James P Sethna

List of Publications by Year in Descending Order

76 papers	5,769 citations	34 h-index	75 g-index
82 ext. papers	6,685 ext. citations	7.1 avg, IF	5.63 L-index

#	Paper	IF	Citations
76	Analysis of magnetic vortex dissipation in Sn-segregated boundaries in Nb3Sn superconducting RF cavities. *Physical Review B*, **2021**, 103,	3.3	2
75	The OpenKIM processing pipeline: A cloud-based automatic material property computation engine.. *Journal of Chemical Physics*, **2020**, 153, 064104	3.9	2
74	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	11.5	2
73	Chebyshev Approximation and the Global Geometry of Model Predictions. *Physical Review Letters*, **2019**, 122, 158302	7.4	1
72	Normal Form for Renormalization Groups. *Physical Review X*, **2019**, 9,	9.1	5
71	Morphology of renormalization-group flow for the de Almeida-Thouless-Gardner universality class. *Physical Review E*, **2019**, 99, 022132	2.4	18
70	Yield Precursor Dislocation Avalanches in Small Crystals: The Irreversibility Transition. *Physical Review Letters*, **2019**, 123, 035501	7.4	10
69	Unusual scaling for two-dimensional avalanches: Curing the faceting and scaling in the lower critical dimension. *Physical Review Research*, **2019**, 1,	3.9	2
68	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	3.4	10
67	Canonical sectors and evolution of firms in the US stock markets. *Quantitative Finance*, **2018**, 18, 1619-1634	1.8	
66	Cluster representations and the Wolff algorithm in arbitrary external fields. *Physical Review E*, **2018**, 98,	2.4	8
65	Vortex Dynamics and Losses Due to Pinning: Dissipation from Trapped Magnetic Flux in Resonant Superconducting Radio-Frequency Cavities. *Physical Review Applied*, **2018**, 10,	4.3	12
64	Deformation of Crystals: Connections with Statistical Physics. *Annual Review of Materials Research*, **2017**, 47, 217-246	12.8	41
63	Theoretical estimates of maximum fields in superconducting resonant radio frequency cavities: stability theory, disorder, and laminates. *Superconductor Science and Technology*, **2017**, 30, 033002	3.1	23
62	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	2	11
61	Light Microscopy at Maximal Precision. *Physical Review X*, **2017**, 7,	9.1	8
60	Emergent SO(3) Symmetry of the Frictionless Shear Jamming Transition. *Journal of Statistical Physics*, **2017**, 167, 735-748	1.5	37

59	Scaling ansatz for the jamming transition. *Proceedings of the National Academy of Sciences of the United States of America*, **2016**, 113, 9745-50	11.5	49
58	Weirdest Martensite: Smectic Liquid Crystal Microstructure and Weyl-Poincar Invariance. *Physical Review Letters*, **2016**, 116, 147802	7.4	6
57	Pinning Susceptibility: The Effect of Dilute, Quenched Disorder on Jamming. *Physical Review Letters* , **2016**, 116, 235501	7.4	16
56	Ginzburg-Landau theory of the superheating field anisotropy of layered superconductors. *Physical Review B*, **2016**, 94,	3.3	6
55	Block copolymer self-assembly-directed synthesis of mesoporous gyroidal superconductors. *Science Advances*, **2016**, 2, e1501119	14.3	81
54	Measuring nonlinear stresses generated by defects in 3D colloidal crystals. *Nature Materials*, **2016**, 15, 1172-1176	27	25
53	Crossover behavior in interface depinning. *Physical Review E*, **2015**, 92, 022146	2.4	5
52	Shielding Superconductors with Thin Films as Applied to rf Cavities for Particle Accelerators. *Physical Review Applied*, **2015**, 4,	4.3	15
51	You can run, you can hide: The epidemiology and statistical mechanics of zombies. *Physical Review E* , **2015**, 92, 052801	2.4	9
50	Visualization, coarsening, and flow dynamics of focal conic domains in simulated smectic-A liquid crystals. *Physical Review E*, **2015**, 92, 062511	2.4	6
49	Overshoot during phenotypic switching of cancer cell populations. *Scientific Reports*, **2015**, 5, 15464	4.9	26
48	Perspective: Sloppiness and emergent theories in physics, biology, and beyond. *Journal of Chemical Physics*, **2015**, 143, 010901	3.9	151
47	Mechanical properties of growing melanocytic nevi and the progression to melanoma. *PLoS ONE*, **2014**, 9, e94229	3.7	17
46	Fracture Strength: Stress Concentration, Extreme Value Statistics, and the Fate of the Weibull Distribution. *Physical Review Applied*, **2014**, 2,	4.3	26
45	Imaging atomic rearrangements in two-dimensional silica glass: watching silica's dance. *Science*, **2013**, 342, 224-7	33.3	162
44	Parameter space compression underlies emergent theories and predictive models. *Science*, **2013**, 342, 604-7	33.3	146
43	From damage percolation to crack nucleation through finite size criticality. *Physical Review Letters*, **2013**, 110, 185505	7.4	77
42	Scaling theory of continuum dislocation dynamics in three dimensions: Self-organized fractal pattern formation. *International Journal of Plasticity*, **2013**, 46, 94-129	7.6	29

