

Jörn Dunkel

List of Publications by Year in descending order

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111
papers

6,452
citations

81900

39
h-index

71685

76
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all docs

114
docs citations

114
times ranked

4467
citing authors

#	ARTICLE	IF	CITATIONS
1	Anyonic Defect Braiding and Spontaneous Chiral Symmetry Breaking in Dihedral Liquid Crystals. <i>Physical Review X</i> , 2022, 12, .	8.9	3
2	Odd dynamics of living chiral crystals. <i>Nature</i> , 2022, 607, 287-293.	27.8	81
3	Topological Metric Detects Hidden Order in Disordered Media. <i>Physical Review Letters</i> , 2021, 126, 048101.	7.8	13
4	Roadmap on emerging concepts in the physical biology of bacterial biofilms: from surface sensing to community formation. <i>Physical Biology</i> , 2021, 18, 051501.	1.8	46
5	Dynamics of hydraulic and contractile wave-mediated fluid transport during <i>Drosophila</i> oogenesis. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	7.1	21
6	Improved bounds on entropy production in living systems. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	7.1	51
7	Combinatorial patterns of graded RhoA activation and uniform F-actin depletion promote tissue curvature. <i>Development (Cambridge)</i> , 2021, 148, .	2.5	24
8	Chiral edge modes in Helmholtz-Onsager vortex systems. <i>Physical Review Fluids</i> , 2021, 6, .	2.5	3
9	Active topoelectrical circuits. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	7.1	41
10	Topological braiding and virtual particles on the cell membrane. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	7.1	9
11	Emergent order in hydrodynamic spin lattices. <i>Nature</i> , 2021, 596, 58-62.	27.8	29
12	Emergence and melting of active vortex crystals. <i>Nature Communications</i> , 2021, 12, 5630.	12.8	15
13	Estimating Entropy Production from Waiting Time Distributions. <i>Physical Review Letters</i> , 2021, 127, 198101.	7.8	35
14	Learning developmental mode dynamics from single-cell trajectories. <i>ELife</i> , 2021, 10, .	6.0	8
15	Topological mechanics of knots and tangles. <i>Science</i> , 2020, 367, 71-75.	12.6	83
16	Topological turbulence in the membrane of a living cell. <i>Nature Physics</i> , 2020, 16, 657-662.	16.7	59
17	Gait-optimized locomotion of wave-driven soft sheets. <i>Soft Matter</i> , 2020, 16, 3991-3999.	2.7	6
18	Linearly forced fluid flow on a rotating sphere. <i>Journal of Fluid Mechanics</i> , 2020, 892, .	3.4	5

