Reuben Epstein

List of Publications by Year
in descending order

126 papers	4,719 citations	87888 38 h-index	110387 64 g-index
127 all docs	127 docs citations	127 times ranked	1685 citing authors

#	Article	IF	Citations
1	Effect of laser illumination nonuniformity on the analysis of time-resolved x-ray measurements in uv spherical transport experiments. Physical Review A, 1987, 36, 3926-3934.	2.5	242
2	Onset of Hydrodynamic Mix in High-Velocity, Highly Compressed Inertial Confinement Fusion Implosions. Physical Review Letters, 2013, 111, 085004.	7.8	215
3	Directâ€drive laserâ€fusion experiments with the OMEGA, 60â€beam, >40 kJ, ultraviolet laser system. Physics of Plasmas, 1996, 3, 2108-2112.	1.9	182
4	Improving the hot-spot pressure and demonstrating ignition hydrodynamic equivalence in cryogenic deuteriumâ€“tritium implosions on OMEGA. Physics of Plasmas, 2014, 21, .	1.9	139
5	Post-Newtonian generation of gravitational waves. Astrophysical Journal, 1975, 197, 717.	4.5	139
6	Post-post-Newtonian deflection of light by the Sun. Physical Review D, 1980, 22, 2947-2949.	4.7	137
7	Hot-Spot Mix in Ignition-Scale Inertial Confinement Fusion Targets. Physical Review Letters, 2013, 111, 045001.	7.8	135
8	Crossed-beam energy transfer in direct-drive implosions. Physics of Plasmas, 2012, 19, .	1.9	133
9	Hot-spot mix in ignition-scale implosions on the NIF. Physics of Plasmas, 2012, 19, .	1.9	107
10	Origins and Scaling of Hot-Electron Preheat in Ignition-Scale Direct-Drive Inertial Confinement Fusion Experiments. Physical Review Letters, 2018, 120, 055001.	7.8	104
11	Tripled yield in direct-drive laser fusion through statistical modelling. Nature, 2019, 565, 581-586.	27.8	103
12	Demonstration of a narrow-divergence x-ray laser in neonlike titanium. Physical Review A, 1990, 42, 6962-6965.	2.5	102
13	The generation of gravitational radiation by escaping supernova neutrinos. Astrophysical Journal, 1978, 223, 1037.	4.5	99
14	On the Bellâ€“Plesset effects: The effects of uniform compression and geometrical convergence on the classical Rayleighâ€“Taylor instability. Physics of Plasmas, 2004, 11, 5114-5124.	1.9	97
15	Multidimensional analysis of direct-drive, plastic-shell implosions on OMEGA. Physics of Plasmas, 2005, 12, 056307.	1.9	95
16	Performance of direct-drive cryogenic targets on OMEGA. Physics of Plasmas, 2008, 15, .	1.9	92
17	Diagnosing and controlling mix in National Ignition Facility implosion experiments. Physics of Plasmas, 2011, 18, .	1.9	92
18	The binary pulsar - Post-Newtonian timing effects. Astrophysical Journal, 1977, 216, 92.	4.5	88

