

Joel Fajans

List of Publications by Year in descending order

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162
papers

4,373
citations

87888

38
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118850

62
g-index

166
all docs

166
docs citations

166
times ranked

1402
citing authors

#	ARTICLE	IF	CITATIONS
1	Efficient calculations of magnetic fields of solenoids for simulations. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2022, 1034, 166706.	1.6	2
2	Laser cooling of antihydrogen atoms. Nature, 2021, 592, 35-42.	27.8	47
3	Sympathetic cooling of positrons to cryogenic temperatures for antihydrogen production. Nature Communications, 2021, 12, 6139.	12.8	18
4	Plasma temperature measurement with a silicon photomultiplier (SiPM). Review of Scientific Instruments, 2020, 91, 103502.	1.3	4
5	Computational and theoretical analysis of electron plasma cooling by resonant interaction with a microwave cavity. Physics of Plasmas, 2020, 27, .	1.9	1
6	Plasma and trap-based techniques for science with antimatter. Physics of Plasmas, 2020, 27, 030601.	1.9	38
7	Electron cyclotron resonance (ECR) magnetometry with a plasma reservoir. Physics of Plasmas, 2020, 27, .	1.9	5
8	Investigation of the fine structure of antihydrogen. Nature, 2020, 578, 375-380.	27.8	43
9	The ALPHA-g Antihydrogen Gravity Magnet System. IEEE Transactions on Applied Superconductivity, 2020, 30, 1-5.	1.7	0
10	The Role of Nonneutral Plasma Physics in Antihydrogen Synthesis. , 2020, , .		0
11	Characterization of the $1S \leftarrow 2S$ transition in antihydrogen. Nature, 2018, 557, 71-75.	27.8	107
12	Low magnetic field cooling of lepton plasmas via cyclotron-cavity resonance. Physics of Plasmas, 2018, 25, .	1.9	5
13	Enhanced Control and Reproducibility of Non-Neutral Plasmas. Physical Review Letters, 2018, 120, 025001.	7.8	18
14	Axial to transverse energy mixing dynamics in octupole-based magnetostatic antihydrogen traps. New Journal of Physics, 2018, 20, 053003.	2.9	6
15	Cyclotron cooling phenomena in an electrode stack which traps microwaves. AIP Conference Proceedings, 2018, , .	0.4	0
16	Observation of the $1S \leftarrow 2P$ Lyman- $\hat{1}\pm$ transition in antihydrogen. Nature, 2018, 561, 211-215.	27.8	51
17	Investigation of two-frequency Paul traps for antihydrogen production. Hyperfine Interactions, 2017, 238, 1.	0.5	13
18	Observation of the $1S \leftarrow 2S$ transition in trapped antihydrogen. Nature, 2017, 541, 506-510.	27.8	122

