

# Ronald C Davidson

## List of Publications by Year in descending order

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118  
papers

1,457  
citations

361045

20  
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476904

29  
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121  
all docs

121  
docs citations

121  
times ranked

459  
citing authors

#	ARTICLE	IF	CITATIONS
1	Physics of Intense Charged Particle Beams in High Energy Accelerators. , 2001, , .		236
2	Nonlinear charge and current neutralization of an ion beam pulse in a pre-formed plasma. Physics of Plasmas, 2001, 8, 4180-4192.	0.7	81
3	Warm-fluid description of intense beam equilibrium and electrostatic stability properties. Physics of Plasmas, 1998, 5, 3028-3053.	0.7	55
4	A Paul trap configuration to simulate intense non-neutral beam propagation over large distances through a periodic focusing quadrupole magnetic field. Physics of Plasmas, 2000, 7, 1020-1025.	0.7	53
5	Nonlinear plasma waves excitation by intense ion beams in background plasma. Physics of Plasmas, 2004, 11, 3546-3552.	0.7	45
6	Kinetic description of electron-proton instability in high-intensity proton linacs and storage rings based on the Vlasov-Maxwell equations. Physical Review Special Topics: Accelerators and Beams, 1999, 2, .	1.8	36
7	Influence of profile shape on the diocotron instability in a non-neutral plasma column. Physics of Plasmas, 1998, 5, 3497-3511.	0.7	34
8	Three-dimensional multispecies nonlinear perturbative particle simulations of collective processes in intense particle beams. Physical Review Special Topics: Accelerators and Beams, 2000, 3, .	1.8	34
9	Kinetic effects on the stability properties of field-reversed configurations. II. Nonlinear evolution. Physics of Plasmas, 2004, 11, 2523-2531.	0.7	34
10	Electromagnetic Weibel instability in intense charged particle beams with large energy anisotropy. Physics of Plasmas, 2003, 10, 4829-4836.	0.7	32
11	Nonlinear $\hat{f}$ simulation studies of intense charged particle beams with large temperature anisotropy. Physics of Plasmas, 2002, 9, 3138-3146.	0.7	31
12	Numerical study of relativistic magnetrons. Journal of Applied Physics, 1993, 73, 7053-7060.	1.1	29
13	Three-dimensional kinetic stability theorem for high-intensity charged particle beams. Physics of Plasmas, 1998, 5, 3459-3468.	0.7	29
14	Nonlinear $\hat{f}$ simulation studies of high-intensity ion beam propagation in a periodic focusing field. Physics of Plasmas, 1999, 6, 298-315.	0.7	29
15	Kinetic effects on the stability properties of field-reversed configurations. I. Linear stability. Physics of Plasmas, 2003, 10, 2361-2371.	0.7	27
16	Nonlinear $\hat{f}$ simulation studies of intense ion beam propagation through an alternating-gradient quadrupole focusing field. Physics of Plasmas, 1997, 4, 1915-1921.	0.7	26
17	Two-stream instability for a longitudinally compressing charged particle beam. Physics of Plasmas, 2006, 13, 062108.	0.7	26
18	Generalized Kapchinskij-Vladimirskij Distribution and Envelope Equation for High-Intensity Beams in a Coupled Transverse Focusing Lattice. Physical Review Letters, 2009, 103, 224802.	2.9	26

