

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	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
2	Diamond formation in double-shocked epoxy to 150â€‰GPa. <i>Journal of Applied Physics</i> , 2022, 131, .	2.5	6
3	Emission phases of implosion sources for x-ray absorption fine structure spectroscopy. <i>Physics of Plasmas</i> , 2022, 29, .	1.9	5
4	Direct-drive laser fusion: status, plans and future. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2021, 379, 20200011.	3.4	20
5	Metastability of diamond ramp-compressed to 2 terapascals. <i>Nature</i> , 2021, 589, 532-535.	27.8	79
6	Equation-of-state, sound speed, and reshock of shock-compressed fluid carbon dioxide. <i>Physics of Plasmas</i> , 2021, 28, .	1.9	5
7	Shock-compressed silicon: Hugoniot and sound speed up to 2100 GPa. <i>Physical Review B</i> , 2021, 103, .	3.2	13
8	High-energy-density-physics measurements in implosions using Bayesian inference. <i>Physics of Plasmas</i> , 2021, 28, .	1.9	8
9	Evidence of hydrogen-helium immiscibility at Jupiter-interior conditions. <i>Nature</i> , 2021, 593, 517-521.	27.8	41
10	Melting of Tantalum at Multimegabar Pressures on the Nanosecond Timescale. <i>Physical Review Letters</i> , 2021, 126, 255701.	7.8	11
11	Melting of magnesium oxide up to two terapascals using double-shock compression. <i>Physical Review B</i> , 2021, 104, .	3.2	11
12	Improved first-principles equation-of-state table of deuterium for high-energy-density applications. <i>Physical Review B</i> , 2021, 104, .	3.2	8
13	Equation of State of CO_2 Shock Compressed to 1â€‰TPa. <i>Physical Review Letters</i> , 2020, 125, 165701.	7.8	11
14	Energy Flow in Thin Shell Implosions and Explosions. <i>Physical Review Letters</i> , 2020, 125, 215001.	7.8	8
15	Constraining physical models at gigabar pressures. <i>Physical Review E</i> , 2020, 102, 053210.	2.1	11
16	X-ray diffraction at the National Ignition Facility. <i>Review of Scientific Instruments</i> , 2020, 91, 043902.	1.3	42
17	Identification of Phase Transitions and Metastability in Dynamically Compressed Antimony Using Ultrafast X-Ray Diffraction. <i>Physical Review Letters</i> , 2019, 122, 255704.	7.8	36
18	Shock Compression of Liquid Deuterium up to 1â€‰TPa. <i>Physical Review Letters</i> , 2019, 122, 255702.	7.8	26

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19	Measurement of the sound speed in dense fluid deuterium along the cryogenic liquid Hugoniot. <i>Physics of Plasmas</i> , 2019, 26, .	1.9	10
20	Tripled yield in direct-drive laser fusion through statistical modelling. <i>Nature</i> , 2019, 565, 581-586.	27.8	103
21	Breakdown of Fermi Degeneracy in the Simplest Liquid Metal. <i>Physical Review Letters</i> , 2019, 122, 085001.	7.8	6
22	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
23	A review on <i>ab initio</i> studies of static, transport, and optical properties of polystyrene under extreme conditions for inertial confinement fusion applications. <i>Physics of Plasmas</i> , 2018, 25, .	1.9	27
24	Femtosecond diffraction studies of solid and liquid phase changes in shock-compressed bismuth. <i>Scientific Reports</i> , 2018, 8, 16927.	3.3	33
25	Thermodynamic properties of MgSiO_3 at super-Earth mantle conditions. <i>Physical Review B</i> , 2018, 97, .	3.2	28
26	Conceptual design for time-resolved x-ray diffraction in a single laser-driven compression experiment. <i>AIP Conference Proceedings</i> , 2018, , .	0.4	4
27	Absolute Equation-of-State Measurement for Polystyrene from 25 to 60 ÅMbar Using a Spherically Converging Shock Wave. <i>Physical Review Letters</i> , 2018, 121, 025001.	7.8	39
