

Raphael Blumenfeld

List of Publications by Year in descending order

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97
papers

1,847
citations

304368

22
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288905

40
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101
all docs

101
docs citations

101
times ranked

895
citing authors

#	ARTICLE	IF	CITATIONS
1	Stress Field in Granular Systems: Loop Forces and Potential Formulation. <i>Physical Review Letters</i> , 2002, 88, 115505.	2.9	161
2	Breakdown of multifractal behavior in diffusion-limited aggregates. <i>Physical Review Letters</i> , 1989, 62, 2977-2980.	2.9	114
3	Fracture surfaces: A critical review of fractal studies and a novel morphological analysis of scanning tunneling microscopy measurements. <i>Progress in Materials Science</i> , 1994, 38, 425-474.	16.0	104
4	Multi-basin dynamics of a protein in a crystal environment. <i>Physica D: Nonlinear Phenomena</i> , 1997, 107, 225-239.	1.3	86
5	Resistance fluctuations in randomly diluted networks. <i>Physical Review B</i> , 1987, 35, 3524-3535.	1.1	79
6	Granular Entropy: Explicit Calculations for Planar Assemblies. <i>Physical Review Letters</i> , 2003, 90, 114303.	2.9	79
7	On Granular Stress Statistics: Compactivity, Angoricity, and Some Open Issues. <i>Journal of Physical Chemistry B</i> , 2009, 113, 3981-3987.	1.2	71
8	Archimedes' law explains penetration of solids into granular media. <i>Nature Communications</i> , 2018, 9, 1101.	5.8	65
9	Stresses in Isostatic Granular Systems and Emergence of Force Chains. <i>Physical Review Letters</i> , 2004, 93, 108301.	2.9	63
10	Strongly nonlinear composite dielectrics: A perturbation method for finding the potential field and bulk effective properties. <i>Physical Review B</i> , 1991, 44, 7378-7386.	1.1	61
11	Comment on "Experimental measurements of the roughness of brittle cracks". <i>Physical Review Letters</i> , 1993, 71, 204-204.	2.9	58
12	Series analysis of randomly diluted nonlinear resistor networks. <i>Physical Review B</i> , 1986, 34, 3424-3428.	1.1	57
13	Exact calculation to second order of the effective dielectric constant of a strongly nonlinear inhomogeneous composite. <i>Physical Review B</i> , 1989, 40, 1987-1989.	1.1	50
14	LÃ©vy dusts, Mittag-Leffler statistics, mass fractal lacunarity, and perceived dimension. <i>Physical Review E</i> , 1997, 56, 112-118.	0.8	38
15	Interdependence of the Volume and Stress Ensembles and Equipartition in Statistical Mechanics of Granular Systems. <i>Physical Review Letters</i> , 2012, 109, 238001.	2.9	35
16	Stress in planar cellular solids and isostatic granular assemblies: coarse-graining the constitutive equation. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2004, 336, 361-368.	1.2	32
17	Universal scaling of the stress field at the vicinity of a wedge crack in two dimensions and oscillatory self-similar corrections to scaling. <i>Physical Review Letters</i> , 1990, 65, 1784-1787.	2.9	29
18	Granular matter and the marginal rigidity state. <i>Journal of Physics Condensed Matter</i> , 2005, 17, S2481-S2487.	0.7	28