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19	Antihydrogen accumulation for fundamental symmetry tests. Nature Communications, 2017, 8, 681.	12.8	64
20	Observation of the hyperfine spectrum of antihydrogen. Nature, 2017, 548, 66-69.	27.8	101
21	Limit on the electric charge of antihydrogen. Hyperfine Interactions, 2017, 238, 1.	0.5	0
22	AUTORESONANCE. Advanced Textbooks in Physics, 2016, , 255-274.	0.1	0
23	Electron Plasmas Cooled by Cyclotron-Cavity Resonance. Physical Review Letters, 2016, 117, 175001.	7.8	5
24	An improved limit on the charge of antihydrogen from stochastic acceleration. Nature, 2016, 529, 373-376.	27.8	48
25	Antiproton cloud compression in the ALPHA apparatus at CERN. Hyperfine Interactions, 2015, 235, 21-28.	0.5	4
26	In situ electromagnetic field diagnostics with an electron plasma in a Penningâ€Malmberg trap. New Journal of Physics, 2014, 16, 013037.	2.9	17
27	Antimatter Interferometry for Gravity Measurements. Physical Review Letters, 2014, 112, 121102.	7.8	46
28	Vacuum compatibility of 3D-printed materials. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2014, 32, .	2.1	22
29	Using stochastic acceleration to place experimental limits on the charge of antihydrogen. New Journal of Physics, 2014, 16, 083013.	2.9	4
30	An experimental limit on the charge of antihydrogen. Nature Communications, 2014, 5, 3955.	12.8	40
31	The ALPHA antihydrogen trapping apparatus. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2014, 735, 319-340.	1.6	51
32	Description and first application of a new technique to measure the gravitational mass of antihydrogen. Nature Communications, 2013, 4, 1785.	12.8	195
33	Nonlinear dynamics of anti-hydrogen in magnetostatic traps: implications for gravitational measurements. Classical and Quantum Gravity, 2013, 30, 205014.	4.0	16
34	Silicon vertex detector upgrade in the ALPHA experiment. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2013, 732, 134-136.	1.6	7
35	Autoresonant-spectrometric determination of the residual gas composition in the ALPHA experiment apparatus. Review of Scientific Instruments, 2013, 84, 065110.	1.3	0
36	Electron plasmas as a diagnostic tool for hyperfine spectroscopy of antihydrogen. , 2013, , .		1

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37	Evaporative cooling of antiprotons for the production of trappable antihydrogen. , 2013, , .		0
38	Experimental and computational study of the injection of antiprotons into a positron plasma for antihydrogen production. Physics of Plasmas, 2013, 20, .	1.9	19
39	Discriminating between antihydrogen and mirror-trapped antiprotons in a minimum-B trap. New Journal of Physics, 2012, 14, 015010.	2.9	18
40	Antiparticle plasmas for antihydrogen trapping. , 2012, , .		0
41	Resonant quantum transitions in trapped antihydrogen atoms. Nature, 2012, 483, 439-443.	27.8	134
42	The ALPHA " detector: Module Production and Assembly. Journal of Instrumentation, 2012, 7, C01051-C01051.	1.2	5
43	Antihydrogen formation by autoresonant excitation of antiproton plasmas. Hyperfine Interactions, 2012, 212, 61-67.	0.5	0
44	Trapped antihydrogen. Hyperfine Interactions, 2012, 212, 15-29.	0.5	12
45	Progress towards microwave spectroscopy of trapped antihydrogen. Hyperfine Interactions, 2012, 212, 81-90.	0.5	7
46	Antihydrogen detection in ALPHA. Hyperfine Interactions, 2012, 212, 91-99.	0.5	0
47	Microwave-plasma interactions studied via mode diagnostics in ALPHA. Hyperfine Interactions, 2012, 212, 117-123.	0.5	0
48	Alternative method for reconstruction of antihydrogen annihilation vertices. Hyperfine Interactions, 2012, 212, 101-107.	0.5	1
49	Antihydrogen annihilation reconstruction with the ALPHA silicon detector. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2012, 684, 73-81.	1.6	24
50	Microwave-plasma interactions studied via mode diagnostics in ALPHA. , 2012, , 117-123.		0
51	Antiparticle sources for antihydrogen production and trapping. Journal of Physics: Conference Series, 2011, 262, 012001.	0.4	1
52	Search for trapped antihydrogen in ALPHA This paper was presented at the International Conference on Precision Physics of Simple Atomic Systems, held at "cole de Physique, les Houches, France, 30 May" " " June, 2010.. Canadian Journal of Physics, 2011, 89, 7-16.		0
53	Confinement of antihydrogen for 1,000 seconds. Nature Physics, 2011, 7, 558-564.	16.7	238
54	Towards antihydrogen trapping and spectroscopy at ALPHA. Hyperfine Interactions, 2011, 199, 39-48.	0.5	0

