Steven J Plimpton

List of Publications by Year
in descending order

55 papers	45,713 citations	126907 33 h-index	161849 54 g-index
56 all docs	56 docs citations	56 times ranked	30327 citing authors

#	Article	IF	Citations
1	Fast Parallel Algorithms for Short-Range Molecular Dynamics. Journal of Computational Physics, 1995, 117, 1-19.	3.8	35,279
2	LAMMPS - a flexible simulation tool for particle-based materials modeling at the atomic, meso, and continuum scales. Computer Physics Communications, 2022, 271, 108171.	7.5	3,106
3	Dynamical Heterogeneities in a Supercooled Lennard-Jones Liquid. Physical Review Letters, 1997, 79, 2827-2830.	7.8	861
4	Stringlike Cooperative Motion in a Supercooled Liquid. Physical Review Letters, 1998, 80, 2338-2341.	7.8	846
5	General formulation of pressure and stress tensor for arbitrary many-body interaction potentials under periodic boundary conditions. Journal of Chemical Physics, 2009, 131, 154107.	3.0	707
6	Implementing molecular dynamics on hybrid high performance computers â€“ short range forces. Computer Physics Communications, 2011, 182, 898-911.	7.5	549
7	Equilibration of long chain polymer melts in computer simulations. Journal of Chemical Physics, 2003, 119, 12718-12728.	3.0	465
8	Spatial correlations of mobility and immobility in a glass-forming Lennard-Jones liquid. Physical Review E, 1999, 60, 3107-3119.	2.1	455
9	Liâ€ion Synaptic Transistor for Low Power Analog Computing. Advanced Materials, 2017, 29, 1604310.	21.0	425
10	Implementing molecular dynamics on hybrid high performance computers â€“ Particleâ€“particle particle-mesh. Computer Physics Communications, 2012, 183, 449-459.	7.5	373
11	Computational aspects of many-body potentials. MRS Bulletin, 2012, 37, 513-521.	3.5	278
12	Implementing peridynamics within a molecular dynamics code. Computer Physics Communications, 2008, 179, 777-783.	7.5	260
13	Computing the mobility of grain boundaries. Nature Materials, 2006, 5, 124-127.	27.5	222
14	MapReduce in MPI for Large-scale graph algorithms. Parallel Computing, 2011, 37, 610-632.	2.1	162
15	Particle dynamics modeling methods for colloid suspensions. Computational Particle Mechanics, 2014, 1, 321-356.	3.0	124
16	A new parallel method for molecular dynamics simulation of macromolecular systems. Journal of Computational Chemistry, 1996, 17, 326-337.	3.3	113
17	Computational limits of classical molecular dynamics simulations. Computational Materials Science, 1995, 4, 361-364.	3.0	105
18	Evaporation of Lennard-Jones fluids. Journal of Chemical Physics, 2011, 134, 224704.	3.0	96

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19	Effect of end-tethered polymers on surface adhesion of glassy polymers. Journal of Polymer Science, Part B: Polymer Physics, 2004, 42, 199-208.	2.1	77
20	Massively parallel symplectic algorithm for coupled magnetic spin dynamics and molecular dynamics. Journal of Computational Physics, 2018, 372, 406-425.	3.8	76
21	Finding strongly connected components in distributed graphs. Journal of Parallel and Distributed Computing, 2005, 65, 901-910.	4.1	73
22	Liquid crystal nanodroplets in solution. Journal of Chemical Physics, 2009, 130, 044901.	3.0	73
23	Molecular dynamics simulations of low-energy (25â€“200 eV) argon ion interactions with silicon surfaces: Sputter yields and product formation pathways. Journal of Applied Physics, 1998, 83, 4055-4063.	2.5	72
24	Accurate and efficient methods for modeling colloidal mixtures in an explicit solvent using molecular dynamics. Computer Physics Communications, 2008, 179, 320-329.	7.5	70
25	Software components for parallel multiscale simulation: an example with LAMMPS. Engineering With Computers, 2010, 26, 205-211.	6.1	68
26	Parallel strategies for crash and impact simulations. Computer Methods in Applied Mechanics and Engineering, 2000, 184, 375-390.	6.6	64
27	Discrete element simulations of stress distributions in silos: crossover from two to three dimensions. Powder Technology, 2004, 139, 233-239.	4.2	56
28	A historical survey of algorithms and hardware architectures for neural-inspired and neuromorphic computing applications. Biologically Inspired Cognitive Architectures, 2017, 19, 49-64.	0.9	54
29	Parallel Transient Dynamics Simulations: Algorithms for Contact Detection and Smoothed Particle Hydrodynamics. Journal of Parallel and Distributed Computing, 1998, 50, 104-122.	4.1	43
30	Effect of shape and friction on the packing and flow of granular materials. Physical Review E, 2018, 98, .	2.1	42
31	Mesoscale hydrodynamics via stochastic rotation dynamics: Comparison with Lennard-Jones fluid. Journal of Chemical Physics, 2010, 132, 174106.	3.0	40
32	Oxygen Modulates the Effectiveness of Granuloma Mediated Host Response to Mycobacterium tuberculosis: A Multiscale Computational Biology Approach. Frontiers in Cellular and Infection Microbiology, 2016, 6, 6.	3.9	40
33	Accelerating dissipative particle dynamics simulations for soft matter systems. Computational Materials Science, 2015, 100, 173-180.	3.0	38
34	ParallelS_nSweeps on Unstructured Grids: Algorithms for Prioritization, Grid Partitioning, and Cycle Detection. Nuclear Science and Engineering, 2005, 150, 267-283.	1.1	35
35	A parallel rendezvous algorithm for interpolation between multiple grids. Journal of Parallel and Distributed Computing, 2004, 64, 266-276.	4.1	34
36	Optimizing legacy molecular dynamics software with directive-based offload. Computer Physics Communications, 2015, 195, 95-101.	7.5	32

