JÃ¶rn Dunkel

List of Publications by Year
in descending order

111	6,452	81900 39	71685 76
papers	citations	h-index	g-index

114	114	114	4467
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	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
2	Fluid dynamics and noise in bacterial cellâ€“cell and cellâ€“surface scattering. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 10940-10945.	7.1	583
3	Fluid Dynamics of Bacterial Turbulence. Physical Review Letters, 2013, 110, 228102.	7.8	407
4	Confinement Stabilizes a Bacterial Suspension into a Spiral Vortex. Physical Review Letters, 2013, 110, 268102.	7.8	333
5	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
6	Emergence of three-dimensional order and structure in growing biofilms. Nature Physics, 2019, 15, 251-256.	16.7	211
7	Rheotaxis facilitates upstream navigation of mammalian sperm cells. ELife, 2014, 3, e02403.	6.0	198
8	Curvature-induced symmetry breaking determines elastic surface patterns. Nature Materials, 2015, 14, 337-342.	27.5	192
9	Architectural transitions in Vibrio cholerae 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
10	Relativistic Brownian motion. Physics Reports, 2009, 471, 1-73.	25.6	177
11	Ferromagnetic and antiferromagnetic order in bacterial vortex lattices. Nature Physics, 2016, 12, 341-345.	16.7	142
12	Consistent thermostatistics forbids negative absolute temperatures. Nature Physics, 2014, 10, 67-72.	16.7	128
13	Thermodynamic laws in isolated systems. Physical Review E, 2014, 90, 062116.	2.1	97
14	Thermal Equilibrium and Statistical Thermometers in Special Relativity. Physical Review Letters, 2007, 99, 170601.	7.8	91
15	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
16	Learning the space-time phase diagram of bacterial swarm expansion. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 1489-1494.	7.1	86
17	Topological mechanics of knots and tangles. Science, 2020, 367, 71-75.	12.6	83
18	Minimal continuum theories of structure formation in dense active fluids. New Journal of Physics, 2013, 15, 045016.	2.9	81

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19	Odd dynamics of living chiral crystals. Nature, 2022, 607, 287-293.	27.8	81
20	Actomyosin-based tissue folding requires a multicellular myosin gradient. Development (Cambridge), 2017, 144, 1876-1886.	2.5	79
21	Phase transitions in small systems: Microcanonical vs. canonical ensembles. Physica A: Statistical Mechanics and Its Applications, 2006, 370, 390-406.	2.6	73
22	Theory of relativistic Brownian motion: The(1+1)-dimensional case. Physical Review E, 2005, 71, 016124.	2.1	72
23	Theory of relativistic Brownian motion: The(1+3)-dimensional case. Physical Review E, 2005, 72, 036106.	2.1	65
24	Controlling active self-assembly through broken particle-shape symmetry. Physical Review E, 2014, 89, 010302.	2.1	64
25	Breakdown of Vibrio cholerae biofilm architecture induced by antibiotics disrupts community barrier function. Nature Microbiology, 2019, 4, 2136-2145.	13.3	64
26	Structural Redundancy in Supracellular Actomyosin Networks Enables Robust Tissue Folding. Developmental Cell, 2019, 50, 586-598.e3.	7.0	61
27	Topological turbulence in the membrane of a living cell. Nature Physics, 2020, 16, 657-662.	16.7	59
28	LÃ©vy fluctuations and mixing in dilute suspensions of algae and bacteria. Journal of the Royal Society Interface, 2011, 8, 1314-1331.	3.4	56
29	Hydrodynamic length-scale selection in microswimmer suspensions. Physical Review E, 2016, 94, 020601.	2.1	54
30	Bacterial scattering in microfluidic crystal flows reveals giant active Taylorâ€“Aris dispersion. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 11119-11124.	7.1	52
31	Improved bounds on entropy production in living systems. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	51
32	Relativistic diffusion processes and random walk models. Physical Review D, 2007, 75, .	4.7	49
33	Swimmer-tracer scattering at low Reynolds number. Soft Matter, 2010, 6, 4268.	2.7	49
34	Antipolar ordering of topological defects in active liquid crystals. New Journal of Physics, 2016, 18, 093006.	2.9	47
35	Cortical microtubule nucleation can organise the cytoskeleton of Drosophila oocytes to define the anteroposterior axis. ELife, 2015, 4, .	6.0	47
36	Roadmap on emerging concepts in the physical biology of bacterial biofilms: from surface sensing to community formation. Physical Biology, 2021, 18, 051501.	1.8	46