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55	Search for trapped antihydrogen. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2011, 695, 95-104.	4.1	44
56	Centrifugal Separation and Equilibration Dynamics in an Electron-Antiproton Plasma. Physical Review Letters, 2011, 106, 145001.	7.8	26
57	Autoresonant Excitation of Antiproton Plasmas. Physical Review Letters, 2011, 106, 025002.	7.8	62
58	Trapped antihydrogen. , 2011, , 15-29.		0
59	Progress towards microwave spectroscopy of trapped antihydrogen. , 2011, , 81-90.		0
60	Towards antihydrogen trapping and spectroscopy at ALPHA. , 2011, , 39-48.		0
61	Antihydrogen formation dynamics in a multipolar neutral anti-atom trap. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2010, 685, 141-145.	4.1	37
62	Trapped antihydrogen. Nature, 2010, 468, 673-676.	27.8	298
63	Evaporative Cooling of Antiprotons to Cryogenic Temperatures. Physical Review Letters, 2010, 105, 013003.	7.8	89
64	Antimatter transport processes. Journal of Physics: Conference Series, 2010, 257, 012004.	0.4	0
65	ALPHA ANTIHYDROGEN EXPERIMENT. , 2010, , .		0
66	Antihydrogen Physics at ALPHA/CERN This paper was presented at the International Conference on Precision Physics of Simple Atomic Systems, held at University of Windsor, Windsor, Ontario, Canada on 21-26 July 2008.. Canadian Journal of Physics, 2009, 87, 791-797.	1.1	13
67	Antiproton, positron, and electron imaging with a microchannel plate/phosphor detector. Review of Scientific Instruments, 2009, 80, 123701.	1.3	39
68	Magnetic multipole induced zero-rotation frequency bounce-resonant loss in a Penning-Malmberg trap used for antihydrogen trapping. Physics of Plasmas, 2009, 16, 100702.	1.9	5
69	Towards trapped antihydrogen. Nuclear Instruments & Methods in Physics Research B, 2008, 266, 357-362.	1.4	4
70	Production of antihydrogen at reduced magnetic field for anti-atom trapping. Journal of Physics B: Atomic, Molecular and Optical Physics, 2008, 41, 011001.	1.5	30
71	Particle Physics Aspects of Antihydrogen Studies with ALPHA at CERN. AIP Conference Proceedings, 2008, , .	0.4	11
72	First Attempts at Antihydrogen Trapping in ALPHA. AIP Conference Proceedings, 2008, , .	0.4	4

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73	Antiproton compression and radial measurements. AIP Conference Proceedings, 2008, , .	0.4	1
74	A novel antiproton radial diagnostic based on octupole induced ballistic loss. Physics of Plasmas, 2008, 15, 032107.	1.9	8
75	Critical loss radius in a Penning trap subject to multipole fields. Physics of Plasmas, 2008, 15, 032108.	1.9	19
76	Compression of Antiproton Clouds for Antihydrogen Trapping. Physical Review Letters, 2008, 100, 203401.	7.8	53
77	Thermalization of magnetized electrons from black body radiation. Journal of Physics B: Atomic, Molecular and Optical Physics, 2007, 40, 3143-3152.	1.5	3
78	Antimatter Plasmas in a Multipole Trap for Antihydrogen. Physical Review Letters, 2007, 98, 023402.	7.8	75
79	Simulation studies of non-neutral plasma equilibria in an electrostatic trap with a magnetic mirror. Physics of Plasmas, 2007, 14, 052107.	1.9	20
80	Simulations of plasma confinement in an antihydrogen trap. Physics of Plasmas, 2007, 14, 102111.	1.9	15
81	Towards antihydrogen confinement with the ALPHA antihydrogen trap. , 2007, , 81-89.		0
82	Simple loss scaling laws for quadrupoles and higher-order multipoles used in antihydrogen traps. AIP Conference Proceedings, 2006, , .	0.4	4
83	A magnetic trap for antihydrogen confinement. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2006, 566, 746-756.	1.6	57
84	Towards antihydrogen confinement with the ALPHA antihydrogen trap. Hyperfine Interactions, 2006, 172, 81-89.	0.5	3
85	The ALPHA Experiment: A Cold Antihydrogen Trap. AIP Conference Proceedings, 2005, , .	0.4	4
86	Effects of Extreme Magnetic Quadrupole Fields on Penning Traps and the Consequences for Antihydrogen Trapping. Physical Review Letters, 2005, 95, 155001.	7.8	53
87	Numerical studies of driven, chirped Bernstein, Greene, and Kruskal modes. Physics of Plasmas, 2005, 12, 062112.	1.9	13
88	Direct Excitation of High-Amplitude Chirped Bucket-Bgk Modes. IEEE International Conference on Plasma Science, 2005, , .	0.0	0
89	Breaking of Rotational Symmetry in Cylindrically Bounded 2D Electron Plasmas and 2D Fluids. Physical Review Letters, 2004, 93, 215002.	7.8	6
90	Driven phase space holes and synchronized Bernstein, Greene, and Kruskal modes. Physics of Plasmas, 2004, 11, 4305-4317.	1.9	19

