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	Confinement and Collective Escape of Active Particles. Physical Review Letters, 2022, 128, 108001.	2.9	11
2	Spontaneous polarization and cell guidance on asymmetric nanotopography. Communications Physics, 2022, 5, .	2.0	1
3	Bacterial active matter. Reports on Progress in Physics, 2022, 85, 076601.	8.1	25
4	Forces that control self-organization of chemically-propelled Janus tori. Communications Physics, 2022, 5, .	2.0	1
5	Selfâ€Propulsion and Shear Flow Align Active Particles in Nozzles and Channels. Advanced Intelligent Systems, 2021, 3, 2000178.	3.3	9
6	Qualification of 3-D Printed Mortar With Electrical Conductivity Measurements. IEEE Transactions on Instrumentation and Measurement, 2021, 70, 1-8.	2.4	4
7	Superfluid swimmers. Physical Review Research, 2021, 3, .	1.3	6
8	Emergence of lanes and turbulent-like motion in active spinner fluid. Communications Physics, 2021, 4, .	2.0	7
9	A particle-field approach bridges phase separation and collective motion in active matter. Nature Communications, 2020, 11, 5365.	5.8	43
10	Surface anchoring controls orientation of a microswimmer in nematic liquid crystal. Communications Physics, 2020, 3, .	2.0	14
11	Organizing bacterial vortex lattices by periodic obstacle arrays. Communications Physics, 2020, 3, .	2.0	34
12	The 2020 motile active matter roadmap. Journal of Physics Condensed Matter, 2020, 32, 193001.	0.7	242
13	Polar jets of swimming bacteria condensed by a patterned liquid crystal. Nature Physics, 2020, 16, 481-487.	6.5	51
14	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
15	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
16	Confinement and substrate topography control cell migration in a 3D computational model. Communications Physics, 2019, 2, .	2.0	50
17	Mechanical shear controls bacterial penetration in mucus. Scientific Reports, 2019, 9, 9713.	1.6	24
18	Shape-programmed 3D printed swimming microtori for the transport of passive and active agents. Nature Communications, 2019, 10, 4932.	5.8	42

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19	Fight the flow: the role of shear in artificial rheotaxis for individual and collective motion. Nanoscale, 2019, 11, 10944-10951.	2.8	32
20	Understanding Dense Active Nematics from Microscopic Models. Physical Review Letters, 2019, 123, 258001.	2.9	22
21	Topological defects in active liquid crystals. Physics-Uspekhi, 2019, 62, 892-909.	0.8	14
22	Quantifying hydrodynamic collective states of magnetic colloidal spinners and rollers. Physical Review Fluids, 2019, 4, .	1.0	14
23	Instability of expanding bacterial droplets. Nature Communications, 2018, 9, 1322.	5.8	17
24	Tuning antimicrobial properties of biomimetic nanopatterned surfaces. Nanoscale, 2018, 10, 6639-6650.	2.8	95
25	Rotating lamellipodium waves in polarizing cells. Communications Physics, 2018, 1, .	2.0	8
26	Engineering bacterial vortex lattice via direct laser lithography. Nature Communications, 2018, 9, 4486.	5.8	73
27	Harnessing Medium Anisotropy To Control Active Matter. Accounts of Chemical Research, 2018, 51, 3023-3030.	7.6	25
28	Cold Active Motion: How Time-Independent Disorder Affects the Motion of Self-Propelled Agents. Physical Review Letters, 2018, 120, 238101.	2.9	29
29	Spontaneous topological charging of tactoids in a living nematic. New Journal of Physics, 2018, 20, 043027.	1.2	19
30	Flocking ferromagnetic colloids. Science Advances, 2017, 3, e1601469.	4.7	143
31	Phase slips in superconducting weak links. Physical Review B, 2017, 95, .	1.1	7
32	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
33	Dynamic states of swimming bacteria in a nematic liquid crystal cell with homeotropic alignment. New Journal of Physics, 2017, 19, 055006.	1.2	50
34	Flagella bending affects macroscopic properties of bacterial suspensions. Journal of the Royal Society Interface, 2017, 14, 20161031.	1.5	10
35	Topological Defects in a Living Nematic Ensnare Swimming Bacteria. Physical Review X, 2017, 7, .	2.8	50
36	Reversals and collisions optimize protein exchange in bacterial swarms. Physical Review E, 2017, 95, 032408.	0.8	6

