Igor Aronson

List of Publications by Year in descending order

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156 papers	11,544 citations	38660 50 h-index	29081 104 g-index
164 all docs	164 docs citations	164 times ranked	6780 citing authors

#	Article	IF	Citations
1	The world of the complex Ginzburg-Landau equation. Reviews of Modern Physics, 2002, 74, 99-143.	16.4	1,508
2	Patterns and collective behavior in granular media: Theoretical concepts. Reviews of Modern Physics, 2006, 78, 641-692.	16.4	703
3	Concentration Dependence of the Collective Dynamics of Swimming Bacteria. Physical Review Letters, 2007, 98, 158102.	2.9	579
4	Swimming bacteria power microscopic gears. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 969-974.	3.3	458
5	Magnetic manipulation of self-assembled colloidal asters. Nature Materials, 2011, 10, 698-703.	13.3	354
6	Living liquid crystals. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 1265-1270.	3.3	330
7	Reduction of Viscosity in Suspension of Swimming Bacteria. Physical Review Letters, 2009, 103, 148101.	2.9	305
8	Physical Properties of Collective Motion in Suspensions of Bacteria. Physical Review Letters, 2012, 109, 248109.	2.9	275
9	The 2020 motile active matter roadmap. Journal of Physics Condensed Matter, 2020, 32, 193001.	0.7	242
10	Continuum Field Description of Crack Propagation. Physical Review Letters, 2000, 85, 118-121.	2.9	234
11	Model for self-polarization and motility of keratocyte fragments. Journal of the Royal Society Interface, 2012, 9, 1084-1092.	1.5	178
12	Self-Assembled Magnetic Surface Swimmers. Physical Review Letters, 2009, 102, 118103.	2.9	173
13	Enhanced mixing and spatial instability in concentrated bacterial suspensions. Physical Review E, 2009, 80, 031903.	0.8	170
14	Localized and Cellular Patterns in a Vibrated Granular Layer. Physical Review Letters, 1997, 79, 213-216.	2.9	158
15	Model for dynamical coherence in thin films of self-propelled microorganisms. Physical Review E, 2007, 75, 040901.	0.8	156
16	Continuum theory of partially fluidized granular flows. Physical Review E, 2002, 65, 061303.	0.8	147
17	Pattern formation of microtubules and motors: Inelastic interaction of polar rods. Physical Review E, 2005, 71, 050901.	0.8	145
18	Flocking ferromagnetic colloids. Science Advances, 2017, 3, e1601469.	4.7	143

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19	Transport Powered by Bacterial Turbulence. Physical Review Letters, 2014, 112, 158101.	2.9	139
20	Collisions of deformable cells lead to collective migration. Scientific Reports, 2015, 5, 9172.	1.6	129
21	Emergence of agent swarm migration and vortex formation through inelastic collisions. New Journal of Physics, 2008, 10, 023036.	1.2	126
22	Stability limits of spirals and traveling waves in nonequilibrium media. Physical Review A, 1992, 46, R2992-R2995.	1.0	124
23	Continuum description of avalanches in granular media. Physical Review E, 2001, 64, 020301.	0.8	122
24	Nonlinear Field Equations for Aligning Self-Propelled Rods. Physical Review Letters, 2012, 109, 268701.	2.9	121
25	Dendritic Flux Avalanches and Nonlocal Electrodynamics in Thin Superconducting Films. Physical Review Letters, 2005, 94, 037002.	2.9	119
26	Active turbulence in a gas of self-assembled spinners. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 12870-12875.	3.3	118
27	Active colloids. Physics-Uspekhi, 2013, 56, 79-92.	0.8	109
28	Viscosity of bacterial suspensions: Hydrodynamic interactions and self-induced noise. Physical Review E, 2011, 83, 050904.	0.8	102
29	Collective Motion of Self-Propelled Particles with Memory. Physical Review Letters, 2015, 114, 168001.	2.9	97
30	Dynamic Self-Assembly and Patterns in Electrostatically Driven Granular Media. Physical Review Letters, 2003, 90, 114301.	2.9	95
31	Tuning antimicrobial properties of biomimetic nanopatterned surfaces. Nanoscale, 2018, 10, 6639-6650.	2.8	95
32	Partially fluidized shear granular flows: Continuum theory and molecular dynamics simulations. Physical Review E, 2003, 68, 021301.	0.8	93
33	Effects of Adhesion Dynamics and Substrate Compliance on the Shape and Motility of Crawling Cells. PLoS ONE, 2013, 8, e64511.	1.1	92
34	Formation of self-organized nanoscale porous structures in anodic aluminum oxide. Physical Review B, 2006, 73, .	1.1	89
35	Modeling crawling cell movement on soft engineered substrates. Soft Matter, 2014, 10, 1365-1373.	1.2	85
36	Driven Magnetic Particles on a Fluid Surface: Pattern Assisted Surface Flows. Physical Review Letters, 2007, 99, 158301.	2.9	84

