Hong Qin

List of Publications by Year
in descending order

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148 papers	2,500 citations	257450 24 h-index	302126 39 g-index
149 all docs	149 docs citations	149 times ranked	1011 citing authors

#	Article	IF	Citations
1	An explicitly solvable energy-conserving algorithm for pitch-angle scattering in magnetized plasmas. Journal of Computational Physics, 2022, 449, 110767.	3.8	4
2	Hybrid simulation of energetic particles interacting with magnetohydrodynamics using a slow manifold algorithm and GPU acceleration. Computer Physics Communications, 2022, 275, 108313.	7.5	8
3	A gauge-compatible Hamiltonian splitting algorithm for particle-in-cell simulations using finite element exterior calculus. Journal of Plasma Physics, 2022, 88, .	2.1	1
4	Lorentz Symmetry Group, Retardation and Energy Transformations in a Relativistic Engine. Symmetry, 2021, 13, 420.	2.2	11
5	Plasma physics in strong-field regimes: Theories and simulations. Physics of Plasmas, 2021, 28, .	1.9	10
6	Explicit structure-preserving geometric particle-in-cell algorithm in curvilinear orthogonal coordinate systems and its applications to whole-device 6D kinetic simulations of tokamak physics. Plasma Science and Technology, 2021, 23, 055102.	1.5	17
7	Topological phases and bulk-edge correspondence of magnetized cold plasmas. Nature Communications, 2021, 12, 3924.	12.8	26
8	Spontaneous and explicit parity-time-symmetry breaking in drift-wave instabilities. Physical Review E, 2021, 104, 015215.	2.1	6
9	Gauge-symmetrization method for energy-momentum tensors in high-order electromagnetic field theories. Physical Review D, 2021, 104, .	4.7	4
10	Geometric electrostatic particle-in-cell algorithm on unstructured meshes. Journal of Plasma Physics, 2021, 87, .	2.1	3
11	Discovering exact, gauge-invariant, local energyâ€“momentum conservation laws for the electromagnetic gyrokinetic system by high-order field theory on heterogeneous manifolds. Plasma Science and Technology, 2021, 23, 105103.	1.5	5
12	Slow manifolds of classical Pauli particle enable structure-preserving geometric algorithms for guiding center dynamics. Computer Physics Communications, 2021, 265, 107981.	7.5	9
13	Noether currents for Eulerian variational principles in non-barotropic magnetohydrodynamics and topological conservations laws. Journal of Fluid Mechanics, 2021, 908, .	3.4	5
14	PT-symmetry entails pseudo-Hermiticity regardless of diagonalizability. Journal of Mathematical Physics, 2020, 61, .	1.1	19
15	Simulating pitch angle scattering using an explicitly solvable energy-conserving algorithm. Physical Review E, 2020, 102, 033302.	2.1	4
16	Machine learning and serving of discrete field theories. Scientific Reports, 2020, 10, 19329.	3.3	21
17	The geometric theory of charge conservation in particle-in-cell simulations. Journal of Plasma Physics, 2020, 86, .	2.1	14
18	Linear beam stability in periodic focusing systems: Krein signature and band structure. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2020, 962, 163708.	1.6	3

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19	The physics of spontaneous parity-time symmetry breaking in the Kelvinâ€“Helmholtz instability. New Journal of Physics, 2020, 22, 083040.	2.9	13
20	General field theory and weak Euler-Lagrange equation for classical particle-field systems in plasma physics. Physics of Plasmas, 2019, 26, .	1.9	4
21	Solving the Vlasovâ€“Maxwell equations using Hamiltonian splitting. Journal of Computational Physics, 2019, 396, 381-399.	3.8	9
22	Energy-preserving algorithm for gyrocenter dynamics of charged particles. Numerical Algorithms, 2019, 81, 1521-1530.	1.9	6
23	Field theory and a structure-preserving geometric particle-in-cell algorithm for drift wave instability and turbulence. Nuclear Fusion, 2019, 59, 106044.	3.5	11
24	Magnetohydrodynamical equilibria with current singularities and continuous rotational transform. Physics of Plasmas, 2019, 26, .	1.9	6
25	Explicit high-order gauge-independent symplectic algorithms for relativistic charged particle dynamics. Computer Physics Communications, 2019, 241, 19-27.	7.5	8
26	A lattice Maxwell system with discrete spaceâ€“time symmetry and local energyâ€“momentum conservation. Physics Letters, Section A: General, Atomic and Solid State Physics, 2019, 383, 808-812.	2.1	5
27	Kelvin-Helmholtz instability is the result of parity-time symmetry breaking. Physics of Plasmas, 2019, 26, .	1.9	17
28	A necessary and sufficient condition for the stability of linear Hamiltonian systems with periodic coefficients. Journal of Mathematical Physics, 2019, 60, 022901.	1.1	4
29	Symplectic integrators with adaptive time step applied to runaway electron dynamics. Numerical Algorithms, 2019, 81, 1295-1309.	1.9	4
30	Explicit symplectic algorithms based on generating functions for relativistic charged particle dynamics in time-dependent electromagnetic field. Physics of Plasmas, 2018, 25, .	1.9	9
31	Preface to Special Topic: Collective Effects in Particle Beams and Nonneutral Plasmas. Physics of Plasmas, 2018, 25, 011501.	1.9	0
32	Constructing Current Singularity in a 3D Line-tied Plasma. Astrophysical Journal, 2018, 852, 3.	4.5	7
33	Generalized parametrization methods for centroid and envelope dynamics of charged particle beams in coupled lattices. Physics of Plasmas, 2018, 25, 011605.	1.9	4
34	Laser-plasma interactions in magnetized environment. Physics of Plasmas, 2018, 25, .	1.9	22
35	Reducing noise for PIC simulations using kernel density estimation algorithm. Physics of Plasmas, 2018, 25, 102107.	1.9	5
36	Structure-preserving geometric particle-in-cell methods for Vlasov-Maxwell systems. Plasma Science and Technology, 2018, 20, 110501.	1.5	39

