Arthur E Pak

List of Publications by Year
in descending order

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126 papers	6,990 citations	57758 44 h-index	60623 81 g-index
127 all docs	127 docs citations	127 times ranked	2825 citing authors

#	Article	IF	Citations
1	Fuel gain exceeding unity in an inertially confined fusion implosion. Nature, 2014, 506, 343-348.	27.8	742
2	Injection and Trapping of Tunnel-Ionized Electrons into Laser-Produced Wakes. Physical Review Letters, 2010, 104, 025003.	7.8	434
3	Self-Guided Laser Wakefield Acceleration beyond 1ÂGeV Using Ionization-Induced Injection. Physical Review Letters, 2010, 105, 105003.	7.8	338
4	Burning plasma achieved in inertial fusion. Nature, 2022, 601, 542-548.	27.8	233
5	Onset of Hydrodynamic Mix in High-Velocity, Highly Compressed Inertial Confinement Fusion Implosions. Physical Review Letters, 2013, 111, 085004.	7.8	215
6	Demonstration of a Narrow Energy Spread,<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mo>â^¼</mml:mo><mml:mn>0.5</mml:mn><mml:mtext>â€‰</mml:mtext><mml:mtext>â€‰</mml:mtext>< Beam from a Two-Stage Laser Wakefield Accelerator. Physical Review Letters, 2011, 107, 045001.	7.8	213
7	Ultrabright X-ray laser scattering for dynamic warm dense matter physics. Nature Photonics, 2015, 9, 274-279.	31.4	208
8	Fusion Energy Output Greater than the Kinetic Energy of an Imploding Shell at the National Ignition Facility. Physical Review Letters, 2018, 120, 245003.	7.8	205
9	2D X-Ray Radiography of Imploding Capsules at the National Ignition Facility. Physical Review Letters, 2014, 112, 195001.	7.8	154
10	Formation of diamonds in laser-compressed hydrocarbons at planetary interior conditions. Nature Astronomy, 2017, 1, 606-611.	10.1	152
11	Inertially confined fusion plasmas dominated by alpha-particle self-heating. Nature Physics, 2016, 12, 800-806.	16.7	144
12	Measurements of the Critical Power for Self-Injection of Electrons in a Laser Wakefield Accelerator. Physical Review Letters, 2009, 103, 215006.	7.8	128
13	First High-Convergence Cryogenic Implosion in a Near-Vacuum Hohlraum. Physical Review Letters, 2015, 114, 175001.	7.8	117
14	High-density carbon ablator experiments on the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	116
15	Symmetry control of an indirectly driven high-density-carbon implosion at high convergence and high velocity. Physics of Plasmas, 2017, 24, .	1.9	106
16	Observations of Continuum Depression in Warm Dense Matter with X-Ray Thomson Scattering. Physical Review Letters, 2014, 112, 145004.	7.8	105
17	Demonstration of High Performance in Layered Deuterium-Tritium Capsule Implosions in Uranium Hohlraums at the National Ignition Facility. Physical Review Letters, 2015, 115, 055001.	7.8	101
18	The high velocity, high adiabat, â€œBigfootâ€•campaign and tests of indirect-drive implosion scaling. Physics of Plasmas, 2018, 25, .	1.9	90