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37	Three-dimensional model for the effective viscosity of bacterial suspensions. Physical Review E, 2009, 80, 041922.	0.8	84
38	Electrostatically Driven Granular Media: Phase Transitions and Coarsening. Physical Review Letters, 2000, 84, 3306-3309.	2.9	80
39	Theory of self-assembly of microtubules and motors. Physical Review E, 2006, 74, 031915.	0.8	79
40	Large-Scale Chaos and Fluctuations in Active Nematics. Physical Review Letters, 2014, 113, 038302.	2.9	74
41	Structure Formation in Electromagnetically Driven Granular Media. Physical Review Letters, 2005, 94, 108002.	2.9	73
42	Engineering bacterial vortex lattice via direct laser lithography. Nature Communications, 2018, 9, 4486.	5.8	73
43	Nucleation of Vortices by Rapid Thermal Quench. Physical Review Letters, 1999, 83, 2600-2603.	2.9	71
44	Swirling motion in a system of vibrated elongated particles. Physical Review E, 2007, 75, 051301.	0.8	71
45	Theory of interaction and bound states of spiral waves in oscillatory media. Physical Review E, 1993, 47, 3231-3241.	0.8	69
46	Dynamics of Axial Separation in Long Rotating Drums. Physical Review Letters, 1999, 82, 4643-4646.	2.9	67
47	Computational approaches to substrate-based cell motility. Npj Computational Materials, 2016, 2, .	3.5	64
48	Order Parameter Description of Stationary Partially Fluidized Shear Granular Flows. Physical Review Letters, 2003, 90, 254301.	2.9	61
49	Continuum theory of axial segregation in a long rotating drum. Physical Review E, 1999, 60, 1975-1987.	0.8	59
50	Emergence of reconfigurable wires and spinners via dynamic self-assembly. Scientific Reports, 2015, 5, 9528.	1.6	52
51	Polar jets of swimming bacteria condensed by a patterned liquid crystal. Nature Physics, 2020, 16, 481-487.	6.5	51
52	Periodic and Disordered Structures in a Modulated Gas-Driven Granular Layer. Physical Review Letters, 2003, 90, 134301.	2.9	50
53	Collective behavior in out-of-equilibrium colloidal suspensions. Comptes Rendus Physique, 2013, 14, 518-527.	0.3	50
54	Self-assembled tunable networks of sticky colloidal particles. Nature Communications, 2014, 5, 3117.	5.8	50

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55	Dynamic states of swimming bacteria in a nematic liquid crystal cell with homeotropic alignment. New Journal of Physics, 2017, 19, 055006.	1.2	50
56	Topological Defects in a Living Nematic Ensnare Swimming Bacteria. Physical Review X, 2017, 7, .	2.8	50
57	Confinement and substrate topography control cell migration in a 3D computational model. Communications Physics, 2019, 2, .	2.0	50
58	Patterns in thin vibrated granular layers: Interfaces, hexagons, and superoscillons. Physical Review E, 2000, 61, 5600-5610.	0.8	49
59	Random bursts determine dynamics of active filaments. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 10703-10707.	3.3	48
60	Stick-slip friction and nucleation dynamics of ultrathin liquid films. Physical Review B, 2002, 65, .	1.1	47
61	Emergence of self-organized multivortex states in flocks of active rollers. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 9706-9711.	3.3	46
62	Resonances, Instabilities, and Structure Selection of Driven Josephson Lattice in Layered Superconductors. Physical Review Letters, 2000, 85, 3938-3941.	2.9	45
63	Phase Separation and Coarsening in Electrostatically Driven Granular Media. Physical Review Letters, 2002, 88, 204301.	2.9	45
64	Effects of cross-links on motor-mediated filament organization. New Journal of Physics, 2007, 9, 421-421.	1.2	45
65	Individual behavior and pairwise interactions between microswimmers in anisotropic liquid. Physical Review E, 2015, 91, 013009.	0.8	43
66	A particle-field approach bridges phase separation and collective motion in active matter. Nature Communications, 2020, 11, 5365.	5.8	43
67	Nonlocal rheological properties of granular flows near a jamming limit. Physical Review E, 2008, 78, 031303.	0.8	42
68	Comment on "Long-Lived Giant Number Fluctuations in a Swarming Granular Nematic". Science, 2008, 320, 612-612.	6.0	42
69	Shape-programmed 3D printed swimming microtori for the transport of passive and active agents. Nature Communications, 2019, 10, 4932.	5.8	42
70	A Model of Hydrodynamic Interaction Between Swimming Bacteria. Bulletin of Mathematical Biology, 2010, 72, 148-183.	0.9	40
71	Correlation properties of collective motion in bacterial suspensions. New Journal of Physics, 2013, 15, 105021.	1.2	40
72	Spiral actin-polymerization waves can generate amoeboidal cell crawling. New Journal of Physics, 2014, 16, 055007.	1.2	40