28	X-ray diffraction of ramp-compressed aluminum to 475 Å%GPa. <i>Physics of Plasmas</i> , 2018, 25, .	1.9	17
29	A broadband proton backlighting platform to probe shock propagation in low-density systems. <i>Review of Scientific Instruments</i> , 2017, 88, 013503.	1.3	6
30	Ultrafast X-Ray Diffraction Studies of the Phase Transitions and Equation of State of Scandium Shock Compressed to 82 ÅGPa. <i>Physical Review Letters</i> , 2017, 118, 025501.	7.8	50
31	Measurement of Body-Centered-Cubic Aluminum at 475 ÅGPa. <i>Physical Review Letters</i> , 2017, 119, 175702.	7.8	37
32	Shock equation of state of LiH to 1.1 TPa. <i>Physical Review B</i> , 2017, 96, .	3.2	11
33	Hugoniot and release measurements in diamond shocked up to 26 Mbar. <i>Physical Review B</i> , 2017, 95, .	3.2	32
34	Development of a WDM platform for charged-particle stopping experiments. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012118.	0.4	4
35	X-ray scattering measurements of dissociation-induced metallization of dynamically compressed deuterium. <i>Nature Communications</i> , 2016, 7, 11189.	12.8	27
36	Equation of state, adiabatic sound speed, and Grüneisen coefficient of boron carbide along the principal Hugoniot to 700 GPa. <i>Physical Review B</i> , 2016, 94, .	3.2	24

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37	Absolute calibration of the OMEGA streaked optical pyrometer for temperature measurements of compressed materials. Review of Scientific Instruments, 2016, 87, 114903.	1.3	34
38	Direct Observation of Melting in Shock-Compressed Bismuth With Femtosecond X-ray Diffraction. Physical Review Letters, 2015, 115, 095701.	7.8	64
39	X-Ray Diffraction of Solid Tin to 1.2 $\hat{\text{A}}$ Tpa. Physical Review Letters, 2015, 115, 075502.	7.8	52
40	Measurement of Charged-Particle Stopping in Warm Dense Plasma. Physical Review Letters, 2015, 114, 215002.	7.8	107
41	Shock compression of stishovite and melting of silica at planetary interior conditions. Science, 2015, 347, 418-420.	12.6	123
42	The effect of nearly steady shock waves in ramp compression experiments. Journal of Applied Physics, 2015, 117, 245903.	2.5	13
43	Development of a broadband reflectivity diagnostic for laser driven shock compression experiments. Review of Scientific Instruments, 2015, 86, 043112.	1.3	4
44	Ultrafast visualization of crystallization and grain growth in shock-compressed SiO ₂ . Nature Communications, 2015, 6, 8191.	12.8	106
45	Hugoniot experiments with unsteady waves. Journal of Applied Physics, 2014, 116, .	2.5	23
46	2D X-Ray Radiography of Imploding Capsules at the National Ignition Facility. Physical Review Letters, 2014, 112, 195001.	7.8	154
47	X-ray area backlighter development at the National Ignition Facility (invited). Review of Scientific Instruments, 2014, 85, 11D502.	1.3	22
48	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
49	X-ray continuum emission spectroscopy from hot dense matter at Gbar pressures. Review of Scientific Instruments, 2014, 85, 11D606.	1.3	5
50	Ramp compression of diamond to five terapascals. Nature, 2014, 511, 330-333.	27.8	195
51	Ramp compression of magnesium oxide to 234 GPa. Journal of Physics: Conference Series, 2014, 500, 062002.	0.4	4
52	X-ray Thomson scattering as a temperature probe for Gbar shock experiments. Journal of Physics: Conference Series, 2014, 500, 192019.	0.4	16
53	Progress towards ignition on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	259
54	Solid Iron Compressed Up to 560 GPa. Physical Review Letters, 2013, 111, 065501.	7.8	137

