James P Sethna

List of Publications by Year
in descending order

81	7,296	101384	69108
papers	citations	36 h-index	77 g-index

82	82	82	6654
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Crackling noise. Nature, 2001, 410, 242-250.	13.7	1,039
2	Universally Sloppy Parameter Sensitivities in Systems Biology Models. PLoS Computational Biology, 2007, 3, e189.	1.5	1,026
3	Hysteresis and hierarchies: Dynamics of disorder-driven first-order phase transformations. Physical Review Letters, 1993, 70, 3347-3350.	2.9	597
4	Statistical mechanical approaches to models with many poorly known parameters. Physical Review E, 2003, 68, 021904.	0.8	299
5	Avalanches, Barkhausen Noise, and Plain Old Criticality. Physical Review Letters, 1995, 75, 4528-4531.	2.9	248
6	Perspective: Sloppiness and emergent theories in physics, biology, and beyond. Journal of Chemical Physics, 2015, 143, 010901.	1.2	224
7	Hysteresis, avalanches, and disorder-induced critical scaling: A renormalization-group approach. Physical Review B, 1996, 53, 14872-14905.	1.1	213
8	The statistical mechanics of complex signaling networks: nerve growth factor signaling. Physical Biology, 2004, 1, 184-195.	0.8	213
9	Imaging Atomic Rearrangements in Two-Dimensional Silica Glass: Watching Silicaâ€™s Dance. Science, 2013, 342, 224-227.	6.0	209
10	Parameter Space Compression Underlies Emergent Theories and Predictive Models. Science, 2013, 342, 604-607.	6.0	209
11	Universality beyond power laws and the average avalanche shape. Nature Physics, 2011, 7, 316-320.	6.5	185
12	Sloppiness, robustness, and evolvability in systems biology. Current Opinion in Biotechnology, 2008, 19, 389-395.	3.3	170
13	Disorder-induced critical phenomena in hysteresis: Numerical scaling in three and higher dimensions. Physical Review B, 1999, 59, 6106-6119.	1.1	166
14	Why are Nonlinear Fits to Data so Challenging?. Physical Review Letters, 2010, 104, 060201.	2.9	148
15	The potential of atomistic simulations and the knowledgebase of interatomic models. Jom, 2011, 63, 17-17.	0.9	144
16	Noise in disordered systems: The power spectrum and dynamic exponents in avalanche models. Physical Review B, 2000, 62, 11699-11708.	1.1	133
17	Geometry of nonlinear least squares with applications to sloppy models and optimization. Physical Review E, 2011, 83, 036701.	0.8	128
18	Sloppy-Model Universality Class and the Vandermonde Matrix. Physical Review Letters, 2006, 97, 150601.	2.9	111

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19	Zero-temperature hysteresis in the random-field Ising model on a Bethe lattice. Journal of Physics A, 1997, 30, 5259-5267.	1.6	106
20	Critical Casimir Forces in Cellular Membranes. Physical Review Letters, 2012, 109, 138101.	2.9	104
21	Block copolymer self-assemblyâ€“directed synthesis of mesoporous gyroidal superconductors. Science Advances, 2016, 2, e1501119.	4.7	104
22	From Damage Percolation to Crack Nucleation Through Finite Size Criticality. Physical Review Letters, 2013, 110, 185505.	2.9	101
23	Bayesian Ensemble Approach to Error Estimation of Interatomic Potentials. Physical Review Letters, 2004, 93, 165501.	2.9	95
24	Microscopic theory of glassy disordered crystals: (KBr)_{1-x}(KCN)_x. Phase Transitions, 1985, 5, 317-339.	0.6	70
25	Scaling ansatz for the jamming transition. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 9745-9750.	3.3	67
26	Optimal experimental design in an epidermal growth factor receptor signalling and down-regulation model. IET Systems Biology, 2007, 1, 190-202.	0.8	65
27	Deformation of Crystals: Connections with Statistical Physics. Annual Review of Materials Research, 2017, 47, 217-246.	4.3	61
28	Temperature dependence of the superheating field for superconductors in the high-<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>Îº</mml:mi></mml:math>London limit. Physical Review B, 2008, 78, .	1.1	54
29	Superheating field of superconductors within Ginzburg-Landau theory. Physical Review B, 2011, 83, .	1.1	54
30	Rate Theory for Correlated Processes: Double Jumps in Adatom Diffusion. Physical Review Letters, 1997, 79, 2843-2846.	2.9	52
31	Extracting Falsifiable Predictions from Sloppy Models. Annals of the New York Academy of Sciences, 2007, 1115, 203-211.	1.8	49
32	Emergent SO(3) Symmetry of the Frictionless Shear Jamming Transition. Journal of Statistical Physics, 2017, 167, 735-748.	0.5	49
33	Spheric domains in smectic liquid crystals. Physical Review A, 1982, 26, 3037-3040.	1.0	44
34	Statistical mechanics of cracks: Fluctuations, breakdown, and asymptotics of elastic theory. Physical Review E, 1997, 55, 7669-7690.	0.8	40
35	Elastic Theory Has Zero Radius of Convergence. Physical Review Letters, 1996, 77, 1520-1523.	2.9	39
36	Fracture Strength: Stress Concentration, Extreme Value Statistics, and the Fate of the Weibull Distribution. Physical Review Applied, 2014, 2, .	1.5	39