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73	Transverse instability of avalanches in granular flows down an incline. Physical Review E, 2006, 73, 050302.	0.8	39
74	Formation of periodic and localized patterns in an oscillating granular layer. Physica A: Statistical Mechanics and Its Applications, 1998, 249, 103-110.	1.2	38
75	Theory of Pattern Formation of Metallic Microparticles in Poorly Conducting Liquids. Physical Review Letters, 2004, 92, 234301.	2.9	38
76	Formation of nanoscale pore arrays during anodization of aluminum. Europhysics Letters, 2005, 70, 836-842.	0.7	38
77	Formation of asymmetric states of spiral waves in oscillatory media. Physical Review E, 1993, 48, R9-R12.	0.8	36
78	Controlled Dynamics of Interfaces in a Vibrated Granular Layer. Physical Review Letters, 1999, 82, 731-734.	2.9	36
79	Crystallization kinetics and self-induced pinning in cellular patterns. Physical Review E, 2000, 62, R5-R8.	0.8	36
80	Organizing bacterial vortex lattices by periodic obstacle arrays. Communications Physics, 2020, 3, .	2.0	34
81	Interaction of Vortices in a Complex Vector Field and Stability of a â€œVortex Moleculeâ€• Physical Review Letters, 2000, 84, 634-637.	2.9	33
82	Stick-slip dynamics of a granular layer under shear. Physical Review E, 2004, 69, 031302.	0.8	33
83	Rapid expulsion of microswimmers by a vortical flow. Nature Communications, 2016, 7, 11114.	5.8	33
84	Fight the flow: the role of shear in artificial rheotaxis for individual and collective motion. Nanoscale, 2019, 11, 10944-10951.	2.8	32
85	Hexagons and interfaces in a vibrated granular layer. Physical Review E, 1999, 59, R1327-R1330.	0.8	30
86	Lattice Boltzmann simulation of asymmetric flow in nematic liquid crystals with finite anchoring. Journal of Chemical Physics, 2016, 144, 084905.	1.2	30
87	Rheological and structural properties of dilute active filament solutions. Physical Review E, 2008, 77, 011918.	0.8	29
88	Model for dynamic self-assembled magnetic surface structures. Physical Review E, 2010, 82, 015301.	0.8	29
89	Cold Active Motion: How Time-Independent Disorder Affects the Motion of Self-Propelled Agents. Physical Review Letters, 2018, 120, 238101.	2.9	29
90	Spiral Motion in a Noisy Complex Ginzburg-Landau Equation. Physical Review Letters, 1998, 80, 2646-2649.	2.9	28