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37	Curvature-Controlled Defect Localization in Elastic Surface Crystals. Physical Review Letters, 2016, 116, 104301.	7.8	43
38	Active matter logic for autonomous microfluidics. Nature Communications, 2017, 8, 15169.	12.8	43
39	Flow-Induced Symmetry Breaking in Growing Bacterial Biofilms. Physical Review Letters, 2019, 123, 258101.	7.8	41
40	Active topolectrical circuits. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	41
41	Spontaneous mirror-symmetry breaking induces inverse energy cascade in 3D active fluids. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 2119-2124.	7.1	40
42	Non-local observables and lightcone-averaging in relativistic thermodynamics. Nature Physics, 2009, 5, 741-747.	16.7	39
43	Nonanalytic microscopic phase transitions and temperature oscillations in the microcanonical ensemble: An exactly solvable one-dimensional model for evaporation. Physical Review E, 2006, 74, 011120.	2.1	38
44	Meaning of temperature in different thermostatistical ensembles. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150039.	3.4	38
45	Geometry-dependent viscosity reduction in sheared active fluids. Physical Review Fluids, 2017, 2, .	2.5	35
46	Estimating Entropy Production from Waiting Time Distributions. Physical Review Letters, 2021, 127, 198101.	7.8	35
47	Nonlinear Dynamics and Fluctuations of Dissipative Toda Chains. Journal of Statistical Physics, 2000, 101, 443-457.	1.2	34
48	Relative entropy, Haar measures and relativistic canonical velocity distributions. New Journal of Physics, 2007, 9, 144-144.	2.9	33
49	Generalized Navier-Stokes equations for active suspensions. European Physical Journal: Special Topics, 2015, 224, 1349-1358.	2.6	31
50	Emergent order in hydrodynamic spin lattices. Nature, 2021, 596, 58-62.	27.8	29
51	Optimal Noise-Canceling Networks. Physical Review Letters, 2018, 121, 208301.	7.8	27
52	Kramers problem in evolutionary strategies. Physical Review E, 2003, 67, 061118.	2.1	25
53	One-dimensional non-relativistic and relativistic Brownian motions: a microscopic collision model. Physica A: Statistical Mechanics and Its Applications, 2007, 374, 559-572.	2.6	25
54	COHERENT MOTIONS AND CLUSTERS IN A DISSIPATIVE MORSE RING CHAIN. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2002, 12, 2359-2377.	1.7	24

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55	Time-dependent entropy of simple quantum model systems. Physical Review A, 2005, 71, .	2.5	24
56	Noisy swimming at low Reynolds numbers. Physical Review E, 2009, 80, 021903.	2.1	24
57	Anomalous Chained Turbulence in Actively Driven Flows on Spheres. Physical Review Letters, 2018, 120, 164503.	7.8	24
58	Geometry of Wave Propagation on Active Deformable Surfaces. Physical Review Letters, 2018, 120, 268001.	7.8	24
59	Combinatorial patterns of graded RhoA activation and uniform F-actin depletion promote tissue curvature. Development (Cambridge), 2021, 148, .	2.5	24
60	Stochastic cycle selection in active flow networks. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 8200-8205.	7.1	23
61	Autonomous Actuation of Zero Modes in Mechanical Networks Far from Equilibrium. Physical Review Letters, 2018, 121, 178001.	7.8	22
62	Stochastic Root Finding and Efficient Estimation of Convex Risk Measures. Operations Research, 2010, 58, 1505-1521.	1.9	21
63	Entropic effects in cell lineage tree packings. Nature Physics, 2018, 14, 1016-1021.	16.7	21
64	Dynamics of hydraulic and contractile wave-mediated fluid transport during Drosophila oogenesis. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	21
65	Inverse design of discrete mechanical metamaterials. Physical Review Materials, 2019, 3, .	2.4	21
66	Memory and obesity affect the population dynamics of asexual freshwater planarians. Physical Biology, 2011, 8, 026003.	1.8	20
67	Relativistic Brownian motion: From a microscopic binary collision model to the Langevin equation. Physical Review E, 2006, 74, 051106.	2.1	19
68	Generalized Swift-Hohenberg models for dense active suspensions. European Physical Journal E, 2016, 39, 97.	1.6	19
69	Geometric control of bacterial surface accumulation. Physical Review E, 2019, 99, 052607.	2.1	18
70	Time parameters and Lorentz transformations of relativistic stochastic processes. Physical Review E, 2009, 79, 010101.	2.1	17
71	CUDA simulations of active dumbbell suspensions. Chemical Physics, 2010, 375, 557-567.	1.9	16
72	Controlling fracture cascades through twisting and quenching. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 8665-8670.	7.1	16

