Abbas Nikroo

List of Publications by Year
in descending order

146 papers	7,455 citations	38742 50 h-index	62596 80 g-index
146 all docs	146 docs citations	146 times ranked	1897 citing authors

#	Article	IF	Citations
1	Point design targets, specifications, and requirements for the 2010 ignition campaign on the National Ignition Facility. Physics of Plasmas, 2011, 18, .	1.9	534
2	Symmetric Inertial Confinement Fusion Implosions at Ultra-High Laser Energies. Science, 2010, 327, 1228-1231.	12.6	321
3	Progress towards ignition on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	259
4	Burning plasma achieved in inertial fusion. Nature, 2022, 601, 542-548.	27.8	233
5	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
6	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
7	Inertially confined fusion plasmas dominated by alpha-particle self-heating. Nature Physics, 2016, 12, 800-806.	16.7	144
8	Hot-Spot Mix in Ignition-Scale Inertial Confinement Fusion Targets. Physical Review Letters, 2013, 111, 045001.	7.8	135
9	Capsule implosion optimization during the indirect-drive National Ignition Campaign. Physics of Plasmas, 2011, 18, .	1.9	131
10	Implosion dynamics measurements at the National Ignition Facility. Physics of Plasmas, 2012, 19, .	1.9	125
11	Neutron spectrometryâ€"An essential tool for diagnosing implosions at the National Ignition Facility (invited). Review of Scientific Instruments, 2012, 83, 10D308.	1.3	117
12	First High-Convergence Cryogenic Implosion in a Near-Vacuum Hohlraum. Physical Review Letters, 2015, 114, 175001.	7.8	117
13	High-density carbon ablator experiments on the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	116
14	Shock timing experiments on the National Ignition Facility: Initial results and comparison with simulation. Physics of Plasmas, 2012, 19, .	1.9	115
15	A high-resolution integrated model of the National Ignition Campaign cryogenic layered experiments. Physics of Plasmas, 2012, 19, .	1.9	108
16	Hot-spot mix in ignition-scale implosions on the NIF. Physics of Plasmas, 2012, 19, .	1.9	107
17	Symmetry control of an indirectly driven high-density-carbon implosion at high convergence and high velocity. Physics of Plasmas, 2017, 24, .	1.9	106
18	Multistep redirection by cross-beam power transfer of ultrahigh-power lasers in a plasma. Nature Physics, 2012, 8, 344-349.	16.7	104

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19	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
20	An in-flight radiography platform to measure hydrodynamic instability growth in inertial confinement fusion capsules at the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	98
21	Cryogenic thermonuclear fuel implosions on the National Ignition Facility. Physics of Plasmas, 2012, 19, .	1.9	95
22	First Measurements of Hydrodynamic Instability Growth in Indirectly Driven Implosions at Ignition-Relevant Conditions on the National Ignition Facility. Physical Review Letters, 2014, 112, 185003.	7.8	90
23	The high velocity, high adiabat, â€œBigfootâ€•campaign and tests of indirect-drive implosion scaling. Physics of Plasmas, 2018, 25, .	1.9	90
24	Design of inertial fusion implosions reaching the burning plasma regime. Nature Physics, 2022, 18, 251-258.	16.7	87
25	Charged-Particle Probing of X-rayâ€“Driven Inertial-Fusion Implosions. Science, 2010, 327, 1231-1235.	12.6	86
26	Precision Shock Tuning on the National Ignition Facility. Physical Review Letters, 2012, 108, 215004.	7.8	83
27	Exploration of the Transition from the Hydrodynamiclike to the Strongly Kinetic Regime in Shock-Driven Implosions. Physical Review Letters, 2014, 112, 185001.	7.8	77
28	Reduced instability growth with high-adiabat high-foot implosions at the National Ignition Facility. Physical Review E, 2014, 90, 011102.	2.1	77
29	The velocity campaign for ignition on NIF. Physics of Plasmas, 2012, 19, .	1.9	76
30	Record Energetics for an Inertial Fusion Implosion at NIF. Physical Review Letters, 2021, 126, 025001.	7.8	76
31	Observations of Electromagnetic Fields and Plasma Flow in Hohlraums with Proton Radiography. Physical Review Letters, 2009, 102, 205001.	7.8	69
32	Ion Thermal Decoupling and Species Separation in Shock-Driven Implosions. Physical Review Letters, 2015, 114, 025001.	7.8	67
33	Nuclear imaging of the fuel assembly in ignition experiments. Physics of Plasmas, 2013, 20, 056320.	1.9	65
34	Indirect drive ignition at the National Ignition Facility. Plasma Physics and Controlled Fusion, 2017, 59, 014021.	2.1	64
35	Progress in hohlraum physics for the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	62
36	Cryogenic tritium-hydrogen-deuterium and deuterium-tritium layer implosions with high density carbon ablators in near-vacuum hohlraums. Physics of Plasmas, 2015, 22, 062703.	1.9	62