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91	Motion of two micro-wedges in a turbulent bacterial bath. European Physical Journal: Special Topics, 2015, 224, 1275-1286.	1.2	27
92	Flexibility of bacterial flagella in external shear results in complex swimming trajectories. Journal of the Royal Society Interface, 2015, 12, 20140904.	1.5	27
93	Dynamic self-assembly and self-organized transport of magnetic micro-swimmers. Scientific Reports, 2017, 7, 14726.	1.6	27
94	Phase Imprinting in Equilibrating Fermi Gases: The Transience of Vortex Rings and Other Defects. Physical Review Letters, 2014, 113, 125301.	2.9	25
95	Harnessing Medium Anisotropy To Control Active Matter. Accounts of Chemical Research, 2018, 51, 3023-3030.	7.6	25
96	Bacterial active matter. Reports on Progress in Physics, 2022, 85, 076601.	8.1	25
97	Dynamics of vortex lines in the three-dimensional complex Ginzburg-Landau equation: Instability, stretching, entanglement, and helices. Physical Review E, 1998, 57, 5276-5286.	0.8	24
98	Modular approach for modeling cell motility. European Physical Journal: Special Topics, 2014, 223, 1265-1277.	1.2	24
99	Mechanical shear controls bacterial penetration in mucus. Scientific Reports, 2019, 9, 9713.	1.6	24
100	Instability and Stretching of Vortex Lines in the Three-Dimensional Complex Ginzburg-Landau Equation. Physical Review Letters, 1997, 79, 4174-4177.	2.9	23
101	Ginzburg-Landau Theory of Spiral Surface Growth. Physical Review Letters, 1998, 80, 1770-1773.	2.9	22
102	Understanding Dense Active Nematics from Microscopic Models. Physical Review Letters, 2019, 123, 258001.	2.9	22
103	Effective shear viscosity and dynamics of suspensions of micro-swimmers from small to moderate concentrations. Journal of Mathematical Biology, 2011, 62, 707-740.	0.8	21
104	Nonequilibrium dislocation dynamics and instability of driven vortex lattices in two dimensions. Physical Review B, 1998, 58, 14541-14547.	1.1	20
105	Viscosity Control of the Dynamic Self-Assembly in Ferromagnetic Suspensions. Physical Review Letters, 2013, 110, 198001.	2.9	20
106	Continuum modeling of myxobacteria clustering. New Journal of Physics, 2013, 15, 035029.	1.2	20
107	Parallel magnetic field suppresses dissipation in superconducting nanostrips. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E10274-E10280.	3.3	20
108	Interaction of spirals in oscillatory media. Physical Review Letters, 1991, 67, 404-404.	2.9	19

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109	Membrane tension feedback on shape and motility of eukaryotic cells. Physica D: Nonlinear Phenomena, 2016, 318-319, 26-33.	1.3	19
110	Spontaneous topological charging of tactoids in a living nematic. New Journal of Physics, 2018, 20, 043027.	1.2	19
111	Instability of expanding bacterial droplets. Nature Communications, 2018, 9, 1322.	5.8	17
112	Stability of spatially homogeneous chaotic regimes in unidirectional chains. Nonlinearity, 1990, 3, 639-651.	0.6	16
113	Control of microswimmers by spiral nematic vortices: Transition from individual to collective motion and contraction, expansion, and stable circulation of bacterial swirls. Physical Review Research, 2020, 2, .	1.3	15
114	Topological defects in active liquid crystals. Physics-Uspekhi, 2019, 62, 892-909.	0.8	14
115	Surface anchoring controls orientation of a microswimmer in nematic liquid crystal. Communications Physics, 2020, 3, .	2.0	14
116	Quantifying hydrodynamic collective states of magnetic colloidal spinners and rollers. Physical Review Fluids, 2019, 4, .	1.0	14
117	Interactions of semiflexible filaments and molecular motors. Physical Review E, 2007, 76, 051905.	0.8	13
118	Effect of noise on solid-to-liquid transition in small granular systems under shear. Physical Review E, 2009, 80, 041305.	0.8	11
119	Confinement and Collective Escape of Active Particles. Physical Review Letters, 2022, 128, 108001.	2.9	11
120	Emergent coherent states and flow rectification in active magnetic colloidal monolayers. Soft Matter, 2013, 9, 6757.	1.2	10
121	Swimmers by design. Nature, 2016, 531, 312-313.	13.7	10
122	Flagella bending affects macroscopic properties of bacterial suspensions. Journal of the Royal Society Interface, 2017, 14, 20161031.	1.5	10
123	Erosive granular avalanches: a cross confrontation between theory and experiment. Granular Matter, 2007, 10, 3-11.	1.1	9
124	Nucleation of spontaneous vortices in trapped Fermi gases undergoing a BCS-BEC crossover. Physical Review B, 2011, 84, .	1.1	9
125	Selfâ€Propulsion and Shear Flow Align Active Particles in Nozzles and Channels. Advanced Intelligent Systems, 2021, 3, 2000178.	3.3	9
126	Dynamics of vortices in current-carrying superconducting films. Journal of Low Temperature Physics, 1992, 89, 859-868.	0.6	8