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37	Simulations of relativistic quantum plasmas using real-time lattice scalar QED. Physical Review E, 2018, 97, 053206.	2.1	21
38	Geometric field theory and weak Eulerâ€“Lagrange equation for classical relativistic particle-field systems. Frontiers of Physics, 2018, 13, 1.	5.0	3
39	Explicit K -symplectic algorithms for charged particle dynamics. Physics Letters, Section A: General, Atomic and Solid State Physics, 2017, 381, 568-573.	2.1	39
40	Photons, phonons, and plasmons with orbital angular momentum in plasmas. Scientific Reports, 2017, 7, 41731.	3.3	11
41	Laser-pulse compression using magnetized plasmas. Physical Review E, 2017, 95, 023211.	2.1	24
42	On the correspondence between classical geometric phase of gyro-motion and quantum Berry phase. Physics of Plasmas, 2017, 24, 022121.	1.9	1
43	Solving Vlasov-Maxwell equations by using Hamiltonian splitting. AIP Conference Proceedings, 2017, , .	0.4	0
44	Kinetic simulations of laser parametric amplification in magnetized plasmas. Physics of Plasmas, 2017, 24, 093103.	1.9	15
45	Local energy conservation law for a spatially-discretized Hamiltonian Vlasov-Maxwell system. Physics of Plasmas, 2017, 24, 062112.	1.9	9
46	Three-wave scattering in magnetized plasmas: From cold fluid to quantized Lagrangian. Physical Review E, 2017, 96, 023204.	2.1	12
47	Canonical symplectic structure and structure-preserving geometric algorithms for SchrÃ¶dingerâ€“Maxwell systems. Journal of Computational Physics, 2017, 349, 441-452.	3.8	14
48	Explicit symplectic methods for solving charged particle trajectories. Physics of Plasmas, 2017, 24, .	1.9	15
49	Application of Lie Algebra in Constructing Volume-Preserving Algorithms for Charged Particles Dynamics. Communications in Computational Physics, 2016, 19, 1397-1408.	1.7	3
50	Envelope Hamiltonian for charged-particle dynamics in general linear coupled systems. Physics of Plasmas, 2016, 23, .	1.9	3
51	On the structure of the two-stream instabilityâ€“complex G-Hamiltonian structure and Krein collisions between positive- and negative-action modes. Physics of Plasmas, 2016, 23, .	1.9	15
52	Lorentz covariant canonical symplectic algorithms for dynamics of charged particles. Physics of Plasmas, 2016, 23, 122513.	1.9	10
53	A family of new explicit, revertible, volume-preserving numerical schemes for the system of Lorentz force. Physics of Plasmas, 2016, 23, .	1.9	7
54	Collisionless pitch-angle scattering of runaway electrons. Nuclear Fusion, 2016, 56, 064002.	3.5	11