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19	Core performance and mix in direct-drive spherical implosions with high uniformity. Physics of Plasmas, 2001, 8, 2251-2256.	1.9	84
20	Demonstration of Fuel Hot-Spot Pressure in Excess of 50ÂGbar for Direct-Drive, Layered Deuterium-Tritium Implosions on OMEGA. Physical Review Letters, 2016, 117, 025001.	7.8	72
21	Plasma-Density Determination from X-Ray Radiography of Laser-Driven Spherical Implosions. Physical Review Letters, 2009, 102, 185004.	7.8	68
22	Theory of hydro-equivalent ignition for inertial fusion and its applications to OMEGA and the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	68
23	Characterization of direct-drive-implosion core conditions on OMEGA with time-resolved ArK-shell spectroscopy. Physics of Plasmas, 2002, 9, 1357-1365.	1.9	65
24	Effects of ion dynamics and opacity on Stark-broadened argon line profiles. Physical Review E, 1996, 53, 1042-1050.	2.1	58
25	Polar-direct-drive simulations and experiments. Physics of Plasmas, 2006, 13, 056311.	1.9	58
26	Direct-drive-implosion experiments with enhanced fluence balance on OMEGA. Physics of Plasmas, 2004, 11, 251-259.	1.9	56
27	First-principles opacity table of warm dense deuterium for inertial-confinement-fusion applications. Physical Review E, 2014, 90, 033111.	2.1	53
28		1.9	52
29	Electron-temperature measurement in laser-produced plasmas by the ratio of isoelectronic line intensities. Physical Review A, 1992, 46, R1747-R1750.	2.5	50
30	National direct-drive program on OMEGA and the National Ignition Facility. Plasma Physics and Controlled Fusion, 2017, 59, 014008.	2.1	50
31	First results from cryogenic target implosions on OMEGA. Physics of Plasmas, 2002, 9, 2195-2201.	1.9	49
32	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
33	Inference of mix in direct-drive implosions on OMEGA. Physics of Plasmas, 2002, 9, 2208-2213.	1.9	48
34	Improving cryogenic deuteriumâ€“tritium implosion performance on OMEGA. Physics of Plasmas, 2013, 20, .	1.9	48
35	Polar direct drive: Proof-of-principle experiments on OMEGA and prospects for ignition on the National Ignition Facility. Physics of Plasmas, 2005, 12, 056304.	1.9	46
36	OMEGA ICF experiments and preparation for direct drive ignition on NIF. Nuclear Fusion, 2001, 41, 1413-1422.	3.5	45

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37	The effects of target mounts in direct-drive implosions on OMEGA. Physics of Plasmas, 2009, 16, .	1.9	45
38	Absorption-spectroscopy diagnosis of pusher conditions in laser-driven implosions. Physical Review A, 1986, 34, 411-420.	2.5	44
39	Direct-drive cryogenic target implosion performance on OMEGA. Physics of Plasmas, 2004, 11, 2790-2797.	1.9	39
40	Diagnosing direct-drive, shock-heated, and compressed plastic planar foils with noncollective spectrally resolved x-ray scattering. Physics of Plasmas, 2007, 14, 122703.	1.9	37
41	Measurements of core and pusher conditions in surrogate capsule implosions on the OMEGA laser system. Physics of Plasmas, 1998, 5, 1870-1879.	1.9	36
42	Shell trajectory measurements from direct-drive implosion experiments. Review of Scientific Instruments, 2012, 83, 10E530.	1.3	36
43	Shock-tuned cryogenic-deuterium-tritium implosion performance on Omega. Physics of Plasmas, 2010, 17, 056312.	1.9	33
44	Demonstration of the Improved Rocket Efficiency in Direct-Drive Implosions Using Different Ablator Materials. Physical Review Letters, 2013, 111, 245005.	7.8	33
45	Effects of residual kinetic energy on yield degradation and ion temperature asymmetries in inertial confinement fusion implosions. Physics of Plasmas, 2018, 25, .	1.9	33
46	Direct-drive cryogenic target implosion performance on OMEGA. Physics of Plasmas, 2003, 10, 1937-1945.	1.9	32
47	Test of Thermal Transport Models through Dynamic Overpressure Stabilization of Ablation-Front Perturbation Growth in Laser-Driven CH Foils. Physical Review Letters, 2006, 96, 115005.	7.8	32
48	Reduction of time-averaged irradiation speckle nonuniformity in laser-driven plasmas due to target ablation. Journal of Applied Physics, 1997, 82, 2123-2139.	2.5	31
49	Dependence of Shell Mix on Feedthrough in Direct Drive Inertial Confinement Fusion. Physical Review Letters, 2004, 92, 185002.	7.8	29
50	Effects of non-Maxwellian electron populations in non-LTE simulations of laser-plasma thermal transport and implosion experiments. Journal of Quantitative Spectroscopy and Radiative Transfer, 1986, 35, 131-143.	2.3	28
51	Polar-drive implosions on OMEGA and the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	28
52	Direct-drive inertial confinement fusion research at the Laboratory for Laser Energetics: charting the path to thermonuclear ignition. Nuclear Fusion, 2005, 45, S283-S290.	3.5	27
53	Direct-drive, cryogenic target implosions on OMEGA. Physics of Plasmas, 2005, 12, 056302.	1.9	27
54	Progress in hydrodynamics theory and experiments for direct-drive and fast ignition inertial confinement fusion. Plasma Physics and Controlled Fusion, 2006, 48, B153-B163.	2.1	27