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55	Hot-Spot Mix in Ignition-Scale Inertial Confinement Fusion Targets. <i>Physical Review Letters</i> , 2013, 111, 045001.	7.8	135
56	Heterogeneous flow and brittle failure in shock-compressed silicon. <i>Journal of Applied Physics</i> , 2013, 114, .	2.5	23
57	Nuclear imaging of the fuel assembly in ignition experiments. <i>Physics of Plasmas</i> , 2013, 20, 056320.	1.9	65
58	Experimental evidence for a phase transition in magnesium oxide at exoplanet pressures. <i>Nature Geoscience</i> , 2013, 6, 926-929.	12.9	170
59	Observation of strong electromagnetic fields around laser-entrance holes of ignition-scale hohlraums in inertial-confinement fusion experiments at the National Ignition Facility. <i>New Journal of Physics</i> , 2013, 15, 025040.	2.9	14
60	Time-dependence of the alpha to epsilon phase transformation in iron. <i>Journal of Applied Physics</i> , 2013, 114, .	2.5	75
61	Progress toward ignition at the National Ignition Facility. <i>Plasma Physics and Controlled Fusion</i> , 2013, 55, 124015.	2.1	23
62	Cryogenic thermonuclear fuel implosions on the National Ignition Facility. <i>Physics of Plasmas</i> , 2012, 19, .	1.9	95
63	Coherent anti-Stokes Raman scattering of laser shock compressed $\hat{\pm}$ -quartz. , 2012, , .		1
64	Two-dimensional imaging velocity interferometry: Technique and data analysis. <i>AIP Conference Proceedings</i> , 2012, , .	0.4	3
65	Charged-particle spectroscopy for diagnosing shock \ddot{R} and strength in NIF implosions. <i>Review of Scientific Instruments</i> , 2012, 83, 10D901.	1.3	38
66	A novel particle time of flight diagnostic for measurements of shock- and compression-bang times in D3He and DT implosions at the NIF. <i>Review of Scientific Instruments</i> , 2012, 83, 10D902.	1.3	38
67	Assembly of High-Areal-Density Deuterium-Tritium Fuel from Indirectly Driven Cryogenic Implosions. <i>Physical Review Letters</i> , 2012, 108, 215005.	7.8	57
68	Precision equation-of-state measurements on National Ignition Facility ablator materials from 1 to 12 Mbar using laser-driven shock waves. <i>Journal of Applied Physics</i> , 2012, 111, .	2.5	40
69	Equation of state of CH _{1.36} : First-principles molecular dynamics simulations and shock-and-release wave speed measurements. <i>Physical Review B</i> , 2012, 86, .	3.2	57
70	Powder diffraction from solids in the terapascal regime. <i>Review of Scientific Instruments</i> , 2012, 83, 113904.	1.3	84
71	Plasma-accelerated flyer-plates for equation of state studies. <i>Review of Scientific Instruments</i> , 2012, 83, 073504.	1.3	12
72	Phase Transformations and Metallization of Magnesium Oxide at High Pressure and Temperature. <i>Science</i> , 2012, 338, 1330-1333.	12.6	156

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73	Implosion dynamics measurements at the National Ignition Facility. <i>Physics of Plasmas</i> , 2012, 19, .	1.9	125
74	MASS-RADIUS RELATIONSHIPS FOR EXOPLANETS. <i>Astrophysical Journal</i> , 2012, 744, 59.	4.5	134
75	Orientation and rate dependence in high strain-rate compression of single-crystal silicon. <i>Physical Review B</i> , 2012, 86, .	3.2	28
76	Extended data set for the equation of state of warm dense hydrogen isotopes. <i>Physical Review B</i> , 2012, 86, .	3.2	95
77	Shock vaporization of silica and the thermodynamics of planetary impact events. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	91
78	Progress in the indirect-drive National Ignition Campaign. <i>Plasma Physics and Controlled Fusion</i> , 2012, 54, 124026.	2.1	38
