

# Alex Friedman

## List of Publications by Year in descending order

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141  
papers

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docs citations

143  
times ranked

972  
citing authors

#	ARTICLE	IF	CITATIONS
1	On numerical energy conservation for an implicit particle-in-cell method coupled with a binary Monte-Carlo algorithm for Coulomb collisions. <i>Journal of Computational Physics</i> , 2022, 456, 111030.	3.8	6
2	Design and implementation of a Thomson parabola for fluence dependent energy-loss measurements at the Neutralized Drift Compression eXperiment. <i>Review of Scientific Instruments</i> , 2018, 89, 103302.	1.3	4
3	Optimizing beam transport in rapidly compressing beams on the neutralized drift compression experiment-II. <i>Matter and Radiation at Extremes</i> , 2018, 3, 78-84.	3.9	7
4	First energy loss measurements of intense pulsed ion beams in matter using a Thomson parabola at NDCX-II. , 2018, , .		0
5	Surface tension models for a multi-material ALE code with AMR. <i>Computers and Fluids</i> , 2017, 151, 91-101.	2.5	1
6	Irradiation of materials with short, intense ion pulses at NDCX-II. <i>Laser and Particle Beams</i> , 2017, 35, 373-378.	1.0	14
7	Monte Carlo calculation of large and small-angle electron scattering in air. <i>Journal of Computational Physics</i> , 2017, 349, 582-588.	3.8	2
8	Development and testing of a pulsed helium ion source for probing materials and warm dense matter studies. <i>Review of Scientific Instruments</i> , 2016, 87, 02B707.	1.3	12
9	Short-pulse, compressed ion beams at the Neutralized Drift Compression Experiment. <i>Journal of Physics: Conference Series</i> , 2016, 717, 012079.	0.4	7
10	Numerical Modeling of Complex Targets for High-Energy- Density Experiments with Ion Beams and other Drivers. <i>Journal of Physics: Conference Series</i> , 2016, 688, 012053.	0.4	0
11	Short intense ion pulses for materials and warm dense matter research. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2015, 800, 98-103.	1.6	19
12	Effect of Multiple Scattering on the Compton Recoil Current Generated in an EMP, Revisited. <i>IEEE Transactions on Nuclear Science</i> , 2015, 62, 1695-1706.	2.0	11
13	Alternate operating scenarios for NDCX-II. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2014, 733, 147-152.	1.6	1
14	Ferroelectric plasma sources for NDCX-II and heavy ion drivers. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2014, 733, 75-79.	1.6	5
15	Computational Methods in the Warp Code Framework for Kinetic Simulations of Particle Beams and Plasmas. <i>IEEE Transactions on Plasma Science</i> , 2014, 42, 1321-1334.	1.3	46
16	Noiseless Vlasovâ€Poisson simulations with linearly transformed particles. <i>Journal of Computational Physics</i> , 2014, 275, 236-256.	3.8	17
17	The NDCX-II engineering design. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2014, 733, 226-232.	1.6	18
18	Simulations of ion beams for NDCX-II. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2014, 733, 134-140.	1.6	3

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19	NDCX-II target experiments and simulations. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2014, 733, 45-50.	1.6	11
20	Multiple beam induction accelerators for heavy ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2014, 733, 193-199.	1.6	4
21	Research and development toward heavy ion driven inertial fusion energy. Physical Review Special Topics: Accelerators and Beams, 2013, 16, .	1.8	10
22	Modeling warm dense matter experiments using the 3D ALE-AMR code and the move toward exascale computing. EPJ Web of Conferences, 2013, 59, 09006.	0.3	2
23	Arc-based smoothing of ion beam intensity on targets. Physics of Plasmas, 2012, 19, 063111.	1.9	2
24	Novel methods in the Particle-In-Cell accelerator Code-Framework Warp. Computational Science & Discovery, 2012, 5, 014019.	1.5	83
25	Nonparaxial pulse broadening in a solenoid focusing element. Physical Review Special Topics: Accelerators and Beams, 2012, 15, .	1.8	2
26	Effects of errors in velocity tilt on maximum longitudinal compression during neutralized drift compression of intense beam pulses: I. general description. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2012, 678, 48-63.	1.6	7
27	Effects of errors in velocity tilt on maximum longitudinal compression during neutralized drift compression of intense beam pulses: II. Analysis of experimental data of the Neutralized Drift Compression eXperiment-I (NDCX-I). Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2012, 678, 39-47.	1.6	5
28	Sheet beam model for intense space charge: Application to Debye screening and the distribution of particle oscillation frequencies in a thermal equilibrium beam. Physical Review Special Topics: Accelerators and Beams, 2011, 14, .	1.8	3
29	Warp simulations for capture and control of laser-accelerated proton beams. Journal of Physics: Conference Series, 2010, 244, 022052.	0.4	12
30	Simulations for experimental study of warm dense matter and inertial fusion energy applications on NDCX-II. Journal of Physics: Conference Series, 2010, 244, 032027.	0.4	3
31	Time-Step Considerations in Particle Simulation Algorithms for Coulomb Collisions in Plasmas. IEEE Transactions on Plasma Science, 2010, 38, 2394-2406.	1.3	25
32	Beam dynamics of the Neutralized Drift Compression Experiment-II, a novel pulse-compressing ion accelerator. Physics of Plasmas, 2010, 17, 056704.	1.9	44
33	Physics of neutralization of intense high-energy ion beam pulses by electrons. Physics of Plasmas, 2010, 17, .	1.9	36
34	Ion-beam-driven warm dense matter experiments. Journal of Physics: Conference Series, 2010, 244, 032028.	0.4	22
35	Pulse line ion accelerator based design for the neutralized drift chamber experiment. Physical Review Special Topics: Accelerators and Beams, 2009, 12, .	1.8	0
36	An implicit "drift-Lorentz" mover for plasma and beam simulations. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2009, 606, 53-55.	1.6	2