#	ARTICLE	IF	CITATIONS
19	Statistically averaged rate equations for intense non-neutral beam propagation through a periodic solenoidal focusing field based on the nonlinear Vlasov-Maxwell equations. <i>Physics of Plasmas</i> , 1998, 5, 279-291.	0.7	22
20	Advances in the numerical modeling of field-reversed configurations. <i>Physics of Plasmas</i> , 2006, 13, 056115.	0.7	22
21	Generalized Courant-Snyder theory for coupled transverse dynamics of charged particles in electromagnetic focusing lattices. <i>Physical Review Special Topics: Accelerators and Beams</i> , 2009, 12, .	1.8	22
22	Analytical and numerical studies of heavy ion beam transport in the fusion chamber. <i>Laser and Particle Beams</i> , 2002, 20, 497-502.	0.4	20
23	Effects of background gas pressure on the dynamics of a nonneutral electron plasma confined in a Malmberg-Penning trap. <i>Physics of Plasmas</i> , 2000, 7, 831-838.	0.7	19
24	Collective temperature anisotropy instabilities in intense charged particle beams. <i>Physics of Plasmas</i> , 2007, 14, 056705.	0.7	18
25	Expansion and nonlinear relaxation of a strongly magnetized non-neutral electron plasma due to elastic collisions with background neutral gas. <i>Physics of Plasmas</i> , 1996, 3, 218-225.	0.7	16
26	Nonlinear 3D simulation studies of intense charged particle beams with large temperature anisotropy. <i>Laser and Particle Beams</i> , 2002, 20, 585-588.	0.4	16
27	A physical parametrization of coupled transverse dynamics based on generalized Courant-Snyder theory and its applications. <i>Physics of Plasmas</i> , 2009, 16, 050705.	0.7	16
28	Generalized Courant-Snyder Theory for Charged-Particle Dynamics in General Focusing Lattices. <i>Physical Review Letters</i> , 2013, 111, 104801.	2.9	16
29	Phase advance for an intense charged particle beam propagating through a periodic quadrupole focusing field in the smooth-beam approximation. <i>Physics of Plasmas</i> , 1994, 1, 3104-3114.	0.7	15
30	Analytical methods for describing charged particle dynamics in general focusing lattices using generalized Courant-Snyder theory. <i>Physical Review Special Topics: Accelerators and Beams</i> , 2014, 17, .	1.8	15
31	Field theory and weak Euler-Lagrange equation for classical particle-field systems. <i>Physical Review E</i> , 2014, 90, 043102.	0.8	15
32	On the structure of the two-stream instability's complex G-Hamiltonian structure and Krein collisions between positive- and negative-action modes. <i>Physics of Plasmas</i> , 2016, 23, .	0.7	15
33	Warm-fluid stability properties of intense non-neutral charged particle beams with pressure anisotropy. <i>Physics of Plasmas</i> , 2000, 7, 2657-2670.	0.7	14
34	A new derivation of the plasma susceptibility tensor for a hot magnetized plasma without infinite sums of products of Bessel functions. <i>Physics of Plasmas</i> , 2007, 14, .	0.7	14
35	Two-stream instability with time-dependent drift velocity. <i>Physics of Plasmas</i> , 2014, 21, .	0.7	14
36	Dynamics of ion beam charge neutralization by ferroelectric plasma sources. <i>Physics of Plasmas</i> , 2016, 23, .	0.7	14

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37	Scaling cross sections for ion-atom impact ionization. <i>Physics of Plasmas</i> , 2004, 11, 1229-1232.	0.7	13
38	Energy amplification and beam bunching in a pulse line ion accelerator. <i>Physical Review Special Topics: Accelerators and Beams</i> , 2006, 9, .	1.8	13
39	Twiss parameters and beam matrix formulation of generalized Courant-Snyder theory for coupled transverse beam dynamics. <i>Physics of Plasmas</i> , 2010, 17, .	0.7	12
40	Generalized Courant-Snyder theory and Kapchinskij-Vladimirskij distribution for high-intensity beams in a coupled transverse focusing lattice. <i>Physics of Plasmas</i> , 2011, 18, 056708.	0.7	12
41	Class of Generalized Kapchinskij-Vladimirskij Solutions and Associated Envelope Equations for High-Intensity Charged-Particle Beams. <i>Physical Review Letters</i> , 2013, 110, 064803.	2.9	12
42	The Paul Trap Simulator Experiment. <i>Laser and Particle Beams</i> , 2003, 21, 549-552.	0.4	11
43	Two-stream stability properties of the return-current layer for intense ion beam propagation through background plasma. <i>Physics of Plasmas</i> , 2009, 16, 092101.	0.7	11
44	Long plasma source for heavy ion beam charge neutralization. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2009, 606, 124-127.	0.7	11
45	Nonlinear expansion and heating of a nonneutral electron plasma due to elastic collisions with background neutral gas. <i>Physics of Plasmas</i> , 1996, 3, 2615-2619.	0.7	10
46	Two-stream sausage and hollowing instabilities in high-intensity particle beams. <i>Physics of Plasmas</i> , 2001, 8, 4637-4646.	0.7	9
47	A Self-Organized Plasma with Induction, Reconnection, and Injection Techniques: the SPIRIT Concept for Field Reversed Configuration Research. <i>Plasma and Fusion Research</i> , 2007, 2, 004-004.	0.3	9
48	Analysis of continuously rotating quadrupole focusing channels using generalized Courant-Snyder theory. <i>Physics of Plasmas</i> , 2013, 20, 083121.	0.7	9
49	Generalized Kapchinskij-Vladimirskij Distribution and Beam Matrix for Phase-Space Manipulations of High-Intensity Beams. <i>Physical Review Letters</i> , 2016, 117, 224801.	2.9	9
50	$l=1$ electrostatic instability induced by electron-neutral collisions in a nonneutral electron plasma interacting with background neutral gas. <i>Physics of Plasmas</i> , 1996, 3, 3279-3287.	0.7	8
51	Phase space structure for matched intense charged-particle beams in periodic focusing transport systems. <i>Physics of Plasmas</i> , 1999, 6, 3647-3657.	0.7	8
52	Non-neutral plasma expansion induced by electron-neutral collisions in a Malmberg-Penning trap. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , 1999, 17, 2050-2055.	0.9	8
53	Implications of the electrostatic approximation in the beam frame on the nonlinear Vlasov-Maxwell equations for intense beam propagation. <i>Physics of Plasmas</i> , 2002, 9, 340-344.	0.7	8
54	3D simulation studies of the ion-electron two-stream instability in heavy ion fusion beams. <i>Laser and Particle Beams</i> , 2003, 21, 21-26.	0.4	8