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19	Exact results on exponential screening in two-dimensional diffusion-limited aggregation. <i>Physical Review A</i> , 1991, 44, R828-R831.	1.0	27
20	An Einstein Model of Brittle Crack Propagation. <i>Physical Review Letters</i> , 1997, 78, 78-81.	2.9	27
21	Isostaticity and Controlled Force Transmission in the Cytoskeleton: A Model Awaiting Experimental Evidence. <i>Biophysical Journal</i> , 2006, 91, 1970-1983.	0.2	26
22	Universal Structural Characteristics of Planar Granular Packs. <i>Physical Review Letters</i> , 2014, 112, 098003.	2.9	25
23	Support of modified Archimedes' law theory in granular media. <i>Soft Matter</i> , 2019, 15, 3008-3017.	1.2	24
24	Coarse-graining procedure to generate and analyze heterogeneous materials: Theory. <i>Physical Review E</i> , 1993, 48, 4492-4500.	0.8	21
25	Comment on "Nonlinear susceptibilities of granular matter". <i>Physical Review B</i> , 1991, 43, 13682-13683.		20
26	Structural characterization and statistical properties of two-dimensional granular systems. <i>Physical Review E</i> , 2008, 77, 041304.	0.8	20
27	Theory of Strains in Auxetic Materials. <i>Journal of Superconductivity and Novel Magnetism</i> , 2012, 25, 565-571.	0.8	18
28	Friction-Controlled Entropy-Stability Competition in Granular Systems. <i>Physical Review Letters</i> , 2020, 125, 268005.	2.9	17
29	Dynamic Structure Factor of a Deterministic Fractal. <i>Europhysics Letters</i> , 1988, 7, 249-253.	0.7	16
30	Topological Analysis of Foams and Tetrahedral Structures. <i>Advanced Engineering Materials</i> , 2009, 11, 169-176.	1.6	16
31	Probe for morphology and hierarchical correlations in scale-invariant structures. <i>Physical Review E</i> , 1993, 47, 2298-2302.	0.8	15
32	Fundamental structural characteristics of planar granular assemblies: Self-organization and scaling away friction and initial state. <i>Physical Review E</i> , 2017, 95, 032905.	0.8	15
33	Distribution of the logarithms of currents in percolating resistor networks. I. Theory. <i>Physical Review B</i> , 1993, 47, 5756-5769.	1.1	14
34	Stresses in two-dimensional isostatic granular systems: exact solutions. <i>New Journal of Physics</i> , 2007, 9, 160-160.	1.2	14
35	Failure of the Volume Function in Granular Statistical Mechanics and an Alternative Formulation. <i>Physical Review Letters</i> , 2016, 116, 148001.	2.9	14
36	Current distributions in a two-dimensional random-resistor network. <i>Journal of Statistical Physics</i> , 1992, 67, 113-121.	0.5	13

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37	Transformation of general curve evolution to a modified Belavinâ€“Polyakov equation. <i>Journal of Mathematical Physics</i> , 1997, 38, 5878-5888.	0.5	13
38	Auxetic strainsâ€“insight from iso-auxetic materials. <i>Molecular Simulation</i> , 2005, 31, 867-871.	0.9	13
39	Analysis of stresses in two-dimensional isostatic granular systems. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2008, 387, 6263-6276.	1.2	13
40	Series analysis of randomly diluted nonlinear networks with negative nonlinearity exponent. <i>Physical Review B</i> , 1987, 36, 3950-3952.	1.1	12
41	da Vinci fluids, catch-up dynamics and dense granular flow. <i>European Physical Journal E</i> , 2010, 32, 333-338.	0.7	12
42	Disorder Criterion and Explicit Solution for the Disc Random Packing Problem. <i>Physical Review Letters</i> , 2021, 127, 118002.	2.9	12
43	Stress transmission in planar disordered solid foams. <i>Journal of Physics A</i> , 2003, 36, 2399-2411.	1.6	11
44	Nonlinear dielectrics: Electrostatics of random media and propagation of electromagnetic waves in a homogeneous slab. <i>Physica A: Statistical Mechanics and Its Applications</i> , 1989, 157, 428-436.	1.2	10
45	Nonequilibrium Brittle Fracture Propagation: Steady State, Oscillations, and Intermittency. <i>Physical Review Letters</i> , 1996, 76, 3703-3706.	2.9	10
46	Stress Chain Solutions in Two-Dimensional Isostatic Granular Systems: Fabric-Dependent Paths, Leakage, and Branching. <i>Physical Review Letters</i> , 2008, 101, 098001.	2.9	10
47	Force-based three-dimensional model predicts mechanical drivers of cell sorting. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2019, 286, 20182495.	1.2	10
48	Onset of scale-invariant pattern in growth processes: the cracking problem. <i>Physica A: Statistical Mechanics and Its Applications</i> , 1991, 177, 407-415.	1.2	9
49	Formulating a first-principles statistical theory of growing surfaces in two-dimensional Laplacian fields. <i>Physical Review E</i> , 1994, 50, 2952-2962.	0.8	9
50	Vertical dynamics of a horizontally oscillating active object in a two-dimensional granular medium. <i>Physical Review E</i> , 2016, 94, 062906.	0.8	9
51	Structural evolution of granular systems: theory. <i>Granular Matter</i> , 2020, 22, 1.	1.1	9
52	Mechanical Behaviors of Sandy Sediments Bearing Pore-Filling Methane Hydrate under Different Intermediate Principal Stress. <i>International Journal of Geomechanics</i> , 2021, 21, 04021043.	1.3	9
53	Plug flow formation and growth in Da Vinci fluids. <i>Granular Matter</i> , 2011, 13, 241-245.	1.1	8
54	Statistical-mechanical characteristics of dense planar granular systems. <i>Granular Matter</i> , 2012, 14, 277-282.	1.1	8