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37	Toward a physics design for NDCX-II, an ion accelerator for warm dense matter and HIF target physics studies. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2009, 606, 6-10.	1.6	38
38	Developing acceleration schedules for NDCX-II*. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2009, 606, 97-101.	1.6	8
39	Ion beam heated target simulations for warm dense matter physics and inertial fusion energy. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2009, 606, 134-138.	1.6	18
40	Heavy ion fusion science research for high energy density physics and fusion applications. Journal of Physics: Conference Series, 2008, 112, 032029.	0.4	4
41	Studies of the pulse line ion accelerator. , 2007, , .		3
42	Heavy-ion-fusion-science: summary of US progress. Nuclear Fusion, 2007, 47, 721-727.	3.5	15
43	Modeling the pulse line ion accelerator (PLIA): an algorithm for quasi-static field solution. , 2007, , .		1
44	Simulation studies of non-neutral plasma equilibria in an electrostatic trap with a magnetic mirror. Physics of Plasmas, 2007, 14, 052107.	1.9	20
45	Simulations of plasma confinement in an antihydrogen trap. Physics of Plasmas, 2007, 14, 102111.	1.9	15
46	Quantitative experiments with electrons in a positively charged beam. Physics of Plasmas, 2007, 14, 056701.	1.9	4
47	Large-timestep mover for particle simulations of arbitrarily magnetized species. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 52-57.	1.6	15
48	Theory and simulation of warm dense matter targets. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 275-283.	1.6	51
49	Recent US advances in ion-beam-driven high energy density physics and heavy ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 1-7.	1.6	52
50	Quantitative electron and gas cloud experiments. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 45-51.	1.6	2
51	A method for obtaining three-dimensional computational equilibrium of non-neutral plasmas using WARP. Journal of Computational Physics, 2007, 225, 1736-1752.	3.8	12
52	Overview of theory and simulations in the Heavy Ion Fusion Science Virtual National Laboratory. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 37-44.	1.6	5
53	Self-consistent simulations of heavy-ion beams interacting with electron-clouds. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 65-69.	1.6	9
54	Beam interaction measurements with a Retarding Field Analyzer in a high-current high-vacuum positively charged particle accelerator. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 139-145.	1.6	8

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55	Simulating electron clouds in high-current ion accelerators with solenoid focusing. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 146-149.	1.6	6
56	Measurement and simulation of the time-dependent behavior of the UMER source. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 157-160.	1.6	4
57	Beam experiments on the Pulse Line Ion Accelerator. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 197-202.	1.6	11
58	Plans for longitudinal and transverse neutralized beam compression experiments, and initial results from solenoid transport experiments. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 215-222.	1.6	25
59	Neutralized drift compression experiments with a high-intensity ion beam. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2007, 577, 223-230.	1.6	11
60	Electron cloud measurements in heavy-ion driver for HEDP and inertial fusion energy. Nuclear Instruments & Methods in Physics Research B, 2007, 261, 980-985.	1.4	0
61	US heavy ion beam research for high energy density physics applications and fusion. European Physical Journal Special Topics, 2006, 133, 731-741.	0.2	7
62	Energy amplification and beam bunching in a pulse line ion accelerator. Physical Review Special Topics: Accelerators and Beams, 2006, 9, .	1.8	13
63	Absolute Measurement of Electron-Cloud Density in a Positively Charged Particle Beam. Physical Review Letters, 2006, 97, 054801.	7.8	18
64	Beam energy scaling of ion-induced electron yield from K <sup>+</sup> impact on stainless steel. Physical Review Special Topics: Accelerators and Beams, 2006, 9, .	1.8	12
65	Experimental studies of electrons in a heavy-ion beam. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 194-201.	1.6	8
66	Simulating electron cloud effects in heavy-ion beams. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 210-215.	1.6	5
67	Heavy ion fusion (HIF) driver point designs. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 294-299.	1.6	18
68	Application of adaptive mesh refinement to PIC simulations in heavy ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 347-352.	1.6	3
69	Measurement and simulation of the UMER beam in the source region. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 441-446.	1.6	8
70	Experimental study of the transport limits of intense heavy ion beams in the HCX. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 151-159.	1.6	4
71	Diagnostics for intense heavy-ion beams in the HIF-VNL. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 268-276.	1.6	20
72	Simulation of intense beams for Heavy Ion Fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 160-170.	1.6	10