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55	Higher order volume-preserving schemes for charged particle dynamics. Journal of Computational Physics, 2016, 305, 172-184.	3.8	28
56	Approach to Chandrasekhar-Kendall-Woltjer state in a chiral plasma. Physical Review D, 2016, 94, .	4.7	17
57	Effective-action approach to wave propagation in scalar QED plasmas. Physical Review A, 2016, 94, .	2.5	17
58	Explicit symplectic algorithms based on generating functions for charged particle dynamics. Physical Review E, 2016, 94, 013205.	2.1	33
59	Generalized Kapchinskij-Vladimirskij Distribution and Beam Matrix for Phase-Space Manipulations of High-Intensity Beams. Physical Review Letters, 2016, 117, 224801.	7.8	9
60	Formation of current singularity in a topologically constrained plasma. Physical Review E, 2016, 93, 023205.	2.1	18
61	Hamiltonian particle-in-cell methods for Vlasov-Maxwell equations. Physics of Plasmas, 2016, 23, .	1.9	34
62	Explicit high-order noncanonical symplectic algorithms for ideal two-fluid systems. Physics of Plasmas, 2016, 23, .	1.9	26
63	High order volume-preserving algorithms for relativistic charged particles in general electromagnetic fields. Physics of Plasmas, 2016, 23, 092109.	1.9	21
64	Canonical symplectic particle-in-cell method for long-term large-scale simulations of the Vlasovâ€“Maxwell equations. Nuclear Fusion, 2016, 56, 014001.	3.5	67
65	Variational symplectic particle-in-cell simulation of nonlinear mode conversion from extraordinary waves to Bernstein waves. Physics of Plasmas, 2015, 22, .	1.9	26
66	Explicit high-order non-canonical symplectic particle-in-cell algorithms for Vlasov-Maxwell systems. Physics of Plasmas, 2015, 22, .	1.9	65
67	Hamiltonian time integrators for Vlasov-Maxwell equations. Physics of Plasmas, 2015, 22, .	1.9	46
68	Volume-preserving algorithm for secular relativistic dynamics of charged particles. Physics of Plasmas, 2015, 22, 044501.	1.9	50
69	Beam envelope calculations in general linear coupled lattices. Physics of Plasmas, 2015, 22, 013109.	1.9	5
70	Physics of Plasmas, 2015, 22, 056702.	1.9	4
71	Volume-preserving algorithms for charged particle dynamics. Journal of Computational Physics, 2015, 281, 135-147.	3.8	82
72	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

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73	Variational integration for ideal magnetohydrodynamics with built-in advection equations. Physics of Plasmas, 2014, 21, .	1.9	37
74	Two-stream instability with time-dependent drift velocity. Physics of Plasmas, 2014, 21, .	1.9	14
75	Analytical methods for describing charged particle dynamics in general focusing lattices using generalized Courant-Snyder theory. Physical Review Special Topics: Accelerators and Beams, 2014, 17, .	1.8	15
76	Field theory and weak Euler-Lagrange equation for classical particle-field systems. Physical Review E, 2014, 90, 043102.	2.1	15
77	What is the fate of runaway positrons in tokamaks?. Physics of Plasmas, 2014, 21, .	1.9	14
78	Canonicalization and symplectic simulation of the gyrocenter dynamics in time-independent magnetic fields. Physics of Plasmas, 2014, 21, .	1.9	32
79	A Nonlinear PIC Algorithm for High Frequency Waves in Magnetized Plasmas Based on Gyrocenter Gauge Kinetic Theory. Communications in Computational Physics, 2014, 15, 1167-1183.	1.7	3
80	Generalized Courant-Snyder Theory for Charged-Particle Dynamics in General Focusing Lattices. Physical Review Letters, 2013, 111, 104801.	7.8	16
81	Why is Boris algorithm so good?. Physics of Plasmas, 2013, 20, .	1.9	193
82	On plasma rotation induced by waves in tokamaks. Physics of Plasmas, 2013, 20, 102105.	1.9	7
83	A variational multi-symplectic particle-in-cell algorithm with smoothing functions for the Vlasov-Maxwell system. Physics of Plasmas, 2013, 20, .	1.9	57
84	On the singularity of the Vlasov-Poisson system. Physics of Plasmas, 2013, 20, .	1.9	6
85	On the toroidal plasma rotations induced by lower hybrid waves. Physics of Plasmas, 2013, 20, .	1.9	15
86	QinetÂal.Reply:. Physical Review Letters, 2013, 110, 269502.	7.8	4
87	Class of Generalized Kapchinskij-Vladimirskij Solutions and Associated Envelope Equations for High-Intensity Charged-Particle Beams. Physical Review Letters, 2013, 110, 064803.	7.8	12
88	Analysis of continuously rotating quadrupole focusing channels using generalized Courant-Snyder theory. Physics of Plasmas, 2013, 20, 083121.	1.9	9
89	Geometric phases of the Faraday rotation of electromagnetic waves in magnetized plasmas. Physics of Plasmas, 2012, 19, .	1.9	5
90	Response to â€œComment on â€˜Geometric phase of the gyromotion for charged particles in a time-dependent magnetic fieldâ€™â€•[Phys. Plasmas 19, 094701 (2012)]. Physics of Plasmas, 2012, 19, .	1.9	6