79	Evidence for a Phase Transition in Silicate Melt at Extreme Pressure and Temperature Conditions. <i>Physical Review Letters</i> , 2012, 108, 065701.	7.8	61
80	Hot-spot mix in ignition-scale implosions on the NIF. <i>Physics of Plasmas</i> , 2012, 19, .	1.9	107
81	Velocity and Timing of Multiple Spherically Converging Shock Waves in Liquid Deuterium. <i>Physical Review Letters</i> , 2011, 106, 195005.	7.8	54
82	Index of refraction of shock-released materials. <i>Journal of Applied Physics</i> , 2011, 110, 083509.	2.5	12
83	Capsule implosion optimization during the indirect-drive National Ignition Campaign. <i>Physics of Plasmas</i> , 2011, 18, .	1.9	131
84	High strain-rate plastic flow in Al and Fe. <i>Journal of Applied Physics</i> , 2011, 110, .	2.5	110
85	Refraction-enhanced x-ray radiography for density profile measurements at CH/Be interface. <i>Journal of Instrumentation</i> , 2011, 6, P09004-P09004.	1.2	30
86	Refractive index of lithium fluoride ramp compressed to 800 GPa. <i>Journal of Applied Physics</i> , 2011, 109, .	2.5	58
87	The direct measurement of ablation pressure driven by 351-nm laser radiation. <i>Journal of Applied Physics</i> , 2011, 110, .	2.5	43
88	The experimental plan for cryogenic layered target implosions on the National Ignition Facilityâ€™The inertial confinement approach to fusion. <i>Physics of Plasmas</i> , 2011, 18, .	1.9	148
89	Multiple spherically converging shock waves in liquid deuterium. <i>Physics of Plasmas</i> , 2011, 18, 092706.	1.9	34
90	Strength effects in diamond under shock compression from 0.1 to 1 TPa. <i>Physical Review B</i> , 2010, 81, .	3.2	87

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91	Melting temperature of diamond at ultrahigh pressure. Nature Physics, 2010, 6, 40-43.	16.7	210
92	A high-resolution two-dimensional imaging velocimeter. Review of Scientific Instruments, 2010, 81, 035101.	1.3	51
93	Convergent ablator performance measurements. Physics of Plasmas, 2010, 17, .	1.9	80
94	Capsule performance optimization in the National Ignition Campaign. Physics of Plasmas, 2010, 17, .	1.9	51
95	High-precision measurements of the equation of state of hydrocarbons at 10^{10} Mbar using laser-driven shock waves. Physics of Plasmas, 2010, 17, .	1.9	119
96	Insulator-to-Conducting Transition in Dense Fluid Helium. Physical Review Letters, 2010, 104, 184503.	7.8	93
97	Laser-driven single shock compression of fluid deuterium from 45 to 220 GPa. Physical Review B, 2009, 79, .	3.2	138
98	Demonstration of the shock-timing technique for ignition targets on the National Ignition Facility. Physics of Plasmas, 2009, 16, .	1.9	82
99	Shock Experiments on Pre-Compressed Fluid Helium. , 2009, , .		5
100	Large elastic wave amplitude and attenuation in shocked pure aluminum. Journal of Applied Physics, 2009, 105, .	2.5	39
101	Diamond at 800 GPa. Physical Review Letters, 2009, 102, 075503.	7.8	155
102	MEASUREMENTS OF THE RELEASE OF ALPHA QUARTZ: A NEW STANDARD FOR IMPEDANCE-MATCHING EXPERIMENTS. AIP Conference Proceedings, 2008, , .	0.4	4
103	High-precision measurements of the diamond Hugoniot in and above the melt region. Physical Review B, 2008, 78, .	3.2	82
104	Hugoniot Data for Helium in the Ionization Regime. Physical Review Letters, 2008, 100, 124503.	7.8	103
105	Ultrafast Dynamic Compression Technique to Study the Kinetics of Phase Transformations in Bismuth. Physical Review Letters, 2008, 101, 065701.	7.8	57
106	RAMP WAVE STRESS-DENSITY MEASUREMENTS OF TA AND W. AIP Conference Proceedings, 2008, , .	0.4	9
107	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