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55	Studies of emittance growth and halo particle production in intense charged particle beams using the Paul Trap Simulator Experiment. <i>Physics of Plasmas</i> , 2010, 17, .	0.7	8
56	Coherent structures in rotating non-neutral plasma. <i>Physics of Fluids B</i> , 1993, 5, 19-41.	1.7	7
57	Study of drift compression for heavy ion beams. <i>Laser and Particle Beams</i> , 2002, 20, 565-568.	0.4	7
58	Experimental simulations of beam propagation over large distances in a compact linear Paul trap. <i>Physics of Plasmas</i> , 2006, 13, 056705.	0.7	7
59	Centroid and envelope dynamics of charged particle beams in an oscillating wobbler and external focusing lattice for heavy ion fusion applications. <i>Laser and Particle Beams</i> , 2011, 29, 365-372.	0.4	7
60	ECR plasma source for heavy ion beam charge neutralization. <i>Laser and Particle Beams</i> , 2003, 21, 37-40.	0.4	6
61	Streaming instabilities of intense charged particle beams propagating along a solenoidal magnetic field in a background plasma. <i>Physics of Plasmas</i> , 2008, 15, 062107.	0.7	6
62	Comment on the stability theorem of Davidson and Lund. <i>Physics of Fluids B</i> , 1992, 4, 1373-1373.	1.7	5
63	A class of coherent vortex structures in rotating non-neutral plasma. <i>Physics of Fluids B</i> , 1993, 5, 1421-1429.	1.7	5
64	Beam envelope calculations in general linear coupled lattices. <i>Physics of Plasmas</i> , 2015, 22, 013109.	0.7	5
65	Editorial: Announcement of editorial policy statement on verification and validation. <i>Physics of Plasmas</i> , 2007, 14, 050401.	0.7	4
66	Weight growth due to resonant simulation particles and a modified $\hat{f}$ algorithm with smooth switching between $\hat{f}$ and total- $f$ methods. <i>Physics of Plasmas</i> , 2008, 15, 063101.	0.7	4
67	<i>Physics of Plasmas</i> , 2015, 22, 056702.	0.7	4
68	Dynamics of the $m=1$ diocotron mode in the electron diffusion gauge experiment. <i>Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films</i> , 1999, 17, 2034-2040.	0.9	3
69	Expansion rate measurements at moderate pressure of non-neutral electron plasmas in the Electron Diffusion Gauge (EDG) experiment. <i>Physics of Plasmas</i> , 2001, 8, 3506-3509.	0.7	3
70	Editorial: Announcement of editorial policy statement on verification and validation. <i>Physics of Plasmas</i> , 2007, 14, 060401.	0.7	3
71	Envelope Hamiltonian for charged-particle dynamics in general linear coupled systems. <i>Physics of Plasmas</i> , 2016, 23, .	0.7	3
72	Thermal equilibrium properties of nonneutral plasma in the weak coupling approximation. <i>AIP Conference Proceedings</i> , 1994, .	0.3	2