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127	Velocity statistics of dynamic spinners in out-of-equilibrium magnetic suspensions. Soft Matter, 2015, 11, 6055-6061.	1.2	8
128	Zig-zag Self-assembly of Magnetic Octahedral Fe3O4 Nanocrystals using in situ Liquid Transmission Electron Microscopy. Microscopy and Microanalysis, 2016, 22, 36-37.	0.2	8
129	Rotating lamellipodium waves in polarizing cells. Communications Physics, 2018, 1, .	2.0	8
130	Effect of vibration on solid-to-liquid transition in small granular systems under shear. Granular Matter, 2012, 14, 151-156.	1.1	7
131	Phase slips in superconducting weak links. Physical Review B, 2017, 95, .	1.1	7
132	Emergence of lanes and turbulent-like motion in active spinner fluid. Communications Physics, 2021, 4, .	2.0	7
133	Dynamics of the constrained polymer collapse. Europhysics Letters, 2003, 62, 848-854.	0.7	6
134	Statistics of Active Transport in Xenopus Melanophores Cells. Biophysical Journal, 2010, 99, 3216-3223.	0.2	6
135	Macroscopic Model of Substrate-Based Cell Motility. Biological and Medical Physics Series, 2016, , 1-67.	0.3	6
136	Reversals and collisions optimize protein exchange in bacterial swarms. Physical Review E, 2017, 95, 032408.	0.8	6
137	Direct Lattice Shaking of Bose Condensates: Finite Momentum Superfluids. Physical Review Letters, 2017, 118, 220401.	2.9	6
138	Minimal model of directed cell motility on patterned substrates. Physical Review E, 2017, 96, 052408.	0.8	6
139	Superfluid swimmers. Physical Review Research, 2021, 3, .	1.3	6
140	Patterns and intrinsic fluctuations in semi-dilute motor-filament systems. Europhysics Letters, 2010, 90, 28001.	0.7	5
141	Self-organized superconducting textures in thin films. Physical Review B, 2011, 84, .	1.1	5
142	Qualification of 3-D Printed Mortar With Electrical Conductivity Measurements. IEEE Transactions on Instrumentation and Measurement, 2021, 70, 1-8.	2.4	4
143	Generic equilibration dynamics of planar defects in trapped atomic superfluids. Physical Review A, 2015, 91, .	1.0	3
144	Mechanical Model of Globular Transition in Polymers. ChemPlusChem, 2015, 80, 37-41.	1.3	3

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145	Development of microwave and impedance spectroscopy methods for in-situ nondestructive evaluation of alkali silica reaction in concrete. AIP Conference Proceedings, 2017, , .	0.3	3
146	Rashmi Desai and Raymond Kapral: Dynamics ofÂSelf-Organized and Self-Assembled Structures. Journal of Statistical Physics, 2011, 142, 220-222.	0.5	1
147	Motor-Mediated Microtubule Self-Organization in Dilute and Semi-Dilute Filament Solutions. Mathematical Modelling of Natural Phenomena, 2011, 6, 119-137.	0.9	1
148	Collisions of deformable cells lead to collective migration. , 0, .		1
149	PHASE-FIELD DESCRIPTION OF SUBSTRATE-BASED MOTILITY OF EUKARYOTIC CELLS. World Scientific Lecture Notes in Complex Systems, 2014, , 93-104.	0.1	1
150	Spontaneous polarization and cell guidance on asymmetric nanotopography. Communications Physics, 2022, 5, .	2.0	1
151	Forces that control self-organization of chemically-propelled Janus tori. Communications Physics, 2022, 5, .	2.0	1
152	Dynamics of quasiperiodic wave motions in unidirectional strings of oscillators. Radiophysics and Quantum Electronics, 1988, 31, 22-31.	0.1	0
153	Nonlinear dynamics of the localized states of multidimensional fields. Uspekhi Fizicheskikh Nauk, 1990, 33, 300-302.	0.3	0
154	Properties of electrostatically-driven granular medium: Phase transitions and charge transfer. AIP Conference Proceedings, 2000, , .	0.3	0
155	Reply to comment by Baohua Ji. European Physical Journal: Special Topics, 2014, 223, 1407-1408.	1.2	0
156	Comment on Falcke et al., â€œPolymerization, bending, tension: What happens at the leading edge of motile cells?â€• European Physical Journal: Special Topics, 2014, 223, 1431-1432.	1.2	0