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55	Neutron yield study of direct-drive, low-adiabat cryogenic D2 implosions on OMEGA laser system. Physics of Plasmas, 2009, 16, 112706.	1.9	27
56	Hot-electron generation at direct-drive ignition-relevant plasma conditions at the National Ignition Facility. Physics of Plasmas, 2020, 27, .	1.9	27
57	Three-dimensional hydrodynamic simulations of OMEGA implosions. Physics of Plasmas, 2017, 24, .	1.9	26
58	Direct-driveâ€“ignition designs with mid-Z ablators. Physics of Plasmas, 2015, 22, .	1.9	25
59	Soft x-ray backlighting of cryogenic implosions using a narrowband crystal imaging system (invited). Review of Scientific Instruments, 2014, 85, 11E501.	1.3	24
60	Direct-drive high-convergence-ratio implosion studies on the OMEGA laser system. Physics of Plasmas, 2000, 7, 2108-2113.	1.9	23
61	Experimentally Inferred Fusion Yield Dependencies of OMEGA Inertial Confinement Fusion Implosions. Physical Review Letters, 2021, 127, 105001.	7.8	23
62	Inertial confinement fusion experiments with OMEGA-A 30-kJ, 60-beam UV laser. Fusion Engineering and Design, 1999, 44, 35-42.	1.9	22
63	X-ray area backlighter development at the National Ignition Facility (invited). Review of Scientific Instruments, 2014, 85, 11D502.	1.3	22
64	Measurements of the ablation-front trajectory and low-mode nonuniformity in direct-drive implosions using x-ray self-emission shadowgraphy. High Power Laser Science and Engineering, 2015, 3, .	4.6	22
65	Production and characterization of hot, longâ€scaleâ€length laser plasmas. Physics of Fluids B, 1992, 4, 432-449.	1.7	21
66	Diagnosis of laser-target implosions by space-resolved continuum absorption x-ray spectroscopy. Physical Review E, 1994, 49, 4381-4390.	2.1	21
67	Signatures of target performance and mixing in titanium-doped, laser-driven target implosions. Physics of Plasmas, 1997, 4, 3021-3030.	1.9	21
68	Monochromatic backlighting of direct-drive cryogenic DT implosions on OMEGA. Physics of Plasmas, 2017, 24, .	1.9	21
69	Progress towards polar-drive ignition for the NIF. Nuclear Fusion, 2013, 53, 113021.	3.5	20
70	Polar-direct-drive experiments on OMEGA. European Physical Journal Special Topics, 2006, 133, 153-157.	0.2	19
71	Experimental investigation of bright spots in broadband, gated x-ray images of ignition-scale implosions on the National Ignition Facility. Physics of Plasmas, 2013, 20, 072706.	1.9	19
72	Isolating and quantifying cross-beam energy transfer in direct-drive implosions on OMEGA and the National Ignition Facility. Physics of Plasmas, 2016, 23, .	1.9	19