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91	Malmberg's Penning and Minimum-B trap compatibility: the advantages of higher-order multipole traps. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2004, 521, 318-325.	1.6	32
92	Quadrupole-Induced Resonant-Particle Transport in a Pure Electron Plasma. Physical Review Letters, 2003, 90, 015001.	7.8	47
93	Non-neutral plasma equilibria, trapping, separatrices, and separatrix crossing in magnetic mirrors. Physics of Plasmas, 2003, 10, 1209-1214.	1.9	32
94	Direct Excitation of High-Amplitude Chirped Bucket-BGK Modes. Physical Review Letters, 2003, 91, 265003.	7.8	41
95	Injection into Electron Plasma Traps. AIP Conference Proceedings, 2003, , .	0.4	5
96	Decay of the Diocotron Rotation and Transport in a New Low-Density Asymmetry-Dominated Regime. Physical Review Letters, 2002, 89, 105002.	7.8	9
97	Shielding from instantaneously and adiabatically applied potential wells in collisionless plasmas. Physics of Plasmas, 2002, 9, 1091-1094.	1.9	3
98	Continuously injected plasma columns. AIP Conference Proceedings, 2002, , .	0.4	1
99	Decay of the diocotron rotation and transport in a new low-density asymmetry-dominated regime. AIP Conference Proceedings, 2002, , .	0.4	1
100	Quadrupole induced resonant particle transport in a pure electron plasma. AIP Conference Proceedings, 2002, , .	0.4	1
101	Breaking the azimuthal symmetry-jumping off-axis or staying away from the axis?. AIP Conference Proceedings, 2002, , .	0.4	0
102	Autoresonant (nonstationary) excitation of pendulums, Plutinos, plasmas, and other nonlinear oscillators. American Journal of Physics, 2001, 69, 1096-1102.	0.7	169
103	The effect of damping on autoresonant (nonstationary) excitation. Physics of Plasmas, 2001, 8, 423-427.	1.9	27
104	Asymmetric vortex merger: Experiments and simulations. Physics of Plasmas, 2001, 8, 3865-3868.	1.9	23
105	Inviscid Two-Dimensional Fluid Dynamics Experiments with Magnetized Electron Columns. Lecture Notes in Physics, 2001, , 319-327.	0.7	0
106	Steering in bicycles and motorcycles. American Journal of Physics, 2000, 68, 654-659.	0.7	62
107	Experiments on two-dimensional vortex patterns. Physics of Fluids, 2000, 12, 289-293.	4.0	70
108	Bifurcations in elliptical, asymmetric non-neutral plasmas. Physics of Plasmas, 2000, 7, 3929.	1.9	9