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19	Design of inertial fusion implosions reaching the burning plasma regime. Nature Physics, 2022, 18, 251-258.	16.7	87
20	X-ray line measurements with high efficiency Bragg crystals. Review of Scientific Instruments, 2004, 75, 3747-3749.	1.3	86
21	High-Performance Indirect-Drive Cryogenic Implosions at High Adiabat on the National Ignition Facility. Physical Review Letters, 2018, 121, 135001.	7.8	86
22	Approaching a burning plasma on the NIF. Physics of Plasmas, 2019, 26, .	1.9	83
23	Dynamic symmetry of indirectly driven inertial confinement fusion capsules on the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	81
24	of Plasmas, 2015, 22, 056318.	1.9	80
25	Record Energetics for an Inertial Fusion Implosion at NIF. Physical Review Letters, 2021, 126, 025001.	7.8	76
26	X-Ray Scattering Measurements of Strong Ion-Ion Correlations in Shock-Compressed Aluminum. Physical Review Letters, 2013, 110, 065001.	7.8	74
27	Observation of a Reflected Shock in an Indirectly Driven Spherical Implosion at the National Ignition Facility. Physical Review Letters, 2014, 112, 225002.	7.8	68
28	Indirect drive ignition at the National Ignition Facility. Plasma Physics and Controlled Fusion, 2017, 59, 014021.	2.1	64
29	Beyond alpha-heating: driving inertially confined fusion implosions toward a burning-plasma state on the National Ignition Facility. Plasma Physics and Controlled Fusion, 2019, 61, 014033.	2.1	61
30	Angular Dependence of Betatron X-Ray Spectra from a Laser-Wakefield Accelerator. Physical Review Letters, 2013, 111, 235004.	7.8	60
31	Measurements of an Ablator-Gas Atomic Mix in Indirectly Driven Implosions at the National Ignition Facility. Physical Review Letters, 2014, 112, 025002.	7.8	60
32	Hohlraum energetics scaling to 520 TW on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	59
33	Improved Performance of High Areal Density Indirect Drive Implosions at the National Ignition Facility using a Four-Shock Adiabat Shaped Drive. Physical Review Letters, 2015, 115, 105001.	7.8	58
34	Impact of Localized Radiative Loss on Inertial Confinement Fusion Implosions. Physical Review Letters, 2020, 124, 145001.	7.8	58
35	Thin Shell, High Velocity Inertial Confinement Fusion Implosions on the National Ignition Facility. Physical Review Letters, 2015, 114, 145004.	7.8	56
36	Achieving record hot spot energies with large HDC implosions on NIF in HYBRID-E. Physics of Plasmas, 2021, 28, .	1.9	55

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37	Toward a burning plasma state using diamond ablator inertially confined fusion (ICF) implosions on the National Ignition Facility (NIF). Plasma Physics and Controlled Fusion, 2019, 61, 014023.	2.1	53
38	The near vacuum hohlraum campaign at the NIF: A new approach. Physics of Plasmas, 2016, 23, .	1.9	51
39	Hotspot conditions achieved in inertial confinement fusion experiments on the National Ignition Facility. Physics of Plasmas, 2020, 27, .	1.9	50
40	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
41	X-ray probe development for collective scattering measurements in dense plasmas. Journal of Quantitative Spectroscopy and Radiative Transfer, 2006, 99, 636-648.	2.3	48
42	Performance of High-Convergence, Layered DT Implosions with Extended-Duration Pulses at the National Ignition Facility. Physical Review Letters, 2013, 111, 215001.	7.8	47
43	On the importance of minimizing â€œcoast-timeâ€•in x-ray driven inertially confined fusion implosions. Physics of Plasmas, 2017, 24, .	1.9	47
44	Generation and Beaming of Early Hot Electrons onto the Capsule in Laser-Driven Ignition Hohlraums. Physical Review Letters, 2016, 116, 075003.	7.8	45
45	Observation of Betatron X-Ray Radiation in a Self-Modulated Laser Wakefield Accelerator Driven with Picosecond Laser Pulses. Physical Review Letters, 2017, 118, 134801.	7.8	45
46	Early-Time Symmetry Tuning in the Presence of Cross-Beam Energy Transfer in ICF Experiments on the National Ignition Facility. Physical Review Letters, 2013, 111, 235001.	7.8	44
47	Development of the CD Symcap platform to study gas-shell mix in implosions at the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	42
48	Increasing stagnation pressure and thermonuclear performance of inertial confinement fusion capsules by the introduction of a high-Z dopant. Physics of Plasmas, 2018, 25, .	1.9	42
49	The influence of hohlraum dynamics on implosion symmetry in indirect drive inertial confinement fusion experiments. Physics of Plasmas, 2018, 25, .	1.9	42
50	Mixing in ICF implosions on the National Ignition Facility caused by the fill-tube. Physics of Plasmas, 2020, 27, .	1.9	41
51	A 3D dynamic model to assess the impacts of low-mode asymmetry, aneurysms and mix-induced radiative loss on capsule performance across inertial confinement fusion platforms. Nuclear Fusion, 2019, 59, 032009.	3.5	40
52	Progress in the indirect-drive National Ignition Campaign. Plasma Physics and Controlled Fusion, 2012, 54, 124026.	2.1	38
53	Performance of indirectly driven capsule implosions on the National Ignition Facility using adiabat-shaping. Physics of Plasmas, 2016, 23, 056303.	1.9	38
54	Thermonuclear reactions probed at stellar-coreÂconditions with laser-based inertial-confinementÂfusion. Nature Physics, 2017, 13, 1227-1231.	16.7	38