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73	Title is missing!. Journal of Fusion Energy, 2000, 19, 229-244.	0.5	2
74	Investigation of the expansion rate scaling of plasmas in the Electron Diffusion Gauge experiment. AIP Conference Proceedings, 2002, , .	0.3	2
75	Electron plasma expansion rate studies on the Electron Diffusion Gauge experimental device. Physics of Plasmas, 2005, 12, 072310.	0.7	2
76	Kinetic description of nonlinear wave and soliton excitations in coasting charged particle beams. , 2007, , .		2
77	Response to "Comment on "A new derivation of the plasma susceptibility tensor for a hot magnetized plasma without infinite sums of products of Bessel functions" [Phys. Plasmas 15, 024701 (2008)]. Physics of Plasmas, 2008, 15, 024702.	0.7	2
78	Nonlinear dynamics and chaoticity in an intense nonneutral heavy ion beam propagating through a periodic focussing field. AIP Conference Proceedings, 1995, , .	0.3	1
79	Large amplitude m=1 diocotron mode measurements in the Electron Diffusion Gauge experiment. AIP Conference Proceedings, 2002, , .	0.3	1
80	Low-frequency flute instabilities of self-pinch ion beams. Physics of Plasmas, 2005, 12, 123105.	0.7	1
81	Meter-long plasma source for heavy ion beam space charge neutralization. , 2007, , .		1
82	Foreword: Papers from the 49th Annual Meeting of the APS Division of Plasma Physics, Orlando, Florida, 2007. Physics of Plasmas, 2008, 15, 055301.	0.7	1
83	Adiabatic formation of a matched-beam distribution for an alternating-gradient quadrupole lattice. Physics of Plasmas, 2009, 16, 123107.	0.7	1
84	Foreword to Special Issue: Papers from the 50th Annual Meeting of the APS Division of Plasma Physics, Dallas, Texas, 2008. Physics of Plasmas, 2009, 16, 055301.	0.7	1
85	Foreword to Special Issue: Papers from the 51st Annual Meeting of the APS Division of Plasma Physics, Atlanta, Georgia, 2009. Physics of Plasmas, 2010, 17, 055301.	0.7	1
86	One-dimensional kinetic description of nonlinear traveling-pulse and traveling-wave disturbances in long coasting charged particle beams. Physical Review Special Topics: Accelerators and Beams, 2015, 18, .	1.8	1
87	Nonlinear $\hat{F}$ simulation studies of high-intensity matched-beam propagation in periodic-focusing transport systems. , 1998, , .		0
88	Intense nonneutral beam propagation through a periodic focusing quadrupole field "A compact Paul trap configuration to simulate beam propagation over large distances. , 1999, , .		0
89	Intense nonneutral beam propagation through a periodic focusing quadrupole field "Hamiltonian averaging techniques in the smooth-focusing approximation. , 1999, , .		0
90	Confinement of pure ion plasma in a cylindrical current sheet. , 1999, , .		0