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37	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
38	Dynamic self-assembly and self-organized transport of magnetic micro-swimmers. Scientific Reports, 2017, 7, 14726.	1.6	27
39	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
40	Direct Lattice Shaking of Bose Condensates: Finite Momentum Superfluids. Physical Review Letters, 2017, 118, 220401.	2.9	6
41	Minimal model of directed cell motility on patterned substrates. Physical Review E, 2017, 96, 052408.	0.8	6
42	Rapid expulsion of microswimmers by a vortical flow. Nature Communications, 2016, 7, 11114.	5.8	33
43	Lattice Boltzmann simulation of asymmetric flow in nematic liquid crystals with finite anchoring. Journal of Chemical Physics, 2016, 144, 084905.	1.2	30
44	Computational approaches to substrate-based cell motility. Npj Computational Materials, 2016, 2, .	3.5	64
45	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
46	Swimmers by design. Nature, 2016, 531, 312-313.	13.7	10
47	Macroscopic Model of Substrate-Based Cell Motility. Biological and Medical Physics Series, 2016, , 1-67.	0.3	6
48	Membrane tension feedback on shape and motility of eukaryotic cells. Physica D: Nonlinear Phenomena, 2016, 318-319, 26-33.	1.3	19
49	Emergence of reconfigurable wires and spinners via dynamic self-assembly. Scientific Reports, 2015, 5, 9528.	1.6	52
50	Collisions of deformable cells lead to collective migration. Scientific Reports, 2015, 5, 9172.	1.6	129
51	Individual behavior and pairwise interactions between microswimmers in anisotropic liquid. Physical Review E, 2015, 91, 013009.	0.8	43
52	Generic equilibration dynamics of planar defects in trapped atomic superfluids. Physical Review A, 2015, 91, .	1.0	3
53	Velocity statistics of dynamic spinners in out-of-equilibrium magnetic suspensions. Soft Matter, 2015, 11, 6055-6061.	1.2	8
54	Collective Motion of Self-Propelled Particles with Memory. Physical Review Letters, 2015, 114, 168001.	2.9	97

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55	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
56	Motion of two micro-wedges in a turbulent bacterial bath. European Physical Journal: Special Topics, 2015, 224, 1275-1286.	1.2	27
57	Mechanical Model of Globular Transition in Polymers. ChemPlusChem, 2015, 80, 37-41.	1.3	3
58	Flexibility of bacterial flagella in external shear results in complex swimming trajectories. Journal of the Royal Society Interface, 2015, 12, 20140904.	1.5	27
59	Phase Imprinting in Equilibrating Fermi Gases: The Transience of Vortex Rings and Other Defects. Physical Review Letters, 2014, 113, 125301.	2.9	25
60	Transport Powered by Bacterial Turbulence. Physical Review Letters, 2014, 112, 158101.	2.9	139
61	Living liquid crystals. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 1265-1270.	3.3	330
62	Self-assembled tunable networks of sticky colloidal particles. Nature Communications, 2014, 5, 3117.	5.8	50
63	Modeling crawling cell movement on soft engineered substrates. Soft Matter, 2014, 10, 1365-1373.	1.2	85
64	Spiral actin-polymerization waves can generate amoeboidal cell crawling. New Journal of Physics, 2014, 16, 055007.	1.2	40
65	Modular approach for modeling cell motility. European Physical Journal: Special Topics, 2014, 223, 1265-1277.	1.2	24
66	Reply to comment by Baohua Ji. European Physical Journal: Special Topics, 2014, 223, 1407-1408.	1.2	0
67	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
68	Large-Scale Chaos and Fluctuations in Active Nematics. Physical Review Letters, 2014, 113, 038302.	2.9	74
69	PHASE-FIELD DESCRIPTION OF SUBSTRATE-BASED MOTILITY OF EUKARYOTIC CELLS. World Scientific Lecture Notes in Complex Systems, 2014, , 93-104.	0.1	1
70	Emergent coherent states and flow rectification in active magnetic colloidal monolayers. Soft Matter, 2013, 9, 6757.	1.2	10
71	Collective behavior in out-of-equilibrium colloidal suspensions. Comptes Rendus Physique, 2013, 14, 518-527.	0.3	50
72	Viscosity Control of the Dynamic Self-Assembly in Ferromagnetic Suspensions. Physical Review Letters, 2013, 110, 198001.	2.9	20