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19	Discharging dynamics of topological batteries. <i>Physical Review Research</i> , 2020, 2, .	3.6	7
20	Spectral Design of Active Mechanical and Electrical Metamaterials. , 2020, , .		1
21	Structural Redundancy in Supracellular Actomyosin Networks Enables Robust Tissue Folding. <i>Developmental Cell</i> , 2019, 50, 586-598.e3.	7.0	61
22	Quantum hydrodynamics for supersolid crystals and quasicrystals. <i>Physical Review A</i> , 2019, 99, .	2.5	14
23	Geometric control of bacterial surface accumulation. <i>Physical Review E</i> , 2019, 99, 052607.	2.1	18
24	Disorder-induced topological transition in porous media flow networks. <i>Journal of Non-Newtonian Fluid Mechanics</i> , 2019, 268, 66-74.	2.4	7
25	Bacterial scattering in microfluidic crystal flows reveals giant active Taylor-Dispersion. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2019, 116, 11119-11124.	7.1	52
26	Chiral Topological Phases in Designed Mechanical Networks. <i>Frontiers in Physics</i> , 2019, 7, .	2.1	2
27	Flow-Induced Symmetry Breaking in Growing Bacterial Biofilms. <i>Physical Review Letters</i> , 2019, 123, 258101.	7.8	41
28	Learning dynamical information from static protein and sequencing data. <i>Nature Communications</i> , 2019, 10, 5368.	12.8	12
29	Breakdown of <i>Vibrio cholerae</i> biofilm architecture induced by antibiotics disrupts community barrier function. <i>Nature Microbiology</i> , 2019, 4, 2136-2145.	13.3	64
30	Emergence of three-dimensional order and structure in growing biofilms. <i>Nature Physics</i> , 2019, 15, 251-256.	16.7	211
31	Learning the space-time phase diagram of bacterial swarm expansion. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2019, 116, 1489-1494.	7.1	86
32	Anomalous percolation flow transition of yield stress fluids in porous media. <i>Physical Review Fluids</i> , 2019, 4, .	2.5	9
33	Inverse design of discrete mechanical metamaterials. <i>Physical Review Materials</i> , 2019, 3, .	2.4	21
34	Defect formation dynamics in curved elastic surface crystals. <i>Soft Matter</i> , 2018, 14, 2329-2338.	2.7	15
35	The nature of triad interactions in active-turbulence. <i>Journal of Fluid Mechanics</i> , 2018, 841, 702-731.	3.4	9
36	Anomalous Chained Turbulence in Actively Driven Flows on Spheres. <i>Physical Review Letters</i> , 2018, 120, 164503.	7.8	24

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37	Optimal Noise-Canceling Networks. <i>Physical Review Letters</i> , 2018, 121, 208301.	7.8	27
38	Information transmission and signal permutation in active flow networks. <i>New Journal of Physics</i> , 2018, 20, 035003.	2.9	4
39	Functional Control of Network Dynamics Using Designed Laplacian Spectra. <i>Physical Review X</i> , 2018, 8, .	8.9	7
40	Autonomous Actuation of Zero Modes in Mechanical Networks Far from Equilibrium. <i>Physical Review Letters</i> , 2018, 121, 178001.	7.8	22
41	Geometry of Wave Propagation on Active Deformable Surfaces. <i>Physical Review Letters</i> , 2018, 120, 268001.	7.8	24
42	Entropic effects in cell lineage tree packings. <i>Nature Physics</i> , 2018, 14, 1016-1021.	16.7	21
43	Controlling fracture cascades through twisting and quenching. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018, 115, 8665-8670.	7.1	16
44	Rolling sound waves. <i>Nature Materials</i> , 2018, 17, 759-760.	27.5	0
45	Spin lattices of walking droplets. <i>Physical Review Fluids</i> , 2018, 3, .	2.5	16
46	Stokes' second problem and reduction of inertia in active fluids. <i>Physical Review Fluids</i> , 2018, 3, .	2.5	4
47	Spontaneous mirror-symmetry breaking induces inverse energy cascade in 3D active fluids. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2017, 114, 2119-2124.	7.1	40
48	Active matter logic for autonomous microfluidics. <i>Nature Communications</i> , 2017, 8, 15169.	12.8	43
49	Actomyosin-based tissue folding requires a multicellular myosin gradient. <i>Development (Cambridge)</i> , 2017, 144, 1876-1886.	2.5	79
50	Mode Selection in Compressible Active Flow Networks. <i>Physical Review Letters</i> , 2017, 119, 028102.	7.8	9
51	Geometry-dependent viscosity reduction in sheared active fluids. <i>Physical Review Fluids</i> , 2017, 2, .	2.5	35
52	Stochastic cycle selection in active flow networks. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2016, 113, 8200-8205.	7.1	23
53	Hydrodynamic length-scale selection in microswimmer suspensions. <i>Physical Review E</i> , 2016, 94, 020601.	2.1	54
54	Curvature-Controlled Defect Localization in Elastic Surface Crystals. <i>Physical Review Letters</i> , 2016, 116, 104301.	7.8	43