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91	Paul Trap Simulator Experiment (PTSX) to simulate intense beam propagation through a periodic focusing quadrupole field. AIP Conference Proceedings, 2002, , .	0.3	0
92	Foreword: Papers from the 45th Annual Meeting of the APS Division of Plasma Physics, Albuquerque, New Mexico, 2003. Physics of Plasmas, 2004, 11, 2327-2327.	0.7	0
93	Foreword: Papers from the 46th Annual Meeting of the APS Division of Plasma Physics, Savannah, Georgia, 2004. Physics of Plasmas, 2005, 12, 055301.	0.7	0
94	Foreword: Papers from the 47th Annual Meeting of the APS Division of Plasma Physics, Denver, Colorado, 2005. Physics of Plasmas, 2006, 13, 055301.	0.7	0
95	Particle-In-Cell simulations of halo particle production in intense charged particle beams propagating through a quadrupole focusing field with varying lattice amplitude. , 2007, , .		0
96	Announcement: The 2006 James Clerk Maxwell Prize for Plasma Physics. Physics of Plasmas, 2007, 14, 010201.	0.7	0
97	Foreword: Papers from the 48th Annual Meeting of the APS Division of Plasma Physics, Philadelphia, Pennsylvania, 2006. Physics of Plasmas, 2007, 14, 055301.	0.7	0
98	Nonlinear $\hat{f}$ particle simulations of energy-anisotropy instabilities in high-intensity bunched beams. , 2007, , .		0
99	Numerical studies of the electromagnetic Weibel instability in intense charged particle beams with large temperature anisotropy using the nonlinear best Darwin $\hat{f}$ code. , 2007, , .		0
100	Announcement: The 2007 James Clerk Maxwell Prize for Plasma Physics. Physics of Plasmas, 2008, 15, 010201.	0.7	0
101	Announcement: The 2009 James Clerk Maxwell Prize for Plasma Physics. Physics of Plasmas, 2010, 17, 010201.	0.7	0
102	Announcement: The 2010 James Clerk Maxwell Prize for Plasma Physics. Physics of Plasmas, 2011, 18, 010201.	0.7	0
103	Novel Hamiltonian method for collective dynamics analysis of an intense charged particle beam propagating through a periodic focusing quadrupole lattice. Physics of Plasmas, 2011, 18, .	0.7	0
104	Foreword to Special Issue: Papers from the 52nd Annual Meeting of the APS Division of Plasma Physics, Chicago, Illinois, USA, 2010. Physics of Plasmas, 2011, 18, .	0.7	0
105	Self-similar nonlinear dynamical solutions for one-component nonneutral plasma in a time-dependent linear focusing field. Physics of Plasmas, 2011, 18, .	0.7	0
106	Referee acknowledgment for 2011. Physics of Plasmas, 2012, 19, 039801.	0.7	0
107	Announcement: The 2011 James Clerk Maxwell Prize for Plasma Physics. Physics of Plasmas, 2012, 19, 055401.	0.7	0
108	Foreword to Special Issue: Papers from the 53rd Annual Meeting of the APS Division of Plasma Physics, Salt Lake City, Utah, USA, 2011. Physics of Plasmas, 2012, 19, 055301.	0.7	0

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109	Thermodynamic bounds on nonlinear electrostatic perturbations in intense charged particle beams. <i>Physics of Plasmas</i> , 2012, 19, 073113.	0.7	0
110	Foreword to Special Issue: Papers from the 54th Annual Meeting of the APS Division of Plasma Physics, Providence, Rhode Island, USA, 2012. <i>Physics of Plasmas</i> , 2013, 20, 055301.	0.7	0
111	Announcement: The 2012 James Clerk Maxwell Prize for Plasma Physics. <i>Physics of Plasmas</i> , 2013, 20, 055401.	0.7	0
112	Announcement: The 2013 James Clerk Maxwell Prize for Plasma Physics. <i>Physics of Plasmas</i> , 2014, 21, 055401.	0.7	0
113	Foreword to Special Issue: Papers from the 55th Annual Meeting of the APS Division of Plasma Physics, November 11–14, 2013, Denver, Colorado, USA. <i>Physics of Plasmas</i> , 2014, 21, 055301.	0.7	0
114	Referee acknowledgment for 2013. <i>Physics of Plasmas</i> , 2014, 21, 019801.	0.7	0
115	Referee acknowledgment for 2014. <i>Physics of Plasmas</i> , 2015, 22, 039801.	0.7	0
116	Foreword to Special Issue: Papers from the 56th Annual Meeting of the APS Division of Plasma Physics, October 27–31, 2014, New Orleans, Louisiana, USA. <i>Physics of Plasmas</i> , 2015, 22, 055301.	0.7	0
117	Announcement: The 2014 James Clerk Maxwell Prize for Plasma Physics. <i>Physics of Plasmas</i> , 2015, 22, 055401.	0.7	0
118	Dynamics of Ion Beam Charge Neutralization by Ferroelectric Plasma Sources*. , 2017, , .		0