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37	Theoretical estimates of maximum fields in superconducting resonant radio frequency cavities: stability theory, disorder, and laminates. Superconductor Science and Technology, 2017, 30, 033002.	1.8	39
38	Python Unleashed on Systems Biology. Computing in Science and Engineering, 2007, 9, 34-37.	1.2	36
39	Scaling theory of continuum dislocation dynamics in three dimensions: Self-organized fractal pattern formation. International Journal of Plasticity, 2013, 46, 94-129.	4.1	31
40	Overshoot during phenotypic switching of cancer cell populations. Scientific Reports, 2015, 5, 15464.	1.6	31
41	Measuring nonlinear stresses generated by defects in 3D colloidal crystals. Nature Materials, 2016, 15, 1172-1176.	13.3	31
42	Avalanche spatial structure and multivariable scaling functions: Sizes, heights, widths, and views through windows. Physical Review E, 2011, 84, 061103.	0.8	30
43	Random-Field Ising Models of Hysteresis. , 2006, , 107-179.		27
44	Vortex Dynamics and Losses Due to Pinning: Dissipation from Trapped Magnetic Flux in Resonant Superconducting Radio-Frequency Cavities. Physical Review Applied, 2018, 10, .	1.5	23
45	Mechanical Properties of Growing Melanocytic Nevi and the Progression to Melanoma. PLoS ONE, 2014, 9, e94229.	1.1	22
46	Crackling crossover. Nature Physics, 2007, 3, 518-519.	6.5	21
47	Morphology of renormalization-group flow for the de Almeidaâ€“Thoulessâ€“Gardner universality class. Physical Review E, 2019, 99, 022132.	0.8	21
48	Glassy Crystals Low-frequency and Low-temperature Properties a. Annals of the New York Academy of Sciences, 1986, 484, 130-149.	1.8	20
49	Pinning Susceptibility: The Effect of Dilute, Quenched Disorder on Jamming. Physical Review Letters, 2016, 116, 235501.	2.9	20
50	Comment on â€œSloppy models, parameter uncertainty, and the role of experimental designâ€• Molecular BioSystems, 2011, 7, 2522.	2.9	18
51	Shielding Superconductors with Thin Films as Applied to rf Cavities for Particle Accelerators. Physical Review Applied, 2015, 4, .	1.5	18
52	Course 6 Crackling noise and avalanches: Scaling, critical phenomena, and the renormalization group. Les Houches Summer School Proceedings, 2007, 85, 257-288.	0.2	15
53	Cluster representations and the Wolff algorithm in arbitrary external fields. Physical Review E, 2018, 98, .	0.8	15
54	Yield Precursor Dislocation Avalanches in Small Crystals: The Irreversibility Transition. Physical Review Letters, 2019, 123, 035501.	2.9	15