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73	Spin lattices of walking droplets. Physical Review Fluids, 2018, 3, .	2.5	16
74	Stochastic resonance in biological nonlinear evolution models. Physical Review E, 2004, 69, 056118.	2.1	15
75	Defect formation dynamics in curved elastic surface crystals. Soft Matter, 2018, 14, 2329-2338.	2.7	15
76	Emergence and melting of active vortex crystals. Nature Communications, 2021, 12, 5630.	12.8	15
77	Thermodynamics and transport in an active Morse ring chain. European Physical Journal B, 2001, 24, 511-524.	1.5	14
78	Quantum hydrodynamics for supersolid crystals and quasicrystals. Physical Review A, 2019, 99, .	2.5	14
79	Phase behavior and collective excitations of the Morse ring chain. European Physical Journal B, 2003, 35, 239-253.	1.5	13
80	On the Relationship between Modified Newtonian Dynamics and Dark Matter. Astrophysical Journal, 2004, 604, L37-L40.	4.5	13
81	Topological Metric Detects Hidden Order in Disordered Media. Physical Review Letters, 2021, 126, 048101.	7.8	13
82	Learning dynamical information from static protein and sequencing data. Nature Communications, 2019, 10, 5368.	12.8	12
83	Efficient Monte Carlo methods for convex risk measures in portfolio credit risk models. , 2007, , .		11
84	Stationarity, ergodicity, and entropy in relativistic systems. Europhysics Letters, 2009, 87, 30005.	2.0	11
85	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
86	Active and passive Brownian motion of charged particles in two-dimensional plasma models. Physical Review E, 2004, 70, 046406.	2.1	9
87	Mode Selection in Compressible Active Flow Networks. Physical Review Letters, 2017, 119, 028102.	7.8	9
88	The nature of triad interactions in activeÂturbulence. Journal of Fluid Mechanics, 2018, 841, 702-731.	3.4	9
89	Topological braiding and virtual particles on the cell membrane. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	9
90	Anomalous percolation flow transition of yield stress fluids in porous media. Physical Review Fluids, 2019, 4, .	2.5	9

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91	Learning developmental mode dynamics from single-cell trajectories. ELife, 2021, 10, .	6.0	8
92	The More the Merrier?. Journal of Statistical Physics, 2011, 142, 1324-1336.	1.2	7
93	Engines and demons. Nature Physics, 2014, 10, 409-410.	16.7	7
94	Functional Control of Network Dynamics Using Designed Laplacian Spectra. Physical Review X, 2018, 8, .	8.9	7
95	Disorder-induced topological transition in porous media flow networks. Journal of Non-Newtonian Fluid Mechanics, 2019, 268, 66-74.	2.4	7
96	Discharging dynamics of topological batteries. Physical Review Research, 2020, 2, .	3.6	7
97	Klimontovich's contributions to the kinetic theory of nonlinear Brownian motion and new developments. Journal of Physics: Conference Series, 2005, 11, 89-98.	0.4	6
98	Gait-optimized locomotion of wave-driven soft sheets. Soft Matter, 2020, 16, 3991-3999.	2.7	6
99	Exact Solutions for Evolutionary Strategies on Harmonic Landscapes. Evolutionary Computation, 2004, 12, 1-17.	3.0	5
100	Accretion of helium and metal-rich gas onto neutron stars and black holes at high luminosities. Astronomy Letters, 2006, 32, 257-262.	1.0	5
101	Linearly forced fluid flow on a rotating sphere. Journal of Fluid Mechanics, 2020, 892, .	3.4	5
102	Information transmission and signal permutation in active flow networks. New Journal of Physics, 2018, 20, 035003.	2.9	4
103	Stokes' second problem and reduction of inertia in active fluids. Physical Review Fluids, 2018, 3, .	2.5	4
104	Chiral edge modes in Helmholtz-Onsager vortex systems. Physical Review Fluids, 2021, 6, .	2.5	3
105	Anyonic Defect Braiding and Spontaneous Chiral Symmetry Breaking in Dihedral Liquid Crystals. Physical Review X, 2022, 12, .	8.9	3
106	A dissipative one-dimensional collision model with intermediate energy storage. Physica D: Nonlinear Phenomena, 2003, 185, 158-174.	2.8	2
107	Low Reynolds number hydrodynamics of asymmetric, oscillating dumbbell pairs. European Physical Journal: Special Topics, 2010, 187, 135-144.	2.6	2
108	Chiral Topological Phases in Designed Mechanical Networks. Frontiers in Physics, 2019, 7, .	2.1	2

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109	Spectral Design of Active Mechanical and Electrical Metamaterials. , 2020, , .		1
110	Rolling sound waves. Nature Materials, 2018, 17, 759-760.	27.5	0
111	Nonlinear Waves and Moving Clusters on Rings. , 2000, , 239-244.		0