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37	Substructured molecular dynamics using multibody dynamics algorithms. International Journal of Non-Linear Mechanics, 2008, 43, 1040-1055.	2.6	31
38	Granular packings with sliding, rolling, and twisting friction. Physical Review E, 2020, 102, 032903.	2.1	31
39	A load-balancing algorithm for a parallel electromagnetic particle-in-cell code. Computer Physics Communications, 2003, 152, 227-241.	7.5	28
40	No-slip boundary conditions and forced flow in multiparticle collision dynamics. Physical Review E, 2012, 86, 066703.	2.1	28
41	Classical molecular dynamics. Journal of Chemical Physics, 2021, 154, 100401.	3.0	28
42	Molecular dynamics simulations of athermal polymer blends: Comparison with integral equation theory. Journal of Chemical Physics, 1995, 103, 1208-1215.	3.0	25
43	Aspherical particle models for molecular dynamics simulation. Computer Physics Communications, 2019, 243, 12-24.	7.5	22
44	Highly scalable discrete-particle simulations with novel coarse-graining: accessing the microscale. Molecular Physics, 2018, 116, 2061-2069.	1.7	16
45	Parallel Genehunter: implementation of a linkage analysis package for distributed-memory architectures. Journal of Parallel and Distributed Computing, 2003, 63, 674-682.	4.1	14
46	Streaming data analytics via message passing with application to graph algorithms. Journal of Parallel and Distributed Computing, 2014, 74, 2687-2698.	4.1	12
47	Scalability and Performance of Two Large Linux Clusters. Journal of Parallel and Distributed Computing, 2001, 61, 1546-1569.	4.1	10
48	Carbon Sequestration inSynechococcusSp.: From Molecular Machines to Hierarchical Modeling. OMICS A Journal of Integrative Biology, 2002, 6, 305-330.	2.0	9
49	Parallel algorithms for hyperdynamics and local hyperdynamics. Journal of Chemical Physics, 2020, 153, 054116.	3.0	9
50	The effect of attractions on the structure and thermodynamics of model polymer blends. Journal of Chemical Physics, 1997, 107, 4024-4032.	3.0	7
51	The diffusion of simple penetrants in tangent site polymer melts. Journal of Chemical Physics, 1999, 111, 9822-9831.	3.0	7
52	Developing community codes for materials modeling. Current Opinion in Solid State and Materials Science, 2013, 17, 271-276.	11.5	7
53	Feature length-scale modeling of LPCVD and PECVD MEMS fabrication processes. Microsystem Technologies, 2005, 12, 137-142.	2.0	6
54	Increasing Molecular Dynamics Simulation Rates with an 8-Fold Increase in Electrical Power Efficiency. , 2016, , .		3

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55	Rendezvous algorithms for large-scale modeling and simulation. Journal of Parallel and Distributed Computing, 2021, 147, 184-195.	4.1	3