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73	Overview of US heavy-ion fusion progress and plans. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 1-8.	1.6	16
74	The WARP Code: Modeling High Intensity Ion Beams. AIP Conference Proceedings, 2005, , .	0.4	71
75	Simulating electron clouds in heavy-ion accelerators. Physics of Plasmas, 2005, 12, 056708.	1.9	23
76	High current transport experiment for heavy ion inertial fusion. Physical Review Special Topics: Accelerators and Beams, 2005, 8, .	1.8	45
77	2-MV electrostatic quadrupole injector for heavy-ion fusion. Physical Review Special Topics: Accelerators and Beams, 2005, 8, .	1.8	15
78	Overview of US heavy ion fusion research. Nuclear Fusion, 2005, 45, 131-137.	3.5	27
79	Electron-cloud simulation and theory for high-current heavy-ion beams. Physical Review Special Topics: Accelerators and Beams, 2004, 7, .	1.8	15
80	Vlasov simulations of beams with a moving grid. Computer Physics Communications, 2004, 164, 390-395.	7.5	28
81	Collective space-charge phenomena in the source region. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2004, 519, 396-404.	1.6	13
82	Application of adaptive mesh refinement to particle-in-cell simulations of plasmas and beams. Physics of Plasmas, 2004, 11, 2928-2934.	1.9	58
83	Implementations of mesh refinement schemes for Particle-In-Cell plasma simulations. Computer Physics Communications, 2004, 164, 297-305.	7.5	27
84	Use of projectional phase space data to infer a 4D particle distribution. Laser and Particle Beams, 2003, 21, 17-20.	1.0	14
85	Cold phase fluid model of the longitudinal dynamics of space-charge-dominated beams. Physics of Plasmas, 2003, 10, 855-861.	1.9	15
86	Progress in heavy ion fusion research. Physics of Plasmas, 2003, 10, 2064-2070.	1.9	17
87	Integrated experiments for heavy ion fusion. Laser and Particle Beams, 2003, 21, 553-560.	1.0	22
88	Overview of virtual national laboratory objectives, plans, and projects. Laser and Particle Beams, 2002, 20, 369-375.	1.0	11
89	Overview of theory and modeling in the heavy ion fusion virtual national laboratory. Laser and Particle Beams, 2002, 20, 377-384.	1.0	14
90	Mesh refinement for particle-in-cell plasma simulations: Applications to and benefits for heavy ion fusion. Laser and Particle Beams, 2002, 20, 569-575.	1.0	41

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91	Recent progress in heavy ion fusion simulations. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 343-350.	1.6	5
92	Results from the recirculator project at LLNL. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 557-562.	1.6	8
93	Progress toward source-to-target simulation. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 563-568.	1.6	24
94	Planning for an integrated research experiment. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 621-628.	1.6	11
95	Beam simulations for IRE and driver status and strategy. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 653-661.	1.6	16
96	Simulation of heavy ion beams with a semi-Lagrangian Vlasov solver. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 470-476.	1.6	20
97	Ballistic-neutralized chamber transport of intense heavy ion beams. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 299-304.	1.6	28
98			3
99	Recent progress in the simulation of heavy ion beams. Physics of Plasmas, 1999, 6, 2254-2261.	1.9	26
100	Status of experiments leading to a small recirculator. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 310-314.	1.6	8
101	Characteristics of an electrostatic instability driven by transverse longitudinal temperature anisotropy. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 405-410.	1.6	15
102	Induction accelerator architectures for heavy-ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 218-228.	1.6	30
103	Simulation studies of transverse resonance effects in space-charge-dominated beams. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 455-459.	1.6	17
104	Numerical simulation of intense-beam experiments at LLNL and LBNL. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 345-356.	1.6	27
105	New developments in WARP: Progress toward end-to-end simulation. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 428-432.	1.6	57
106	The longitudinal wall impedance instability in a heavy-ion fusion driver. Journal of Applied Physics, 1997, 81, 3398-3409.	2.5	6
107	“Thick-Slice” simulation of short longitudinal-scale phenomena on a space-charge-dominated beam. , 1997, , .		1
108	Methods used in WARP3d, a three-dimensional PIC/Accelerator code. , 1997, , .		6