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109	Subharmonic autoresonance of the diocotron mode. <i>Physics of Plasmas</i> , 2000, 7, 1712-1718.	1.9	16
110	Experimental Dynamics of a Vortex within a Vortex. <i>Physical Review Letters</i> , 2000, 85, 4052-4055.	7.8	28
111	Second harmonic autoresonant control of the $l=1$ diocotron mode in pure-electron plasmas. <i>Physical Review E</i> , 2000, 62, 4131-4136.	2.1	27
112	Quadrupole induced resonant particle transport in a pure electron plasma. , 1999, , .		1
113	A selection of experiments performed with the photocathode trap. , 1999, , .		1
114	Bifurcations in elliptical, asymmetric non-neutral plasmas. , 1999, , .		0
115	Autoresonant (nonstationary) excitation of a collective nonlinear mode. <i>Physics of Plasmas</i> , 1999, 6, 4497-4503.	1.9	47
116	Equilibrium of highly asymmetric non-neutral plasmas. <i>Physics of Plasmas</i> , 1999, 6, 12-18.	1.9	12
117	Stability of highly asymmetric non-neutral plasmas. <i>Physics of Plasmas</i> , 1999, 6, 19-30.	1.9	11
118	Autoresonant (Nonstationary) Excitation of the Diocotron Mode in Non-neutral Plasmas. <i>Physical Review Letters</i> , 1999, 82, 4444-4447.	7.8	94
119	Photocathode source for studying two-dimensional fluid phenomena with magnetized electron columns. <i>Review of Scientific Instruments</i> , 1999, 70, 4539-4541.	1.3	12
120	Plasma shielding, Vlasov's equation, and the unperturbed-orbits technique. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1999, 258, 145-148.	2.1	5
121	Application of Contour Dynamics to Systems with Cylindrical Boundaries. <i>Journal of Computational Physics</i> , 1998, 145, 462-468.	3.8	4
122	Solving Poisson's equation with interior conditions. <i>Journal of Mathematical Physics</i> , 1998, 39, 6720-6729.	1.1	4
123	Saturation in nonmagnetic stainless steel. <i>Review of Scientific Instruments</i> , 1998, 69, 3695-3696.	1.3	6
124	Dynamic and Debye shielding and anti-shielding. <i>Physics of Plasmas</i> , 1996, 3, 1820-1826.	1.9	29
125	Temperature and anisotropic temperature relaxation measurements in cold, pure electron plasmas. <i>Physics of Plasmas</i> , 1996, 3, 1250-1258.	1.9	65
126	Debye shielding and the dynamic response of a magnetized, collisionless plasma. <i>AIP Conference Proceedings</i> , 1995, , .	0.4	0

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127	Stability of highly deformed, asymmetric single-species plasmas. AIP Conference Proceedings, 1995, , .	0.4	1
128	Dynamic and Debye Shielding and Antishielding in Magnetized, Collisionless Plasmas. Physical Review Letters, 1995, 74, 4209-4212.	7.8	22
129	The effect of asymmetries on non-neutral plasma confinement time. Physics of Plasmas, 1994, 1, 1123-1127.	1.9	59
130	Development of a pure cryogenic positron plasma using a LINAC positron source. Hyperfine Interactions, 1993, 76, 135-142.	0.5	12
131	Experimental dynamics of an annulus of vorticity in a pure electron plasma. Physics of Fluids A, Fluid Dynamics, 1993, 5, 493-499.	1.6	52
132	Pure electron plasmas in asymmetric traps*. Physics of Fluids B, 1993, 5, 2378-2386.	1.7	39
133	Collapse and winding of an asymmetric annulus of vorticity. Journal of Fluid Mechanics, 1993, 252, 713-720.	3.4	9
134	Transient ion resonance instability. Physics of Fluids B, 1993, 5, 3127-3135.	1.7	25
135	A limitation to the analogy between pure electron plasmas and two-dimensional inviscid fluids. Physics of Fluids B, 1993, 5, 4295-4298.	1.7	46
136	A pulsed microchannel-plate-based non-neutral plasma imaging system. Review of Scientific Instruments, 1993, 64, 52-55.	1.3	30
137	Experimental breaking of an adiabatic invariant. Physical Review Letters, 1993, 70, 3900-3903.	7.8	33
138	Observation of the ion resonance instability. Physical Review Letters, 1993, 70, 295-298.	7.8	33
139	Three-dimensional non-neutral plasma shapes. Physics of Fluids B, 1993, 5, 4250-4252.	1.7	4
140	Search for Resonant States in Positron Electron Scattering. Materials Science Forum, 1992, 105-110, 529-532.	0.3	4
141	Measurement of collisional anisotropic temperature relaxation in a strongly magnetized pure electron plasma. Physical Review Letters, 1992, 68, 317-320.	7.8	76
142	Asymmetric stable equilibria of non-neutral plasmas. Physical Review Letters, 1992, 69, 3056-3059.	7.8	34
143	Parametric studies of free-electron laser nonlinear ponderomotive trapping buckets. IEEE Journal of Quantum Electronics, 1991, 27, 2546-2549.	1.9	0
144	Proposed search for resonant states in positron-electron scattering using a positron gas target. Nuclear Instruments & Methods in Physics Research B, 1991, 56-57, 599-603.	1.4	4