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55	Negative moments of currents in percolating resistor networks. <i>Physical Review B</i> , 1989, 40, 7318-7320.	1.1	7
56	On entropic characterization of granular materials. <i>World Scientific Lecture Notes in Complex Systems</i> , 2007, , 43-53.	0.1	7
57	Blumenfeld and Aharony reply. <i>Physical Review Letters</i> , 1990, 64, 1843-1843.	2.9	6
58	Blumenfeld and Edwards Reply:. <i>Physical Review Letters</i> , 2007, 99, .	2.9	6
59	Fluid flow in a random porous medium: A network model and effective medium approximation. <i>Journal of Applied Physics</i> , 1987, 62, 1616-1621.	1.1	5
60	Distribution of the logarithms of currents in percolating resistor networks. II. Series expansions. <i>Physical Review B</i> , 1993, 47, 5770-5782.	1.1	5
61	Dynamics of fracture propagation in the mesoscale: Theory. <i>Theoretical and Applied Fracture Mechanics</i> , 1998, 30, 209-223.	2.1	5
62	Pulling a Chain's Leg: The Pullout Dynamics of Entangled Chains. <i>Macromolecules</i> , 2000, 33, 1082-1088.	2.2	5
63	Bending back stress chains and unique behaviour of granular matter in cylindrical geometries. <i>Granular Matter</i> , 2017, 19, 1.	1.1	5
64	Stress Transmission and Isostatic States of Non-Rigid Particulate Systems. <i>The IMA Volumes in Mathematics and Its Applications</i> , 2005, , 235-246.	0.5	5
65	Phase coherence oscillation of holes in $\text{La}_{2-x}(\text{Sr})_x\text{CuO}_4$, dynamics of single holes in the CuO plane and the typical pairing time. <i>Physica A: Statistical Mechanics and Its Applications</i> , 1990, 168, 705-713.	1.2	3
66	Two-dimensional Laplacian growth as a system of creating and annihilating particles. <i>Physical Review E</i> , 1995, 51, 3434-3443.	0.8	3
67	Dynamic structure factor of fractals. <i>Physica D: Nonlinear Phenomena</i> , 1989, 38, 93-97.	1.3	2
68	Novel flux solutions in nonlinear conducting continuum systems with negative dynamic resistance. <i>Physica A: Statistical Mechanics and Its Applications</i> , 1990, 168, 697-704.	1.2	2
69	Ball and Blumenfeld reply. <i>Physical Review Letters</i> , 1992, 68, 2254-2254.	2.9	2
70	Two-dimensional Laplacian growth can be mapped onto Hamiltonian dynamics. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1994, 186, 317-322.	0.9	2
71	On the twist excitations in a classical anisotropic antiferromagnetic chain. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1997, 237, 69-72.	0.9	2
72	Exact multi-twist solutions to the Belavin-Polyakov equation and applications to magnetic systems. <i>Journal of Physics A</i> , 2000, 33, 2459-2468.	1.6	2