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55	Generalized Swift-Hohenberg models for dense active suspensions. European Physical Journal E, 2016, 39, 97.	1.6	19
56	Antipolar ordering of topological defects in active liquid crystals. New Journal of Physics, 2016, 18, 093006.	2.9	47
57	Meaning of temperature in different thermostistical ensembles. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150039.	3.4	38
58	Architectural transitions in <i>Vibrio cholerae</i> biofilms at single-cell resolution. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E2066-72.	7.1	178
59	Ferromagnetic and antiferromagnetic order in bacterial vortex lattices. Nature Physics, 2016, 12, 341-345.	16.7	142
60	Bimodal rheotactic behavior reflects flagellar beat asymmetry in human sperm cells. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 15904-15909.	7.1	91
61	Generalized Navier-Stokes equations for active suspensions. European Physical Journal: Special Topics, 2015, 224, 1349-1358.	2.6	31
62	Curvature-induced symmetry breaking determines elastic surface patterns. Nature Materials, 2015, 14, 337-342.	27.5	192
63	Cortical microtubule nucleation can organise the cytoskeleton of <i>Drosophila</i> oocytes to define the anteroposterior axis. ELife, 2015, 4, .	6.0	47
64	Rheotaxis facilitates upstream navigation of mammalian sperm cells. ELife, 2014, 3, e02403.	6.0	198
65	Thermodynamic laws in isolated systems. Physical Review E, 2014, 90, 062116.	2.1	97
66	Engines and demons. Nature Physics, 2014, 10, 409-410.	16.7	7
67	Consistent thermostatics forbids negative absolute temperatures. Nature Physics, 2014, 10, 67-72.	16.7	128
68	Controlling active self-assembly through broken particle-shape symmetry. Physical Review E, 2014, 89, 010302.	2.1	64
69	Fluid Dynamics of Bacterial Turbulence. Physical Review Letters, 2013, 110, 228102.	7.8	407
70	Confinement Stabilizes a Bacterial Suspension into a Spiral Vortex. Physical Review Letters, 2013, 110, 268102.	7.8	333
71	Minimal continuum theories of structure formation in dense active fluids. New Journal of Physics, 2013, 15, 045016.	2.9	81
72	Ciliary contact interactions dominate surface scattering of swimming eukaryotes. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 1187-1192.	7.1	247

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73	Improving risk assessment for biodiversity conservation. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, E2304; author reply E2305.	7.1	11
74	Meso-scale turbulence in living fluids. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 14308-14313.	7.1	747
75	Fluid dynamics and noise in bacterial cell-cell and cell-surface scattering. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 10940-10945.	7.1	583
76	The More the Merrier?. Journal of Statistical Physics, 2011, 142, 1324-1336.	1.2	7
77	LÄvy fluctuations and mixing in dilute suspensions of algae and bacteria. Journal of the Royal Society Interface, 2011, 8, 1314-1331.	3.4	56
78	Memory and obesity affect the population dynamics of asexual freshwater planarians. Physical Biology, 2011, 8, 026003.	1.8	20
79	Stochastic Root Finding and Efficient Estimation of Convex Risk Measures. Operations Research, 2010, 58, 1505-1521.	1.9	21
80	Low Reynolds number hydrodynamics of asymmetric, oscillating dumbbell pairs. European Physical Journal: Special Topics, 2010, 187, 135-144.	2.6	2
81	CUDA simulations of active dumbbell suspensions. Chemical Physics, 2010, 375, 557-567.	1.9	16
82	Swimmer-tracer scattering at low Reynolds number. Soft Matter, 2010, 6, 4268.	2.7	49
83	Time parameters and Lorentz transformations of relativistic stochastic processes. Physical Review E, 2009, 79, 010101.	2.1	17
84	Noisy swimming at low Reynolds numbers. Physical Review E, 2009, 80, 021903.	2.1	24
85	Relativistic Brownian motion. Physics Reports, 2009, 471, 1-73.	25.6	177
86	Non-local observables and lightcone-averaging in relativistic thermodynamics. Nature Physics, 2009, 5, 741-747.	16.7	39
87	Stationarity, ergodicity, and entropy in relativistic systems. Europhysics Letters, 2009, 87, 30005.	2.0	11
88	Relative entropy, Haar measures and relativistic canonical velocity distributions. New Journal of Physics, 2007, 9, 144-144.	2.9	33
89	Thermal Equilibrium and Statistical Thermometers in Special Relativity. Physical Review Letters, 2007, 99, 170601.	7.8	91
90	Efficient Monte Carlo methods for convex risk measures in portfolio credit risk models. , 2007, , .		11