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73	Direct Measurements of DT Fuel Preheat from Hot Electrons in Direct-Drive Inertial Confinement Fusion. Physical Review Letters, 2021, 127, 055001.	7.8	18
74	The design and optimization of recombination extremeâ€ultraviolet lasers. Physics of Fluids B, 1989, 1, 214-220.	1.7	16
75	Diagnosis of laser-compressed shells based on absorption of core radiation. Physical Review A, 1991, 44, 8429-8432.	2.5	15
76	Spectroscopic analysis of Arâ€doped laserâ€driven implosions. Review of Scientific Instruments, 1995, 66, 755-757.	1.3	14
77	Satellite spectral lines in high density laser-produced plasmas. Journal of Quantitative Spectroscopy and Radiative Transfer, 1997, 58, 559-570.	2.3	14
78	X-ray continuum as a measure of pressure and fuelâ€“shell mix in compressed isobaric hydrogen implosion cores. Physics of Plasmas, 2015, 22, .	1.9	14
79	Novel Methods for Diagnosing Mixing and Laser-Fusion Target Performance Using X-ray Spectroscopy of an Embedded Titanium Layer. Optics and Photonics News, 1997, 8, 42.	0.5	13
80	Soft x-ray backlighting of direct-drive implosions using a spherical crystal imager on OMEGA. Review of Scientific Instruments, 2012, 83, 10E501.	1.3	13
81	X-ray lasing in thick foil irradiation geometry. Optics Communications, 1990, 79, 57-63.	2.1	12
82	Anticipated improvement in laser beam uniformity using distributed phase plates with quasirandom patterns. Journal of Applied Physics, 1990, 68, 924-931.	2.5	12
83	Satellite absorption lines and the temperature dependence of x-ray absorption features in high-temperature plasmas. Physical Review A, 1991, 43, 961-967.	2.5	12
84	High temperature of laser-compressed shells measured withKr34+andKr35+x-ray lines. Physical Review E, 1996, 54, 5848-5850.	2.1	12
85	The National Direct-Drive Program: OMEGA to the National Ignition Facility. Fusion Science and Technology, 2018, 73, 89-97.	1.1	12
86	Interpreting the electron temperature inferred from x-ray continuum emission for direct-drive inertial confinement fusion implosions on OMEGA. Physics of Plasmas, 2019, 26, .	1.9	12
87	Neutrino angular momentum loss in rotating stars. Astrophysical Journal, 1978, 219, L39.	4.5	12
88	Multibeam, laser-imploded cylindrical plasmas. Physical Review A, 1986, 33, 1246-1253.	2.5	10
89	Applied plasma spectroscopy: Laser-fusion experiments. High Energy Density Physics, 2009, 5, 234-243.	1.5	10
90	Polar-direct-drive experiments with contoured-shell targets on OMEGA. Physics of Plasmas, 2016, 23, 012711.	1.9	10

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91	The National Direct-Drive Inertial Confinement Fusion Program. Nuclear Fusion, 2019, 59, 032007.	3.5	10
92	Simultaneous diagnosis of radial profiles and mix in NIF ignition-scale implosions via X-ray spectroscopy. Physics of Plasmas, 2017, 24, .	1.9	9
93	Diagnosis of High-Temperature Implosions Using Low- and High-Opacity Krypton Lines. Journal of X-Ray Science and Technology, 1996, 6, 172-187.	1.0	8
94	Causes of fuelâ€“ablator mix inferred from modeling of monochromatic time-gated radiography of OMEGA cryogenic implosions. Physics of Plasmas, 2022, 29, .	1.9	8
95	Statistical ray tracing in plasmas with random density fluctuations. Physical Review A, 1986, 33, 1892-1902.	2.5	7
96	X-ray self-emission imaging used to diagnose 3-D nonuniformities in direct-drive ICF implosions. Review of Scientific Instruments, 2016, 87, 11E340.	1.3	7
97	A case study of using x-ray Thomson scattering to diagnose the in-flight plasma conditions of DT cryogenic implosions. Physics of Plasmas, 2022, 29, 072703.	1.9	7
98	Areal-density measurement of laser targets using absorption lines. Journal of Quantitative Spectroscopy and Radiative Transfer, 1997, 58, 75-83.	2.3	6
99	Hydrodynamic simulations of long-scale-length plasmas for two-plasmon-decay planar-target experiments on the NIF. Journal of Physics: Conference Series, 2016, 717, 012053.	0.4	6
100	Effect of cross-beam energy transfer on target-offset asymmetry in direct-drive inertial confinement fusion implosions. Physics of Plasmas, 2020, 27, 112713.	1.9	6
101	Short-wavelength-laser requirements for direct-drive ignition and gain. Laser and Particle Beams, 1993, 11, 299-306.	1.0	5
102	Diagnosis of core-shell mixing using absorption and emission spectra of a doped layer. Journal of Quantitative Spectroscopy and Radiative Transfer, 1996, 55, 731-739.	2.3	5
103	X-ray backlighting imaging of mixed imploded targets. Laser and Particle Beams, 1996, 14, 81-91.	1.0	5
104	Thermal transport studies of 351â€nm laserâ€produced plasmas using extreme ultraviolet spectroscopy. Journal of Applied Physics, 1988, 63, 674-680.	2.5	4
105	Effect of photoelectric fluorescence on the formation of x-ray absorption lines in laser-plasma experiments. Physical Review A, 1991, 44, 5111-5117.	2.5	4
106	Inferences of mix in direct-drive spherical implosions with high uniformity. Plasma Physics and Controlled Fusion, 2001, 43, A277-A286.	2.1	4
107	Direct-drive implosion physics: Results from OMEGA and the National Ignition Facility. Journal of Physics: Conference Series, 2016, 688, 012006.	0.4	4
108	Simulation and analysis of time-gated monochromatic radiographs of cryogenic implosions on OMEGA. High Energy Density Physics, 2017, 23, 167-177.	1.5	4