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73	Correlation properties of collective motion in bacterial suspensions. New Journal of Physics, 2013, 15, 105021.	1.2	40
74	Continuum modeling of myxobacteria clustering. New Journal of Physics, 2013, 15, 035029.	1.2	20
75	Active colloids. Physics-Uspekhi, 2013, 56, 79-92.	0.8	109
76	Effects of Adhesion Dynamics and Substrate Compliance on the Shape and Motility of Crawling Cells. PLoS ONE, 2013, 8, e64511.	1.1	92
77	Physical Properties of Collective Motion in Suspensions of Bacteria. Physical Review Letters, 2012, 109, 248109.	2.9	275
78	Nonlinear Field Equations for Aligning Self-Propelled Rods. Physical Review Letters, 2012, 109, 268701.	2.9	121
79	Model for self-polarization and motility of keratocyte fragments. Journal of the Royal Society Interface, 2012, 9, 1084-1092.	1.5	178
80	Effect of vibration on solid-to-liquid transition in small granular systems under shear. Granular Matter, 2012, 14, 151-156.	1.1	7
81	Magnetic manipulation of self-assembled colloidal asters. Nature Materials, 2011, 10, 698-703.	13.3	354
82	Self-organized superconducting textures in thin films. Physical Review B, 2011, 84, .	1.1	5
83	Rashmi Desai and Raymond Kapral: Dynamics ofÂSelf-Organized and Self-Assembled Structures. Journal of Statistical Physics, 2011, 142, 220-222.	0.5	1
84	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
85	Viscosity of bacterial suspensions: Hydrodynamic interactions and self-induced noise. Physical Review E, 2011, 83, 050904.	0.8	102
86	Nucleation of spontaneous vortices in trapped Fermi gases undergoing a BCS-BEC crossover. Physical Review B, 2011, 84, .	1.1	9
87	Motor-Mediated Microtubule Self-Organization in Dilute and Semi-Dilute Filament Solutions. Mathematical Modelling of Natural Phenomena, 2011, 6, 119-137.	0.9	1
88	Patterns and intrinsic fluctuations in semi-dilute motor-filament systems. Europhysics Letters, 2010, 90, 28001.	0.7	5
89	A Model of Hydrodynamic Interaction Between Swimming Bacteria. Bulletin of Mathematical Biology, 2010, 72, 148-183.	0.9	40
90	Model for dynamic self-assembled magnetic surface structures. Physical Review E, 2010, 82, 015301.	0.8	29

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91	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
92	Statistics of Active Transport in Xenopus Melanophores Cells. Biophysical Journal, 2010, 99, 3216-3223.	0.2	6
93	Enhanced mixing and spatial instability in concentrated bacterial suspensions. Physical Review E, 2009, 80, 031903.	0.8	170
94	Reduction of Viscosity in Suspension of Swimming Bacteria. Physical Review Letters, 2009, 103, 148101.	2.9	305
95	Self-Assembled Magnetic Surface Swimmers. Physical Review Letters, 2009, 102, 118103.	2.9	173
96	Effect of noise on solid-to-liquid transition in small granular systems under shear. Physical Review E, 2009, 80, 041305.	0.8	11
97	Three-dimensional model for the effective viscosity of bacterial suspensions. Physical Review E, 2009, 80, 041922.	0.8	84
98	Nonlocal rheological properties of granular flows near a jamming limit. Physical Review E, 2008, 78, 031303.	0.8	42
99	Emergence of agent swarm migration and vortex formation through inelastic collisions. New Journal of Physics, 2008, 10, 023036.	1.2	126
100	Comment on "Long-Lived Giant Number Fluctuations in a Swarming Granular Nematic". Science, 2008, 320, 612-612.	6.0	42
101	Rheological and structural properties of dilute active filament solutions. Physical Review E, 2008, 77, 011918.	0.8	29
102	Effects of cross-links on motor-mediated filament organization. New Journal of Physics, 2007, 9, 421-421.	1.2	45
103	Model for dynamical coherence in thin films of self-propelled microorganisms. Physical Review E, 2007, 75, 040901.	0.8	156
104	Swirling motion in a system of vibrated elongated particles. Physical Review E, 2007, 75, 051301.	0.8	71
105	Interactions of semiflexible filaments and molecular motors. Physical Review E, 2007, 76, 051905.	0.8	13
106	Driven Magnetic Particles on a Fluid Surface: Pattern Assisted Surface Flows. Physical Review Letters, 2007, 99, 158301.	2.9	84
107	Concentration Dependence of the Collective Dynamics of Swimming Bacteria. Physical Review Letters, 2007, 98, 158102.	2.9	579
108	Erosive granular avalanches: a cross confrontation between theory and experiment. Granular Matter, 2007, 10, 3-11.	1.1	9