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73	Microstructural characteristics of planar granular solids. , 2013, , .		2
74	Theory-based design of sintered granular composites triples three-phase boundary in fuel cells. Physical Review E, 2017, 96, 052903.	0.8	2
75	Modifying continuous-time random walks to model finite-size particle diffusion in granular porous media. Granular Matter, 2017, 19, 1.	1.1	2
76	Equally probable positive and negative Poisson's ratios in disordered planar systems. Soft Matter, 2018, 14, 6554-6560.	1.2	2
77	The unusual problem of upscaling isostaticity theory for granular matter. Granular Matter, 2020, 22, 1.	1.1	2
78	Universality and superuniversality of multifractals in nonlinear resistor networks. Journal of Statistical Physics, 1989, 56, 233-241.	0.5	1
79	The functional form of the $T_c(x)$ line in the phase diagram of high temperature superconductors. Physica C: Superconductivity and Its Applications, 1991, 178, 119-124.	0.6	1
80	Planar Curve Representation of Many-Body Systems and Dynamics. Physical Review Letters, 1997, 78, 1203-1206.	2.9	1
81	Hierarchical structure of domain walls in magnetic layers. Phase Transitions, 1999, 69, 237-245.	0.6	1
82	Stress transmission and incipient yield flow in dense granular materials. , 2010, , .		1
83	Granular statistical mechanics: Volume-stress phase space, equipartition and equations of state. , 2013, , .		1
84	Affine and topological structural entropies in granular statistical mechanics: Explicit calculations and equation of state. Physical Review E, 2017, 95, 052905.	0.8	1
85	Blumenfeld <i>etÂal.</i> Reply. Physical Review Letters, 2017, 119, 039802.	2.9	1
86	Stress-strain rate relation in plug-free flow of dense granular fluids: A first-principles derivation. Physical Review E, 2018, 98, .	0.8	1
87	Locomotion of Self-Excited Vibrating and Rotating Objects in Granular Environments. Applied Sciences (Switzerland), 2021, 11, 2054.	1.3	1
88	Structural characteristics of ordered clusters in packs of ellipses. EPJ Web of Conferences, 2021, 249, 06004.	0.1	1
89	Pairing of holes via vortex/antivortex attraction in doped $La_{2-x}(Sr)_xCuO_4$. Journal De Physique, 1990, 51, 2229-2233.	1.8	1
90	ONSET OF SCALING BEHAVIOUR IN 2D SLOW CRACKING. Modern Physics Letters B, 1991, 05, 1567-1573.	1.0	0

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91	Explicitly exact solutions for waves in a family of nonlinear media. Physica D: Nonlinear Phenomena, 1993, 66, 7-13.	1.3	0
92	QUANTIFYING MORPHOLOGY OF SCALE-INVARIANT STRUCTURES BEYOND THE FRACTAL DIMENSION. Fractals, 1993, 01, 985-991.	1.8	0
93	Characterizing Fractal and Hierarchical Morphologies Beyond the Fractal Dimension. Materials Research Society Symposia Proceedings, 1994, 367, 367.	0.1	0
94	A Theory for Growing Interfaces in Laplacian Fields: A Many-Body Formulation and Statistical Analysis. Materials Research Society Symposia Proceedings, 1994, 367, 53.	0.1	0
95	Statistical properties of cell stresses in 2D granular solids. EPJ Web of Conferences, 2021, 249, 02006.	0.1	0
96	Geometrical correlations and the origin of x values at the maximum and intersects of $T_c(x)$ in $\text{La}_{2-x}(\text{Sr})_x\text{CuO}_4$. Journal De Physique, I, 1991, 1, 159-166.	1.2	0
97	Toward a Theory of Growing Surfaces: Mapping Two-Dimensional Laplacian Growth Onto Hamiltonian Dynamics and Statistics. Institute for Nonlinear Science, 1996, , 225-237.	0.2	0