41	Structural susceptibility and separation of time scales in the van der Pol oscillator. *Physical Review E* , **2012**, 86, 026712	2.4	7
40	Critical Casimir forces in cellular membranes. *Physical Review Letters*, **2012**, 109, 138101	7.4	91
39	Avalanche spatial structure and multivariable scaling functions: sizes, heights, widths, and views through windows. *Physical Review E*, **2011**, 84, 061103	2.4	22
38	Geometry of nonlinear least squares with applications to sloppy models and optimization. *Physical Review E*, **2011**, 83, 036701	2.4	85
37	Universality beyond power laws and the average avalanche shape. *Nature Physics*, **2011**, 7, 316-320	16.2	155
36	The potential of atomistic simulations and the knowledgebase of interatomic models. *Jom*, **2011**, 63, 17-17	2.1	91
35	Comment on "Sloppy models, parameter uncertainty, and the role of experimental design". *Molecular BioSystems*, **2011**, 7, 2522; author reply 2523-4		14
34	Superheating field of superconductors within Ginzburg-Landau theory. *Physical Review B*, **2011**, 83,	3.3	40
33	Why are nonlinear fits to data so challenging?. *Physical Review Letters*, **2010**, 104, 060201	7.4	107
32	Temperature dependence of the superheating field for superconductors in the high-κ London limit. *Physical Review B*, **2008**, 78,	3.3	46
31	Sloppiness, robustness, and evolvability in systems biology. *Current Opinion in Biotechnology*, **2008**, 19, 389-95	11.4	130
30	Extracting falsifiable predictions from sloppy models. *Annals of the New York Academy of Sciences*, **2007**, 1115, 203-11	6.5	34
29	. *Computing in Science and Engineering*, **2007**, 9, 34-37	1.5	27
28	Universally sloppy parameter sensitivities in systems biology models. *PLoS Computational Biology*, **2007**, 3, 1871-78	5	774
27	Materials science. Crackling wires. *Science*, **2007**, 318, 207-8	33.3	4
26	Course 6 Crackling noise and avalanches: Scaling, critical phenomena, and the renormalization group. *Les Houches Summer School Proceedings*, **2007**, 85, 257-288		9
25	Optimal experimental design in an epidermal growth factor receptor signalling and down-regulation model. *IET Systems Biology*, **2007**, 1, 190-202	1.4	54
24	Sloppy-model universality class and the Vandermonde matrix. *Physical Review Letters*, **2006**, 97, 150601	7.4	82

23	Random-Field Ising Models of Hysteresis **2006**, 107-179		19
22	Bayesian ensemble approach to error estimation of interatomic potentials. *Physical Review Letters*, **2004**, 93, 165501	7.4	84
21	The statistical mechanics of complex signaling networks: nerve growth factor signaling. *Physical Biology*, **2004**, 1, 184-95	3	174
20	Statistical mechanical approaches to models with many poorly known parameters. *Physical Review E*, **2003**, 68, 021904	2.4	232
19	Crackling noise. *Nature*, **2001**, 410, 242-50	50.4	836
18	Noise in disordered systems: The power spectrum and dynamic exponents in avalanche models. *Physical Review B*, **2000**, 62, 11699-11708	3.3	113
17	Disorder-induced critical phenomena in hysteresis: Numerical scaling in three and higher dimensions. *Physical Review B*, **1999**, 59, 6106-6119	3.3	145
16	Dislocation Mobility in Two-Dimensional Lennard-Jones Material. *Materials Research Society Symposia Proceedings*, **1999**, 578, 249		1
15	Improved magnetic information storage using return-point memory. *Journal of Applied Physics*, **1997**, 81, 1590-1597	2.5	9
14	Rate Theory for Correlated Processes: Double Jumps in Adatom Diffusion. *Physical Review Letters*, **1997**, 79, 2843-2846	7.4	50
13	Statistical mechanics of cracks: Fluctuations, breakdown, and asymptotics of elastic theory. *Physical Review E*, **1997**, 55, 7669-7690	2.4	35
12	Zero-temperature hysteresis in the random-field Ising model on a Bethe lattice. *Journal of Physics A* , **1997**, 30, 5259-5267		100
11	Microscopic Estimates for Electromigration Velocities of Intragranular Voids in Thin Aluminum Lines. *Materials Research Society Symposia Proceedings*, **1996**, 428, 171		
10	A generalization of the theory of normal forms. *Journal of Nonlinear Science*, **1996**, 6, 499-506	2.8	5
9	Elastic Theory Has Zero Radius of Convergence. *Physical Review Letters*, **1996**, 77, 1520-1523	7.4	37
8	Hysteresis, avalanches, and disorder-induced critical scaling: A renormalization-group approach. *Physical Review B*, **1996**, 53, 14872-14905	3.3	196
7	Avalanches, Barkhausen noise, and plain old criticality. *Physical Review Letters*, **1995**, 75, 4528-4531	7.4	218
6	Disorder-driven first-order phase transformations: A model for hysteresis. *Journal of Applied Physics*, **1994**, 75, 5946-5948	2.5	13

5	Hysteresis and hierarchies: Dynamics of disorder-driven first-order phase transformations. *Physical Review Letters*, **1993**, 70, 3347-3350	7.4	540
4	Persistent infrared spectral hole burning of NO⁻₂ ions in potassium halide crystals. I. Principle and satellite hole generation. *Journal of Chemical Physics*, **1991**, 95, 8816-8842	3.9	6
3	Glassy Crystals Low-frequency and Low-temperature Properties a. *Annals of the New York Academy of Sciences*, **1986**, 484, 130-149	6.5	20
2	Microscopic theory of glassy disordered crystals: (KBr)1-x(KCN)x. *Phase Transitions*, **1985**, 5, 317-339	1.3	68
1	Spheric domains in smectic liquid crystals. *Physical Review A*, **1982**, 26, 3037-3040	2.6	33