, 2018, 97, .	3.2	21
95	Time-resolved characterization ofHohlraumradiation temperature via interferometer measurement of quartz shock velocity. Review of Scientific Instruments, 2006, 77, 10E523.	1.3	20
96	Direct-drive laser fusion: status, plans and future. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2021, 379, 20200011.	3.4	20
97	X-ray diffraction of ramp-compressed aluminum to 475â€‰GPa. Physics of Plasmas, 2018, 25, .	1.9	17
98	X-ray Thomson scattering as a temperature probe for Gbar shock experiments. Journal of Physics: Conference Series, 2014, 500, 192019.	0.4	16
99	Equation of State of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>CO</mml:mi></mml:mrow><mml:mrow><mml:mn>2</mml:mn></mml:mrow></mml:msub></mml:mrow></mml:math> Shock Compressed to 1ÂTPa. Physical Review Letters, 2020, 125, 165701.	7.8	16
100	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
101	The effect of nearly steady shock waves in ramp compression experiments. Journal of Applied Physics, 2015, 117, 245903.	2.5	13
102	Shock-compressed silicon: Hugoniot and sound speed up to 2100 GPa. Physical Review B, 2021, 103, .	3.2	13
103	Index of refraction of shock-released materials. Journal of Applied Physics, 2011, 110, 083509.	2.5	12
104	Plasma-accelerated flyer-plates for equation of state studies. Review of Scientific Instruments, 2012, 83, 073504.	1.3	12
105	The first target experiments on the National Ignition Facility. European Physical Journal D, 2007, 44, 273-281.	1.3	11
106	Shock equation of state of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mmultiscripts><mml:mi>LiH</mml:mi><mml:mprescripts /><mml:none /><mml:mn>6</mml:mn></mml:mmultiscripts></mml:math> to 1.1 TPa. Physical Review B, 2017, 96, .	3.2	11
107	Constraining physical models at gigabar pressures. Physical Review E, 2020, 102, 053210.	2.1	11
108	Melting of Tantalum at Multimegabar Pressures on the Nanosecond Timescale. Physical Review Letters, 2021, 126, 255701.	7.8	11

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109	Melting of magnesium oxide up to two terapascals using double-shock compression. Physical Review B, 2021, 104, .	3.2	11
110	Measurement of the sound speed in dense fluid deuterium along the cryogenic liquid Hugoniot. Physics of Plasmas, 2019, 26, .	1.9	10
111	RAMP WAVE STRESS-DENSITY MEASUREMENTS OF TA AND W. AIP Conference Proceedings, 2008, , .	0.4	9
112	Shockâ€Compression Experiments and Reflectivity Measurements in Deuterium up to 3.5 Mbar using the Nova Laser. Contributions To Plasma Physics, 1999, 39, 13-16.	1.1	8
113	Energy Flow in Thin Shell Implosions and Explosions. Physical Review Letters, 2020, 125, 215001.	7.8	8
114	High-energy-density-physics measurements in implosions using Bayesian inference. Physics of Plasmas, 2021, 28, .	1.9	8
115	Improved first-principles equation-of-state table of deuterium for high-energy-density applications. Physical Review B, 2021, 104, .	3.2	8
116	A broadband proton backlighting platform to probe shock propagation in low-density systems. Review of Scientific Instruments, 2017, 88, 013503.	1.3	6
117	Breakdown of Fermi Degeneracy in the Simplest Liquid Metal. Physical Review Letters, 2019, 122, 085001.	7.8	6
118	Diamond formation in double-shocked epoxy to 150â€‰GPa. Journal of Applied Physics, 2022, 131, .	2.5	6
119	Shock Experiments on Pre-Compressed Fluid Helium. , 2009, , .		5
120	X-ray continuum emission spectroscopy from hot dense matter at Gbar pressures. Review of Scientific Instruments, 2014, 85, 11D606.	1.3	5
121	Equation-of-state, sound speed, and reshock of shock-compressed fluid carbon dioxide. Physics of Plasmas, 2021, 28, .	1.9	5
122	Emission phases of implosion sources for x-ray absorption fine structure spectroscopy. Physics of Plasmas, 2022, 29, .	1.9	5
123	Laser-shock-driven laboratory measurements of the equation of state of hydrogen isotopes in the megabar regime. High Pressure Research, 2000, 16, 281-290.	1.2	4
124	MEASUREMENTS OF THE RELEASE OF ALPHA QUARTZ: A NEW STANDARD FOR IMPEDANCE-MATCHING EXPERIMENTS. AIP Conference Proceedings, 2008, , .	0.4	4
125	Ramp compression of magnesium oxide to 234 GPa. Journal of Physics: Conference Series, 2014, 500, 062002.	0.4	4
126	Development of a broadband reflectivity diagnostic for laser driven shock compression experiments. Review of Scientific Instruments, 2015, 86, 043112.	1.3	4

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127	Development of a WDM platform for charged-particle stopping experiments. Journal of Physics: Conference Series, 2016, 717, 012118.	0.4	4
128	Conceptual design for time-resolved x-ray diffraction in a single laser-driven compression experiment. AIP Conference Proceedings, 2018, , .	0.4	4
129	Interferometric and Chirped Optical Probe Techniques for Highâ€Pressure Equationâ€ofâ€State Measurements. Astrophysical Journal, Supplement Series, 2000, 127, 333-337.	7.7	3
130	Two-dimensional imaging velocity interferometry: Technique and data analysis. AIP Conference Proceedings, 2012, , .	0.4	3
131	Coherent anti-Stokes Raman scattering of laser shock compressed Î±-quartz. , 2012, , .		1
132	Equation of State Measurements at Extreme Pressures Using Laser-Driven Shocks. , 2000, , 41-50.		0
133	Species separation in polystyrene shock release evidenced by molecular-dynamics simulations and laser-drive experiments. Physical Review Research, 2022, 4, .	3.6	0