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91	Woltjer-Taylor State without Taylorâ€™s Conjecture: Plasma Relaxation at all Wavelengths. Physical Review Letters, 2012, 109, 235001.	7.8	18
92	Geometric phase of the gyromotion for charged particles in a time-dependent magnetic field. Physics of Plasmas, 2011, 18, .	1.9	14
93	Variational symplectic algorithm for guiding center dynamics in the inner magnetosphere. Physics of Plasmas, 2011, 18, 052902.	1.9	13
94	Centroid and envelope dynamics of charged particle beams in an oscillating wobbler and external focusing lattice for heavy ion fusion applications. Laser and Particle Beams, 2011, 29, 365-372.	1.0	7
95	Self-similar nonlinear dynamical solutions for one-component nonneutral plasma in a time-dependent linear focusing field. Physics of Plasmas, 2011, 18, .	1.9	0
96	A gyrokinetic collision operator for magnetized Lorentz plasmas. Physics of Plasmas, 2011, 18, .	1.9	5
97	Generalized Courantâ€“Snyder theory and Kapchinskijâ€“Vladimirskij distribution for high-intensity beams in a coupled transverse focusing lattice. Physics of Plasmas, 2011, 18, 056708.	1.9	12
98	Centroid and Envelope Dynamics of High-Intensity Charged-Particle Beams in an External Focusing Lattice and Oscillating Wobbler. Physical Review Letters, 2010, 104, 254801.	7.8	31
99	Twiss parameters and beam matrix formulation of generalized Courantâ€“Snyder theory for coupled transverse beam dynamics. Physics of Plasmas, 2010, 17, .	1.9	12
100	Phase-space dynamics of runaway electrons in tokamaks. Physics of Plasmas, 2010, 17, .	1.9	39
101	Adiabatic formation of a matched-beam distribution for an alternating-gradient quadrupole lattice. Physics of Plasmas, 2009, 16, 123107.	1.9	1
102	Generalized Kapchinskij-Vladimirskij Distribution and Envelope Equation for High-Intensity Beams in a Coupled Transverse Focusing Lattice. Physical Review Letters, 2009, 103, 224802.	7.8	26
103	Gyrocenter-gauge kinetic algorithm for high frequency waves in magnetized plasmas. Physics of Plasmas, 2009, 16, 032507.	1.9	14
104	Generalized Courant-Snyder theory for coupled transverse dynamics of charged particles in electromagnetic focusing lattices. Physical Review Special Topics: Accelerators and Beams, 2009, 12, .	1.8	22
105	A physical parametrization of coupled transverse dynamics based on generalized Courantâ€“Snyder theory and its applications. Physics of Plasmas, 2009, 16, 050705.	1.9	16
106	Variational symplectic algorithm for guiding center dynamics and its application in tokamak geometry. Physics of Plasmas, 2009, 16, 042510.	1.9	52
107	Variational Symplectic Integrator for Long-Time Simulations of the Guiding-Center Motion of Charged Particles in General Magnetic Fields. Physical Review Letters, 2008, 100, 035006.	7.8	86
108	Response to â€œComment on â€˜A new derivation of the plasma susceptibility tensor for a hot magnetized plasma without infinite sums of products of Bessel functionsâ€™â€•[Phys. Plasmas 15, 024701 (2008)]. Physics of Plasmas, 2008, 15, 024702.	1.9	2