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109	X-ray laser studies at LLE. IEEE Transactions on Plasma Science, 1988, 16, 505-511.	1.3	3
110	Radiation cooling in laser-produced plasmas due to high-Zlayers. Physical Review A, 1989, 40, 4564-4571.	2.5	3
111	New diagnostic features in the laser implosion of argonâ€filled targets. Review of Scientific Instruments, 1995, 66, 728-730.	1.3	3
112	Spectroscopic analysis of hot dense plasmas: A focus on ion dynamics. Laser and Particle Beams, 1996, 14, 713-730.	1.0	3
113	Laser uniformity and hydrodynamic stability experiments at the OMEGA laser facility. Laser and Particle Beams, 2000, 18, 11-19.	1.0	3
114	Spectroscopic observations of Fermi-degenerate aluminum compressed and heated to four times solid density and 20ÂeV. High Energy Density Physics, 2011, 7, 259-262.	1.5	3
115	X-ray spectroscopy of planar laser-plasma interaction experiments at the National Ignition Facility. Physics of Plasmas, 2019, 26, .	1.9	3
116	Parameterizing hot electron energy distributions for tabular emissivities and opacities. High Energy Density Physics, 2020, 35, 100730.	1.5	3
117	Inferred UV fluence focal-spot profiles from soft x-ray pinhole-camera measurements on OMEGA. Review of Scientific Instruments, 2020, 91, 023505.	1.3	3
118	Experimental and numerical study of thermal transport in 24â€beam ultraviolet irradiation of spherical targets. Journal of Applied Physics, 1989, 65, 969-977.	2.5	2
119	New diagnostic features in the laser implosion of argon-filled targets. Optics Communications, 1994, 111, 556-565.	2.1	2
120	Monochromatic Backlighting as a Laser-Fusion Diagnostic. Journal of X-Ray Science and Technology, 1995, 5, 73-87.	1.0	2
121	Mass-ablation-rate measurements in direct-drive cryogenic implosions using x-ray self-emission images. Review of Scientific Instruments, 2014, 85, 11D616.	1.3	2
122	Properties of hot-spot emission in a warm plastic-shell implosion on the OMEGA laser system. Physical Review E, 2018, 98, .	2.1	2
123	Bound on hot-spot mix in high-velocity, high-adiabat direct-drive cryogenic implosions based on comparison of absolute x-ray and neutron yields. Physical Review E, 2022, 106, .	2.1	2
124	Self-radiography of imploded shells on OMEGA based on additive-free multi-monochromatic continuum spectral analysis. Physics of Plasmas, 2020, 27, .	1.9	1
125	Xâ€ray diagnosis of highâ€density compression of Arâ€filled polymer shell targets (abstract). Review of Scientific Instruments, 1988, 59, 1851-1851.	1.3	0
126	Target imaging and backlighting diagnosis. Review of Scientific Instruments, 1995, 66, 731-733.	1.3	0