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37	Hydrodynamic instability growth and mix experiments at the National Ignition Facility. Physics of Plasmas, 2014, 21, .	1.9	60
38	Hohlraum energetics scaling to 520 TW on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	59
39	First Observations of Nonhydrodynamic Mix at the Fuel-Shell Interface in Shock-Driven Inertial Confinement Implosions. Physical Review Letters, 2014, 112, 135001.	7.8	58
40	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
41	Assembly of High-Areal-Density Deuterium-Tritium Fuel from Indirectly Driven Cryogenic Implosions. Physical Review Letters, 2012, 108, 215005.	7.8	57
42	Thin Shell, High Velocity Inertial Confinement Fusion Implosions on the National Ignition Facility. Physical Review Letters, 2015, 114, 145004.	7.8	56
43	Achieving record hot spot energies with large HDC implosions on NIF in HYBRID-E. Physics of Plasmas, 2021, 28, .	1.9	55
44	X-ray driven implosions at ignition relevant velocities on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	54
45	Improving ICF implosion performance with alternative capsule supports. Physics of Plasmas, 2017, 24, .	1.9	54
46	First Liquid Layer Inertial Confinement Fusion Implosions at the National Ignition Facility. Physical Review Letters, 2016, 117, 245001.	7.8	53
47	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
48		1.9	52
49	Capsule performance optimization in the National Ignition Campaign. Physics of Plasmas, 2010, 17, .	1.9	51
50	The near vacuum hohlraum campaign at the NIF: A new approach. Physics of Plasmas, 2016, 23, .	1.9	51
51	Proof of principle experiments that demonstrate utility of cocktail hohlraums for indirect drive ignition. Physics of Plasmas, 2007, 14, 056311.	1.9	50
52	2015, 22, 056314.	1.9	49
53	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
54	Hydrodynamic instability growth of three-dimensional, â€œnative-roughnessâ€•modulations in x-ray driven, spherical implosions at the National Ignition Facility. Physics of Plasmas, 2015, 22, .	1.9	46

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55	X-ray shadow imprint of hydrodynamic instabilities on the surface of inertial confinement fusion capsules by the fuel fill tube. Physical Review E, 2017, 95, 031204.	2.1	46
56	Hot-spot mix in large-scale HDC implosions at NIF. Physics of Plasmas, 2020, 27, .	1.9	46
57	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
58	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
59	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
60	First implosion experiments with cryogenic thermonuclear fuel on the National Ignition Facility. Plasma Physics and Controlled Fusion, 2012, 54, 045013.	2.1	41
61	Mixing in ICF implosions on the National Ignition Facility caused by the fill-tube. Physics of Plasmas, 2020, 27, .	1.9	41
62	Evidence of Three-Dimensional Asymmetries Seeded by High-Density Carbon-Ablator Nonuniformity in Experiments at the National Ignition Facility. Physical Review Letters, 2021, 126, 025002.	7.8	40
63	Charged-particle spectroscopy for diagnosing shock ïR and strength in NIF implosions. Review of Scientific Instruments, 2012, 83, 10D901.	1.3	38
64	Progress in the indirect-drive National Ignition Campaign. Plasma Physics and Controlled Fusion, 2012, 54, 124026.	2.1	38
65	Performance of indirectly driven capsule implosions on the National Ignition Facility using adiabat-shaping. Physics of Plasmas, 2016, 23, 056303.	1.9	38
66	Progress of indirect drive inertial confinement fusion in the United States. Nuclear Fusion, 2019, 59, 112018.	3.5	38
67	Beryllium Capsule Coating Development for NIF Targets. Fusion Science and Technology, 2007, 51, 547-552.	1.1	37
68	First beryllium capsule implosions on the National Ignition Facility. Physics of Plasmas, 2016, 23, 056310.	1.9	37
69	Developing depleted uranium and gold cocktail hohlraums for the National Ignition Facility. Physics of Plasmas, 2007, 14, 056310.	1.9	36
70	Progress toward fabrication of graded doped beryllium and CH capsules for the National Ignition Facility. Physics of Plasmas, 2006, 13, 056302.	1.9	33
71	Investigation of ion kinetic effects in direct-drive exploding-pusher implosions at the NIF. Physics of Plasmas, 2014, 21, 122712.	1.9	33
72	First Measurements of Fuel-Ablator Interface Instability Growth in Inertial Confinement Fusion Implosions on the National Ignition Facility. Physical Review Letters, 2016, 117, 075002.	7.8	33