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109	Weight growth due to resonant simulation particles and a modified Î´f algorithm with smooth switching between Î´f and total-f methods. Physics of Plasmas, 2008, 15, 063101.	1.9	4
110	Gyrocenter Gauge Theory and Algorithm for Nonlinear Particle Simulations of Radio-Frequency Waves in Plasmas. AIP Conference Proceedings, 2007, , .	0.4	0
111	High Frequency Gyrokinetic Particle-in-Cell Simulation: Application to Heating of Magnetically Confined Plasmas. AIP Conference Proceedings, 2007, , .	0.4	0
112	Collective temperature anisotropy instabilities in intense charged particle beams. Physics of Plasmas, 2007, 14, 056705.	1.9	18
113	Nonlinear Î´f particle simulations of energy-anisotropy instabilities in high-intensity bunched beams. , 2007, , .		0
114	Kinetic description of nonlinear wave and soliton excitations in coasting charged particle beams. , 2007, , .		2
115	A new derivation of the plasma susceptibility tensor for a hot magnetized plasma without infinite sums of products of Bessel functions. Physics of Plasmas, 2007, 14, .	1.9	14
116	Nonlinear ponderomotive force by low frequency waves and nonresonant current drive. Physics of Plasmas, 2006, 13, 112307.	1.9	18
117	An Exact Magnetic-Moment Invariant of Charged-Particle Gyromotion. Physical Review Letters, 2006, 96, 085003.	7.8	14
118	Symmetries and invariants of the oscillator and envelope equations with time-dependent frequency. Physical Review Special Topics: Accelerators and Beams, 2006, 9, .	1.8	17
119	Drift compression and final focus options for heavy ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2005, 544, 255-261.	1.6	16
120	Kinetic description of neutralized drift compression and transverse focusing of intense ion charge bunches. Physical Review Special Topics: Accelerators and Beams, 2005, 8, .	1.8	20
121	Drift compression and final focus for intense heavy ion beams with nonperiodic, time-dependent lattice. Physical Review Special Topics: Accelerators and Beams, 2004, 7, .	1.8	21
122	δf simulation studies of the ion-electron two-stream instability in IBX. , 2003, , .		0
123	Î´f simulation studies of the ionâ€“electron two-stream instability in heavy ion fusion beams. Laser and Particle Beams, 2003, 21, 21-26.	1.0	8
124	Nonlinear Î´â€Šf simulations of collective effects in intense charged particle beams. Physics of Plasmas, 2003, 10, 2078-2086.	1.9	17
125	The Paul Trap Simulator Experiment. Laser and Particle Beams, 2003, 21, 549-552.	1.0	11
126	Nonlinear Î´f simulation studies of intense charged particle beams with large temperature anisotropy. Physics of Plasmas, 2002, 9, 3138-3146.	1.9	31

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127	Implications of the electrostatic approximation in the beam frame on the nonlinear Vlasovâ€“Maxwell equations for intense beam propagation. Physics of Plasmas, 2002, 9, 340-344.	1.9	8
128	Nonlinear Î´f simulation studies of intense charged particle beams with large temperature anisotropy. Laser and Particle Beams, 2002, 20, 585-588.	1.0	16
129	Study of drift compression for heavy ion beams. Laser and Particle Beams, 2002, 20, 565-568.	1.0	7
130	Paul Trap Simulator Experiment (PTSX) to simulate intense beam propagation through a periodic focusing quadrupole field. AIP Conference Proceedings, 2002, , .	0.4	0
131	3D multispecies nonlinear perturbative particle simulations of collective processes in intense particle beams for heavy ion fusion. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2001, 464, 477-483.	1.6	24
132	Physics of Intense Charged Particle Beams in High Energy Accelerators. , 2001, , .		236
133	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.	1.9	53
134	Intense nonneutral beam propagation through a periodic focusing quadrupole field Iâ€”A compact Paul trap configuration to simulate beam propagation over large distances. , 1999, , .		0
135	Intense nonneutral beam propagation through a periodic focusing quadrupole field IIâ€”Hamiltonian averaging techniques in the smooth-focusing approximation. , 1999, , .		0
136	3D multispecies nonlinear perturbative particle simulation of intense particle beams. , 0, , .		3
137	Kinetic description of electron-proton instability in high-intensity linacs and storage rings. , 0, , .		0
138	Periodically-focused solutions to the nonlinear Vlasov-Maxwell equations for intense beam propagation through an alternating-gradient quadrupole field. , 0, , .		0
139	Electromagnetic (Darwin) model for three-dimensional perturbative particle simulation of high intensity beams. , 0, , .		0
140	3D simulation studies of the two-stream instability in intense particle beams based on the Vlasov-Maxwell equations. , 0, , .		2
141	Drift compression of space-charge-dominated bunched beams. , 0, , .		3
142	Paul Trap Simulator Experiment (PTSX) to simulate intense beam propagation through a periodic quadrupole focusing field. , 0, , .		0
143	Kinetic studies of temperature anisotropy instability in intense charged particle beams. , 0, , .		1
144	Instability driven by wall impedance in intense charged particle beams. , 0, , .		0

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145	Nonlinear δf Particle Simulations of Collective Effects in High-Intensity Bunched Beams. , 0, , .		0
146	Symmetries and Invariants of the Time-Dependent Oscillator Equation and the Envelope Equation. , 0, , .		0
147	Anisotropy-Driven Instability in Intense Charged Particle Beams. , 0, , .		0
148	Nonlinear Î´F simulation studies of intense charged particle beams with large pressure anisotropy. , 0, , .		0