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91	One-dimensional non-relativistic and relativistic Brownian motions: a microscopic collision model. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2007, 374, 559-572.	2.6	25
92	Relativistic diffusion processes and random walk models. <i>Physical Review D</i> , 2007, 75, .	4.7	49
93	Phase transitions in small systems: Microcanonical vs. canonical ensembles. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2006, 370, 390-406.	2.6	73
94	Relativistic Brownian motion: From a microscopic binary collision model to the Langevin equation. <i>Physical Review E</i> , 2006, 74, 051106.	2.1	19
95	Accretion of helium and metal-rich gas onto neutron stars and black holes at high luminosities. <i>Astronomy Letters</i> , 2006, 32, 257-262.	1.0	5
96	Nonanalytic microscopic phase transitions and temperature oscillations in the microcanonical ensemble: An exactly solvable one-dimensional model for evaporation. <i>Physical Review E</i> , 2006, 74, 011120.	2.1	38
97	Time-dependent entropy of simple quantum model systems. <i>Physical Review A</i> , 2005, 71, .	2.5	24
98	Klimontovich's contributions to the kinetic theory of nonlinear Brownian motion and new developments. <i>Journal of Physics: Conference Series</i> , 2005, 11, 89-98.	0.4	6
99	Theory of relativistic Brownian motion: The(1+1)-dimensional case. <i>Physical Review E</i> , 2005, 71, 016124.	2.1	72
100	Theory of relativistic Brownian motion: The(1+3)-dimensional case. <i>Physical Review E</i> , 2005, 72, 036106.	2.1	65
101	Active and passive Brownian motion of charged particles in two-dimensional plasma models. <i>Physical Review E</i> , 2004, 70, 046406.	2.1	9
102	Stochastic resonance in biological nonlinear evolution models. <i>Physical Review E</i> , 2004, 69, 056118.	2.1	15
103	Exact Solutions for Evolutionary Strategies on Harmonic Landscapes. <i>Evolutionary Computation</i> , 2004, 12, 1-17.	3.0	5
104	On the Relationship between Modified Newtonian Dynamics and Dark Matter. <i>Astrophysical Journal</i> , 2004, 604, L37-L40.	4.5	13
105	Phase behavior and collective excitations of the Morse ring chain. <i>European Physical Journal B</i> , 2003, 35, 239-253.	1.5	13
106	A dissipative one-dimensional collision model with intermediate energy storage. <i>Physica D: Nonlinear Phenomena</i> , 2003, 185, 158-174.	2.8	2
107	Kramers problem in evolutionary strategies. <i>Physical Review E</i> , 2003, 67, 061118.	2.1	25
108	COHERENT MOTIONS AND CLUSTERS IN A DISSIPATIVE MORSE RING CHAIN. <i>International Journal of Bifurcation and Chaos in Applied Sciences and Engineering</i> , 2002, 12, 2359-2377.	1.7	24

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109	Thermodynamics and transport in an active Morse ring chain. European Physical Journal B, 2001, 24, 511-524.	1.5	14
110	Nonlinear Dynamics and Fluctuations of Dissipative Toda Chains. Journal of Statistical Physics, 2000, 101, 443-457.	1.2	34
111	Nonlinear Waves and Moving Clusters on Rings. , 2000, , 239-244.		0