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55	Progress of indirect drive inertial confinement fusion in the United States. Nuclear Fusion, 2019, 59, 112018.	3.5	38
56	Symmetry control in subscale near-vacuum hohlraums. Physics of Plasmas, 2016, 23, .	1.9	34
57	Comparison of implosion core metrics: A 10 ps dilation X-ray imager vs a 100 ps gated microchannel plate. Review of Scientific Instruments, 2016, 87, 11E311.	1.3	34
58	First demonstration of ARC-accelerated proton beams at the National Ignition Facility. Physics of Plasmas, 2019, 26, .	1.9	34
59	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
60	Collisionless shock acceleration of narrow energy spread ion beams from mixed species plasmas using <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mn>1</mml:mn><mml:mtext>â€‰</mml:mtext><mml:mtext>â€‰</mml:mtext><mml:mi>Î¼</mml:mi><mml:mathvariant="normal">m</mml:mi></mml:mrow></mml:math> lasers. Physical Review Accelerators and Beams, 2018, 21, .	1.6	32
61	Adiabat-shaping in indirect drive inertial confinement fusion. Physics of Plasmas, 2015, 22, 052702.	1.9	31
62	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
63	Bremsstrahlung hard x-ray source driven by an electron beam from a self-modulated laser wakefield accelerator. Plasma Physics and Controlled Fusion, 2018, 60, 054008.	2.1	31
64	Thermal Temperature Measurements of Inertial Fusion Implosions. Physical Review Letters, 2018, 121, 085001.	7.8	31
65	Review of hydrodynamic instability experiments in inertially confined fusion implosions on National Ignition Facility. Plasma Physics and Controlled Fusion, 2020, 62, 014007.	2.1	31
66	First results of radiation-driven, layered deuterium-tritium implosions with a 3-shock adiabat-shaped drive at the National Ignition Facility. Physics of Plasmas, 2015, 22, .	1.9	29
67	Symmetric fielding of the largest diamond capsule implosions on the NIF. Physics of Plasmas, 2020, 27, .	1.9	28
68	X-ray scattering measurements of dissociation-induced metallization of dynamically compressed deuterium. Nature Communications, 2016, 7, 11189.	12.8	27
69	Experimental results of radiation-driven, layered deuterium-tritium implosions with adiabat-shaped drives at the National Ignition Facility. Physics of Plasmas, 2016, 23, .	1.9	27
70	Demonstration of X-ray Thomson scattering as diagnostics for miscibility in warm dense matter. Nature Communications, 2020, 11, 2620.	12.8	27
71	In-flight observations of low-mode <i>Ï<</i>R asymmetries in NIF implosions. Physics of Plasmas, 2015, 22, .	1.9	24
72	High-pressure chemistry of hydrocarbons relevant to planetary interiors and inertial confinement fusion. Physics of Plasmas, 2018, 25, .	1.9	24