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73	Enhanced energy coupling for indirectly driven inertial confinement fusion. Nature Physics, 2019, 15, 138-141.	16.7	32
74	Adiabat-shaping in indirect drive inertial confinement fusion. Physics of Plasmas, 2015, 22, 052702.	1.9	31
75	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
76	The NIF x-ray spectrometer calibration campaign at Omega. Review of Scientific Instruments, 2014, 85, 11D613.	1.3	30
77	Probing the deep nonlinear stage of the ablative Rayleigh-Taylor instability in indirect drive experiments on the National Ignition Facility. Physics of Plasmas, 2015, 22, .	1.9	30
78	Hydrodynamic instability growth of three-dimensional modulations in radiation-driven implosions with â€œlow-footâ€•and â€œhigh-footâ€•drives at the National Ignition Facility. Physics of Plasmas, 2017, 24, .	1.9	30
79	Mitigation of X-ray shadow seeding of hydrodynamic instabilities on inertial confinement fusion capsules using a reduced diameter fuel fill-tube. Physics of Plasmas, 2018, 25, .	1.9	30
80	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
81	Developing an Experimental Basis for Understanding Transport in NIF Hohlraum Plasmas. Physical Review Letters, 2018, 121, 095002.	7.8	28
82	Symmetric fielding of the largest diamond capsule implosions on the NIF. Physics of Plasmas, 2020, 27, .	1.9	28
83	Status of the development of ignition capsules in the U.S. effort to achieve thermonuclear ignition on the national ignition facility. Laser and Particle Beams, 2006, 24, 567-578.	1.0	27
84	Shock timing measurements and analysis in deuterium-tritium-ice layered capsule implosions on NIF. Physics of Plasmas, 2014, 21, 022703.	1.9	27
85	Assessment of ion kinetic effects in shock-driven inertial confinement fusion implosions using fusion burn imaging. Physics of Plasmas, 2015, 22, .	1.9	27
86	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
87	Hydro-instability growth of perturbation seeds from alternate capsule-support strategies in indirect-drive implosions on National Ignition Facility. Physics of Plasmas, 2017, 24, 102707.	1.9	27
88	Time-Resolved Fuel Density Profiles of the Stagnation Phase of Indirect-Drive Inertial Confinement Implosions. Physical Review Letters, 2020, 125, 155003.	7.8	27
89	Fill-Tube-Induced Mass Perturbations on X-Ray-Driven, Ignition-Scale, Inertial-Confinement-Fusion Capsule Shells and the Implications for Ignition Experiments. Physical Review Letters, 2007, 99, 205003.	7.8	25
90	Hydrodynamic instabilities seeded by the X-ray shadow of ICF capsule fill-tubes. Physics of Plasmas, 2018, 25, .	1.9	25