108	The first target experiments on the National Ignition Facility. European Physical Journal D, 2007, 44, 273-281.	1.3	11

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109	Dissociation of Liquid Silica at High Pressures and Temperatures. <i>Physical Review Letters</i> , 2006, 97, 025502.	7.8	158
110	Time-resolved characterization of Hohlraum radiation temperature via interferometer measurement of quartz shock velocity. <i>Review of Scientific Instruments</i> , 2006, 77, 10E523.	1.3	20
111	Shock-timing experiments using double-pulse laser irradiation. <i>Physics of Plasmas</i> , 2006, 13, 056303.	1.9	31
112	Shock compression of quartz in the high-pressure fluid regime. <i>Physics of Plasmas</i> , 2005, 12, 082702.	1.9	89
113	Systematic uncertainties in shock-wave impedance-match analysis and the high-pressure equation of state of Al. <i>Journal of Applied Physics</i> , 2005, 98, 113529.	2.5	75
114	Direct Observation of the ϵ - γ Transition in Shock-Compressed Iron via Nanosecond X-Ray Diffraction. <i>Physical Review Letters</i> , 2005, 95, 075502.	7.8	270
115	Properties of fluid deuterium under double-shock compression to several Mbar. <i>Physics of Plasmas</i> , 2004, 11, L49-L52.	1.9	58
116	Shock Compressing Diamond to a Conducting Fluid. <i>Physical Review Letters</i> , 2004, 93, 195506.	7.8	81
117	Line-imaging velocimeter for shock diagnostics at the OMEGA laser facility. <i>Review of Scientific Instruments</i> , 2004, 75, 4916-4929.	1.3	394
118	Electronic conduction in shock-compressed water. <i>Physics of Plasmas</i> , 2004, 11, L41-L44.	1.9	96
119	Coupling static and dynamic compressions: first measurements in dense hydrogen. <i>High Pressure Research</i> , 2004, 24, 25-31.	1.2	96
120	Shock-Induced Transformation of Al ₂ O ₃ and LiF into Semiconducting Liquids. <i>Physical Review Letters</i> , 2003, 91, 035502.	7.8	97
121	Temperature Measurements of Shock Compressed Liquid Deuterium up to 230 GPa. <i>Physical Review Letters</i> , 2001, 87, 165504.	7.8	86
122	Interferometric and Chirped Optical Probe Techniques for High-Pressure Equation of State Measurements. <i>Astrophysical Journal, Supplement Series</i> , 2000, 127, 333-337.	7.7	3
123	Equation of State and Material Property Measurements of Hydrogen Isotopes at the High-Pressure, High-Temperature Insulator-Metal Transition. <i>Astrophysical Journal, Supplement Series</i> , 2000, 127, 267-273.	7.7	26
124	Shock-Induced Transformation of Liquid Deuterium into a Metallic Fluid. <i>Physical Review Letters</i> , 2000, 84, 5564-5567.	7.8	202
125	Laser-shock-driven laboratory measurements of the equation of state of hydrogen isotopes in the megabar regime. <i>High Pressure Research</i> , 2000, 16, 281-290.	1.2	4
126	Equation of State Measurements at Extreme Pressures Using Laser-Driven Shocks. , 2000, , 41-50.		0

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127	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
128	Absolute Equation-of-State Data in the 10â€40 Mbar (1â€4 TPa) Regime. Physical Review Letters, 1998, 80, 1248-1251.	7.8	85
129	Equation of state measurements of hydrogen isotopes on Nova. Physics of Plasmas, 1998, 5, 1864-1869.	1.9	42
130	Measurements of the Equation of State of Deuterium at the Fluid Insulator-Metal Transition. , 1998, 281, 1178-1181.		326
131	Accurate measurement of laser-driven shock trajectories with velocity interferometry. Applied Physics Letters, 1998, 73, 1320-1322.	3.3	113
132	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
133	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