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73	Progress toward ignition at the National Ignition Facility. Plasma Physics and Controlled Fusion, 2013, 55, 124015.	2.1	23
74	Qualification of a high-efficiency, gated spectrometer for x-ray Thomson scattering on the National Ignition Facility. Review of Scientific Instruments, 2014, 85, 11D617.	1.3	22
75	Design of indirectly driven, high-compression Inertial Confinement Fusion implosions with improved hydrodynamic stability using a 4-shock adiabat-shaped drive. Physics of Plasmas, 2015, 22, .	1.9	22
76	X-ray sources using a picosecond laser driven plasma accelerator. Physics of Plasmas, 2019, 26, .	1.9	22
77	Evidence for Crystalline Structure in Dynamically-Compressed Polyethylene up to 200 GPa. Scientific Reports, 2019, 9, 4196.	3.3	22
78	Integrated performance of large HDC-capsule implosions on the National Ignition Facility. Physics of Plasmas, 2020, 27, .	1.9	22
79	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
80	Hotspot electron temperature from x-ray continuum measurements on the NIF. Review of Scientific Instruments, 2016, 87, 11E534.	1.3	21
81	Mix and hydrodynamic instabilities on NIF. Journal of Instrumentation, 2017, 12, C06001-C06001.	1.2	21
82	The effect of shock dynamics on compressibility of ignition-scale National Ignition Facility implosions. Physics of Plasmas, 2014, 21, .	1.9	20
83	Electron-ion temperature equilibration in warm dense tantalum. High Energy Density Physics, 2015, 14, 1-5.	1.5	20
84	Achieving 280 Gbar hot spot pressure in DT-layered CH capsule implosions at the National Ignition Facility. Physics of Plasmas, 2020, 27, .	1.9	20
85	Observation of Hydrodynamic Flows in Imploding Fusion Plasmas on the National Ignition Facility. Physical Review Letters, 2021, 127, 125001.	7.8	20
86	Formation of Ultrarelativistic Electron Rings from a Laser-Wakefield Accelerator. Physical Review Letters, 2015, 115, 055004.	7.8	17
87	First demonstration of improved capsule implosions by reducing radiation preheat in uranium vs gold hohlraums. Physics of Plasmas, 2018, 25, .	1.9	17
88	Betatron x-ray radiation in the self-modulated laser wakefield acceleration regime: prospects for a novel probe at large scale laser facilities. Nuclear Fusion, 2019, 59, 032003.	3.5	17
89	Observations of strong ion-ion correlations in dense plasmas. Physics of Plasmas, 2014, 21, 056302.	1.9	16
90	Liquid Structure of Shock-Compressed Hydrocarbons at Megabar Pressures. Physical Review Letters, 2018, 121, 245501.	7.8	16

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91	Maintaining low-mode symmetry control with extended pulse shapes for lower-adiabat Bigfoot implosions on the National Ignition Facility. Physics of Plasmas, 2019, 26, .	1.9	14
92	X-ray Thomson scattering measurements of temperature and density from multi-shocked CH capsules. Physics of Plasmas, 2013, 20, .	1.9	13
93	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
94	Development of a krypton-doped gas symmetry capsule platform for x-ray spectroscopy of implosion cores on the NIF. Review of Scientific Instruments, 2016, 87, 11E327.	1.3	13
95	New experimental platform to study high density laser-compressed matter. Review of Scientific Instruments, 2014, 85, 11E616.	1.3	12
96	Simulations of indirectly driven gas-filled capsules at the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	12
97	Fill tube dynamics in inertial confinement fusion implosions with high density carbon ablators. Physics of Plasmas, 2020, 27, .	1.9	11
98	Simplified model of pinhole imaging for quantifying systematic errors in image shape. Applied Optics, 2017, 56, 8719.	1.8	10
99	Betatron x-ray radiation from laser-plasma accelerators driven by femtosecond and picosecond laser systems. Physics of Plasmas, 2018, 25, 056706.	1.9	10
100	Measurement of diamond nucleation rates from hydrocarbons at conditions comparable to the interiors of icy giant planets. Physical Review B, 2020, 101, .	3.2	10
101	Laser absorption, power transfer, and radiation symmetry during the first shock of inertial confinement fusion gas-filled hohlraum experiments. Physics of Plasmas, 2015, 22, 122701.	1.9	9
102	Spatially resolved X-ray emission measurements of the residual velocity during the stagnation phase of inertial confinement fusion implosion experiments. Physics of Plasmas, 2016, 23, 072701.	1.9	8
103	X-ray analysis methods for sources from self-modulated laser wakefield acceleration driven by picosecond lasers. Review of Scientific Instruments, 2019, 90, 033503.	1.3	8
104	Recent and planned hydrodynamic instability experiments on indirect-drive implosions on the National Ignition Facility. High Energy Density Physics, 2020, 36, 100820.	1.5	8
105	Forward directed ion acceleration in a LWFA with ionization-induced injection. Journal of Plasma Physics, 2012, 78, 327-331.	2.1	7
106	Measurements of enhanced performance in an indirect drive inertial confinement fusion experiment when reducing the contact area of the capsule support. Physics of Plasmas, 2020, 27, .	1.9	7
107	Metrics for implosion performance with enhanced energy coupling on NIF. Nuclear Fusion, 2021, 61, 116066.	3.5	7
108	A concept to collect neutron and x-ray images on the same line of sight at NIF. Review of Scientific Instruments, 2014, 85, 11E614.	1.3	6