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91	Early time implosion symmetry from two-axis shock-timing measurements on indirect drive NIF experiments. Physics of Plasmas, 2014, 21, .	1.9	24
92	In-flight observations of low-mode <i>Ï<</i>R asymmetries in NIF implosions. Physics of Plasmas, 2015, 22, .	1.9	24
93	Robust Capsule and Fill Tube Assemblies for the National Ignition Campaign. Fusion Science and Technology, 2009, 55, 331-336.	1.1	23
94	X-ray streaked refraction enhanced radiography for inferring inflight density gradients in ICF capsule implosions. Review of Scientific Instruments, 2018, 89, 10G108.	1.3	23
95	Visualizing deceleration-phase instabilities in inertial confinement fusion implosions using an â€œenhanced self-emissionâ€•technique at the National Ignition Facility. Physics of Plasmas, 2018, 25, 054502.	1.9	22
96	Integrated performance of large HDC-capsule implosions on the National Ignition Facility. Physics of Plasmas, 2020, 27, .	1.9	22
97	Development of a polar direct-drive platform for studying inertial confinement fusion implosion mix on the National Ignition Facility. Physics of Plasmas, 2013, 20, .	1.9	21
98	Mix and hydrodynamic instabilities on NIF. Journal of Instrumentation, 2017, 12, C06001-C06001.	1.2	21
99	The effect of shock dynamics on compressibility of ignition-scale National Ignition Facility implosions. Physics of Plasmas, 2014, 21, .	1.9	20
100	Development of an inertial confinement fusion platform to study charged-particle-producing nuclear reactions relevant to nuclear astrophysics. Physics of Plasmas, 2017, 24, .	1.9	20
101	Beryllium capsule implosions at a case-to-capsule ratio of 3.7 on the National Ignition Facility. Physics of Plasmas, 2018, 25, .	1.9	20
102	Review of hydro-instability experiments with alternate capsule supports in indirect-drive implosions on the National Ignition Facility. Physics of Plasmas, 2018, 25, 072705.	1.9	20
103	Fabrication and Attachment of Polyimide Fill Tubes to Plastic NIF Capsules. Fusion Science and Technology, 2007, 51, 638-642.	1.1	19
104	Performance and Mix Measurements of Indirect Drive Cu-Doped Be Implosions. Physical Review Letters, 2015, 114, 205002.	7.8	18
105	Hydrodynamic instability experiments with three-dimensional modulations at the National Ignition Facility. High Power Laser Science and Engineering, 2015, 3, .	4.6	17
106	Effects of fuel-capsule shimming and drive asymmetry on inertial-confinement-fusion symmetry and yield. Physics of Plasmas, 2016, 23, .	1.9	17
107	First demonstration of improved capsule implosions by reducing radiation preheat in uranium vs gold hohlraums. Physics of Plasmas, 2018, 25, .	1.9	17
108	A â€œpolar contactâ€•tent for reduced perturbation and improved performance of NIF ignition capsules. Physics of Plasmas, 2018, 25, 082714.	1.9	17

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109	Update 2015 on Target Fabrication Requirements for NIF Layered Implosions, with Emphasis on Capsule Support and Oxygen Modulations in GDP. Fusion Science and Technology, 2016, 70, 121-126.	1.1	16
110	Mitigating laser-imprint effects in direct-drive inertial confinement fusion implosions with an above-critical-density foam layer. Physics of Plasmas, 2018, 25, .	1.9	16
111	Implosion shape control of high-velocity, large case-to-capsule ratio beryllium ablators at the National Ignition Facility. Physics of Plasmas, 2018, 25, 072708.	1.9	16
112	A compact proton spectrometer for measurement of the absolute DD proton spectrum from which yield and ĪR are determined in thin-shell inertial-confinement-fusion implosions. Review of Scientific Instruments, 2014, 85, 103504.	1.3	15
113	Variable convergence liquid layer implosions on the National Ignition Facility. Physics of Plasmas, 2018, 25, .	1.9	15
114	Simultaneous visualization of wall motion, beam propagation, and implosion symmetry on the National Ignition Facility (invited). Review of Scientific Instruments, 2018, 89, 10K111.	1.3	15
115	Development of new platforms for hydrodynamic instability and asymmetry measurements in deceleration phase of indirectly driven implosions on NIF. Physics of Plasmas, 2018, 25, 082705.	1.9	15
116	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
117	The Magnetized Indirect Drive Project on the National Ignition Facility. Journal of Fusion Energy, 2022, 41, 1.	1.2	14
118	Mechanical Properties of Thin GDP Shells Used as Cryogenic Direct Drive Targets at OMEGA. Fusion Science and Technology, 2004, 45, 229-232.	1.1	12
119	Wetted foam liquid fuel ICF target experiments. Journal of Physics: Conference Series, 2016, 717, 012042.	0.4	12
120	Fabrication of Low-Density Foam Liners in Hohlraums for NIF Targets. Fusion Science and Technology, 2018, 73, 194-209.	1.1	12
121	Pushered single shell implosions for mix and radiation trapping studies using high-Z layers on National Ignition Facility. Physics of Plasmas, 2019, 26, .	1.9	12
122	Deficiencies in compression and yield in x-ray-driven implosions. Physics of Plasmas, 2020, 27, .	1.9	12
123	Experimental demonstration of the reduced expansion of a laser-heated surface using a low density foam layer, pertaining to advanced hohlraum designs with less wall-motion. Physics of Plasmas, 2020, 27, .	1.9	12
124	Fabrication of Pressurized 2 mm Beryllium Targets for ICF Experiments. Fusion Science and Technology, 2007, 51, 576-580.	1.1	11
125	Laser irradiance scaling in polar direct drive implosions on the National Ignition Facility. Physics of Plasmas, 2015, 22, .	1.9	11
126	Observation of hohlraum-wall motion with spectrally selective x-ray imaging at the National Ignition Facility. Review of Scientific Instruments, 2016, 87, 11E321.	1.3	11