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55	You can run, you can hide: The epidemiology and statistical mechanics of zombies. Physical Review E, 2015, 92, 052801.	0.8	14
56	A KIM-compliantpotfitfor fitting sloppy interatomic potentials: application to the EDIP model for silicon. Modelling and Simulation in Materials Science and Engineering, 2017, 25, 014001.	0.8	14
57	Disorderâ€driven firstâ€order phase transformations: A model for hysteresis. Journal of Applied Physics, 1994, 75, 5946-5948.	1.1	13
58	Computation of a Theoretical Membrane Phase Diagram and the Role of Phase in Lipid-Raft-Mediated Protein Organization. Journal of Physical Chemistry B, 2018, 122, 3500-3513.	1.2	13
59	Improved magnetic information storage using return-point memory. Journal of Applied Physics, 1997, 81, 1590-1597.	1.1	12
60	Normal Form for Renormalization Groups. Physical Review X, 2019, 9, .	2.8	12
61	Analysis of magnetic vortex dissipation in Sn-segregated boundaries in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mrow><mml:mi>Nb</mml:mi></mml:mrow><mml:mn>3</mml:mn> superconducting RF cavities. Physical Review B, 2021, 103, .	1.1	12
62	Crossover behavior in interface depinning. Physical Review E, 2015, 92, 022146.	0.8	11
63	Weirdest Martensite: Smectic Liquid Crystal Microstructure and Weyl-PoincarÃ© Invariance. Physical Review Letters, 2016, 116, 147802.	2.9	11
64	Light Microscopy at Maximal Precision. Physical Review X, 2017, 7, .	2.8	11
65	Structural susceptibility and separation of time scales in the van der Pol oscillator. Physical Review E, 2012, 86, 026712.	0.8	9
66	Visualization, coarsening, and flow dynamics of focal conic domains in simulated smectic-Aliquid crystals. Physical Review E, 2015, 92, 062511.	0.8	9
67	Visualizing probabilistic models and data with Intensive Principal Component Analysis. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 13762-13767.	3.3	9
68	Chebyshev Approximation and the Global Geometry of Model Predictions. Physical Review Letters, 2019, 122, 158302.	2.9	9
69	Ginzburg-Landau theory of the superheating field anisotropy of layered superconductors. Physical Review B, 2016, 94, .	1.1	7
70	Information loss under coarse graining: A geometric approach. Physical Review E, 2018, 98, .	0.8	7
71	The OpenKIM processing pipeline: A cloud-based automatic material property computation engine. Journal of Chemical Physics, 2020, 153, 064104.	1.2	7
72	Unusual scaling for two-dimensional avalanches: Curing the faceting and scaling in the lower critical dimension. Physical Review Research, 2019, 1, .	1.3	7

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73	Persistent infrared spectral hole burning of NOâ^'2ions in potassium halide crystals. I. Principle and satellite hole generation. Journal of Chemical Physics, 1991, 95, 8816-8842.	1.2	6
74	A generalization of the theory of normal forms. Journal of Nonlinear Science, 1996, 6, 499-506.	1.0	5
75	Crackling Wires. Science, 2007, 318, 207-208.	6.0	4
76	Visualizing probabilistic models in Minkowski space with intensive symmetrized Kullback-Leibler embedding. Physical Review Research, 2020, 2, .	1.3	4
77	Logarithimically slow coarsening in nonrandomly frustrated models. AIP Conference Proceedings, 1992, , .	0.3	1
78	Dislocation Mobility in Two-Dimensional Lennard-Jones Material. Materials Research Society Symposia Proceedings, 1999, 578, 249.	0.1	1
79	Accelerating glassy relaxation in the Frenkel-Kontorova model. AIP Conference Proceedings, 1992, , .	0.3	0
80	Microscopic Estimates for Electromigration Velocities of Intragranular Voids in Thin Aluminum Lines. Materials Research Society Symposia Proceedings, 1996, 428, 171.	0.1	0
81	Canonical sectors and evolution of firms in the US stock markets. Quantitative Finance, 2018, 18, 1619-1634.	0.9	0