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109	Exploring Mbar shock conditions and isochorically heated aluminum at the Matter in Extreme Conditions end station of the Linac Coherent Light Source (invited). Review of Scientific Instruments, 2014, 85, 11E702.	1.3	6
110	Automated analysis of hot spot X-ray images at the National Ignition Facility. Review of Scientific Instruments, 2016, 87, 11E334.	1.3	6
111	Early-time radiation flux symmetry optimization and its effect on gas-filled hohlraum ignition targets on the National Ignition Facility. Physics of Plasmas, 2016, 23, .	1.9	6
112	Experimental room temperature hohlraum performance study on the National Ignition Facility. Physics of Plasmas, 2016, 23, .	1.9	6
113	Using a 2-shock 1D platform at NIF to measure the effect of convergence on mix and symmetry. Physics of Plasmas, 2018, 25, 102702.	1.9	6
114	Predominant contribution of direct laser acceleration to high-energy electron spectra in a low-density self-modulated laser wakefield accelerator. Physical Review Accelerators and Beams, 2021, 24, .	1.6	6
115	Measuring the angular dependence of betatron x-ray spectra in a laser-wakefield accelerator. Plasma Physics and Controlled Fusion, 2014, 56, 084016.	2.1	5
116	Simulations of symcap and layered NIF experiments with top/bottom laser asymmetry to impose P1 drive on capsules. Journal of Physics: Conference Series, 2016, 717, 012014.	0.4	5
117	Diagnosing residual motion via the x-ray self emission from indirectly driven inertial confinement implosions. Review of Scientific Instruments, 2014, 85, 11E605.	1.3	3
118	Using multiple x-ray emission images of inertially confined implosions to identify spatial variations and estimate confinement volumes (invited). Review of Scientific Instruments, 2018, 89, 10G105.	1.3	2
119	Betatron radiation from laser plasma accelerators. Proceedings of SPIE, 2015, , .	0.8	1
120	High intensity laser-driven x-ray sources for high energy density science. , 2015, , .		1
121	Angular dependance of betatron x-ray spectra in a laser-wakefield accelerator. , 2014, , .		0
122	Performance of indirectly driven capsule implosions on NIF using adiabat-shaping. Journal of Physics: Conference Series, 2016, 717, 012045.	0.4	0
123	Reply to: Reconsidering X-ray plasmons. Nature Photonics, 2019, 13, 751-753.	31.4	0
124	Acceleration of Electrons by A Laser Wakefield Accelerator (LWFA) Operating in the Self-Guided Regime. , 2010, , .		0
125	X-ray Sources from Self-modulated Laser Wakefield Acceleration: Applications in High Energy Density Sciences. , 2020, , .		0
126	Bootstrap estimation of the effect of instrument response function uncertainty on the reconstruction of fusion neutron sources. Review of Scientific Instruments, 2022, 93, 043508.	1.3	0