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127	Experiments to explore the influence of pulse shaping at the National Ignition Facility. Physics of Plasmas, 2020, 27, 112708.	1.9	11
128	Optimization of a high-yield, low-areal-density fusion product source at the National Ignition Facility with applications in nucleosynthesis experiments. Physics of Plasmas, 2018, 25, .	1.9	10
129	The National Direct-Drive Inertial Confinement Fusion Program. Nuclear Fusion, 2019, 59, 032007.	3.5	10
130	A direct-drive exploding-pusher implosion as the first step in development of a monoenergetic charged-particle backlighting platform at the National Ignition Facility. High Energy Density Physics, 2016, 18, 38-44.	1.5	9
131	First study of Hohlraum x-ray preheat asymmetry inside an ICF capsule. Physics of Plasmas, 2020, 27, 122703.	1.9	9
132	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
133	Principal factors in performance of indirect-drive laser fusion experiments. Physics of Plasmas, 2020, 27, .	1.9	7
134	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
135	Zinc Oxideâ€“Coated Poly(HIPE) Annular Liners to Advance Laser Indirect Drive Inertial Confinement Fusion. Fusion Science and Technology, 2018, 73, 210-218.	1.1	6
136	Direct observation of density gradients in ICF capsule implosions via streaked Refraction Enhanced Radiography (RER). High Energy Density Physics, 2020, 36, 100795.	1.5	6
137	The effects of multispecies Hohlraum walls on stimulated Brillouin scattering, Hohlraum dynamics, and beam propagation. Physics of Plasmas, 2021, 28, .	1.9	6
138	Experimental evidence of a bubble-merger regime for the Rayleigh-Taylor Instability at the ablation front. Journal of Physics: Conference Series, 2016, 717, 012010.	0.4	5
139	D₂ and D-T Liquid-Layer Target Shots at the National Ignition Facility. Fusion Science and Technology, 2018, 73, 305-314.	1.1	5
140	Symmetry tuning and high energy coupling for an Al capsule in a Au rugby hohlraum on NIF. Physics of Plasmas, 2020, 27, .	1.9	5
141	Process Developments in the Fabrication of Depleted Uranium Hohlraums. Fusion Science and Technology, 2018, 73, 370-379.	1.1	4
142	Reaching 30% energy coupling efficiency for a high-density-carbon capsule in a gold rugby hohlraum on NIF. Nuclear Fusion, 2021, 61, 086028.	3.5	4
143	Diagnosing implosions at the national ignition facility with X-ray spectroscopy. AIP Conference Proceedings, 2012, , .	0.4	3
144	Foam-lined hohlraum, inertial confinement fusion experiments on the National Ignition Facility. Physical Review E, 2020, 102, 051201.	2.1	2

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145	Comparison of ablators for the polar direct drive exploding pusher platform. High Energy Density Physics, 2021, 38, 100928.	1.5	2
146	Hohlraum x-ray preheat asymmetry measurement at the ICF capsule via Mo ball fluorescence imaging. Review of Scientific Instruments, 2021, 92, 023517.	1.3	1