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109	Transverse-longitudinal temperature equilibration in a long uniform beam. Fusion Engineering and Design, 1996, 32-33, 169-174.	1.9	14
110	Three-dimensional simulations of high current beams in induction accelerators with WARP3d. Fusion Engineering and Design, 1996, 32-33, 193-200.	1.9	62
111	Effects of longitudinal space charge in beams for heavy-ion fusion. Fusion Engineering and Design, 1996, 32-33, 201-208.	1.9	6
112	Recirculating induction accelerators for inertial fusion: prospects and status. Fusion Engineering and Design, 1996, 32-33, 235-246.	1.9	11
113	Physics design and scaling of recirculating induction accelerators: from benchtop prototypes to drivers. Fusion Engineering and Design, 1996, 32-33, 247-258.	1.9	10
114	Physics design and scaling of Elise. Fusion Engineering and Design, 1996, 32-33, 323-335.	1.9	10
115	Bounded Multi-scale Plasma Simulation: Application to Sheath Problems. Journal of Computational Physics, 1993, 107, 388-402.	3.8	64
116	The ILSE experimental program. Il Nuovo Cimento A, 1993, 106, 1631-1636.	0.2	3
117	What we have learned from 3D andr, z intense-beam simulations using the WARP code. Il Nuovo Cimento A, 1993, 106, 1649-1655.	0.2	2
118	Recirculating induction accelerators as drivers for heavy ion fusion*. Physics of Fluids B, 1993, 5, 2698-2706.	1.7	36
119	Longitudinal beam dynamics for heavy ion fusion using WARPrz. AIP Conference Proceedings, 1993, , .	0.4	1
120	Three-dimensional particle simulation of heavy-ion fusion beams*. Physics of Fluids B, 1992, 4, 2203-2210.	1.7	141
121	Numerically induced stochasticity. Journal of Computational Physics, 1991, 93, 171-188.	3.8	19
122	Multi-scale particle-in-cell plasma simulation. Journal of Computational Physics, 1991, 96, 54-70.	3.8	34
123	Long-time behaviour of numerically computed orbits: Small and intermediate timestep analysis of one-dimensional systems. Journal of Computational Physics, 1991, 93, 189-223.	3.8	28
124	Heavy ion inertial fusion Report on the International Symposium held at Monterey, California, United States of America, 3-6 December 1990. Nuclear Fusion, 1991, 31, 1567-1578.	3.5	7
125	A second-order implicit particle mover with adjustable damping. Journal of Computational Physics, 1990, 90, 292-312.	3.8	51
126	Stability of field-reversed ion rings. Physics of Fluids, 1986, 29, 3317.	1.4	5



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127	Smoothing and spatial grid effects in implicit particle simulation. Journal of Computational Physics, 1984, 56, 51-64.	3.8	15
128	Direct implicit large time-step particle simulation of plasmas. Journal of Computational Physics, 1983, 51, 107-138.	3.8	148
129	Application of Particle Simulation Codes to Fusion Reactor Engineering. Nuclear Technology/Fusion, 1983, 3, 287-292.	0.5	0
130	Implicit time integration for plasma simulation. Journal of Computational Physics, 1982, 46, 15-38.	3.8	103
131	Strong ion ring equilibria formed by injection and intrinsic stochasticity of orbits. Journal of Computational Physics, 1981, 44, 104-133.	3.8	7
132	A linearized 3D hybrid code for stability studies of field-reversed ion rings. Journal of Computational Physics, 1981, 40, 1-35.	3.8	22
133	Numerical stimulation of injection and resistive trapping of ion rings. Plasma Physics, 1981, 23, 521-537.	0.9	13
134	Numerical simulation of strong proton rings. Plasma Physics, 1977, 19, 1101-1117.	0.9	19
135	Transverse-longitudinal energy equilibration in a long uniform beam. , 0, , .		4
136	Initial experimental studies of electron accumulation in a heavy-ion beam. , 0, , .		8
137	Particle-in-cell simulations of the high current experiment. , 0, , .		2
138	Stray-electron accumulation and effects in HIF accelerators. , 0, , .		4
139	Simulation using initial 4D beam particle distributions synthesized from experimental data. , 0, , .		4
140	The High Current Transport Experiment for heavy-ion inertial fusion. , 0, , .		10
141	Filling in the Roadmap for Self-Consistent Electron Cloud and Gas Modeling. , 0, , .		7