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145	Non-neutral plasma shapes and edge profiles. <i>Physics of Fluids B</i> , 1990, 2, 693-699.	1.7	26
146	Search for resonances in electron-positron scattering using a cold positron gas target. , 1990, , .		0
147	Nonlinear theory and experiment of collective free electron lasers. <i>Physics of Fluids B</i> , 1990, 2, 1626-1634.	1.7	18
148	Bifilar helical wiggler magnet inductance. <i>Review of Scientific Instruments</i> , 1989, 60, 3073-3074.	1.3	1
149	Waveguide mode deformation in free-electron lasers. <i>Physics of Fluids B</i> , 1989, 1, 2073-2084.	1.7	3
150	Suppression of feedback oscillations in free-electron lasers. <i>IEEE Journal of Quantum Electronics</i> , 1988, 24, 18005-18006.	1.9	2
151	Experiments with pure electron plasmas. <i>AIP Conference Proceedings</i> , 1988, , .	0.4	23
152	Wave profile modification (optical guiding) induced by free-electron laser interaction. <i>Physical Review Letters</i> , 1987, 59, 1177-1180.	7.8	27
153	Effect of electron beam temperature on the gain of a collective free-electron laser. <i>IEEE Journal of Quantum Electronics</i> , 1987, 23, 1617-1620.	1.9	8
154	Collective (Raman) free electron laser gain measurements. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 1986, 250, 357-360.	1.6	0
155	Measurements of amplification and phase shift (wave refractive index) in a free-electron laser. <i>Physics of Fluids</i> , 1986, 29, 3461.	1.4	37
156	Nonlinear Power Saturation and Phase (Wave Refractive Index) in a Collective Free-Electron Laser Amplifier. <i>Physical Review Letters</i> , 1986, 57, 579-582.	7.8	56
157	Comments on "Study of gain, bandwidth, and tunability of a millimeter-wave free-electron laser operating in the collective regime" [Phys. Fluids 26, 2683 (1983)]. <i>Physics of Fluids</i> , 1985, 28, 3177.	1.4	3
158	Off-axis electron orbits in realistic helical wigglers for free-electron-laser applications. <i>Physical Review A</i> , 1985, 32, 3448-3453.	2.5	35
159	Microwave studies of a tunable free-electron laser in combined axial and wiggler magnetic fields. <i>Physics of Fluids</i> , 1985, 28, 1995.	1.4	83
160	End effects of a bifilar magnetic wiggler. <i>Journal of Applied Physics</i> , 1984, 55, 43-50.	2.5	26
161	Spectral Measurements from a Tunable, Raman, Free-Electron Laser. <i>Physical Review Letters</i> , 1984, 53, 246-249.	7.8	70
162	<title>Three-Dimensional Display</title>. <i>Proceedings of SPIE</i> , 1979, , .	0.8	3