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109	Formation of self-organized nanoscale porous structures in anodic aluminum oxide. Physical Review B, 2006, 73, .	1.1	89
110	Theory of self-assembly of microtubules and motors. Physical Review E, 2006, 74, 031915.	0.8	79
111	Patterns and collective behavior in granular media: Theoretical concepts. Reviews of Modern Physics, 2006, 78, 641-692.	16.4	703
112	Transverse instability of avalanches in granular flows down an incline. Physical Review E, 2006, 73, 050302.	0.8	39
113	Dendritic Flux Avalanches and Nonlocal Electrodynamics in Thin Superconducting Films. Physical Review Letters, 2005, 94, 037002.	2.9	119
114	Pattern formation of microtubules and motors: Inelastic interaction of polar rods. Physical Review E, 2005, 71, 050901.	0.8	145
115	Structure Formation in Electromagnetically Driven Granular Media. Physical Review Letters, 2005, 94, 108002.	2.9	73
116	Formation of nanoscale pore arrays during anodization of aluminum. Europhysics Letters, 2005, 70, 836-842.	0.7	38
117	Theory of Pattern Formation of Metallic Microparticles in Poorly Conducting Liquids. Physical Review Letters, 2004, 92, 234301.	2.9	38
118	Stick-slip dynamics of a granular layer under shear. Physical Review E, 2004, 69, 031302.	0.8	33
119	Periodic and Disordered Structures in a Modulated Gas-Driven Granular Layer. Physical Review Letters, 2003, 90, 134301.	2.9	50
120	Order Parameter Description of Stationary Partially Fluidized Shear Granular Flows. Physical Review Letters, 2003, 90, 254301.	2.9	61
121	Partially fluidized shear granular flows: Continuum theory and molecular dynamics simulations. Physical Review E, 2003, 68, 021301.	0.8	93
122	Dynamic Self-Assembly and Patterns in Electrostatically Driven Granular Media. Physical Review Letters, 2003, 90, 114301.	2.9	95
123	Dynamics of the constrained polymer collapse. Europhysics Letters, 2003, 62, 848-854.	0.7	6
124	Phase Separation and Coarsening in Electrostatically Driven Granular Media. Physical Review Letters, 2002, 88, 204301.	2.9	45
125	Continuum theory of partially fluidized granular flows. Physical Review E, 2002, 65, 061303.	0.8	147
126	Stick-slip friction and nucleation dynamics of ultrathin liquid films. Physical Review B, 2002, 65, .	1.1	47

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127	The world of the complex Ginzburg-Landau equation. Reviews of Modern Physics, 2002, 74, 99-143.	16.4	1,508
128	Continuum description of avalanches in granular media. Physical Review E, 2001, 64, 020301.	0.8	122
129	Properties of electrostatically-driven granular medium: Phase transitions and charge transfer. AIP Conference Proceedings, 2000, , .	0.3	0
130	Patterns in thin vibrated granular layers: Interfaces, hexagons, and superoscillons. Physical Review E, 2000, 61, 5600-5610.	0.8	49
131	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
132	Crystallization kinetics and self-induced pinning in cellular patterns. Physical Review E, 2000, 62, R5-R8.	0.8	36
133	Electrostatically Driven Granular Media: Phase Transitions and Coarsening. Physical Review Letters, 2000, 84, 3306-3309.	2.9	80
134	Continuum Field Description of Crack Propagation. Physical Review Letters, 2000, 85, 118-121.	2.9	234
135	Resonances, Instabilities, and Structure Selection of Driven Josephson Lattice in Layered Superconductors. Physical Review Letters, 2000, 85, 3938-3941.	2.9	45
136	Nucleation of Vortices by Rapid Thermal Quench. Physical Review Letters, 1999, 83, 2600-2603.	2.9	71
137	Controlled Dynamics of Interfaces in a Vibrated Granular Layer. Physical Review Letters, 1999, 82, 731-734.	2.9	36
138	Continuum theory of axial segregation in a long rotating drum. Physical Review E, 1999, 60, 1975-1987.	0.8	59
139	Dynamics of Axial Separation in Long Rotating Drums. Physical Review Letters, 1999, 82, 4643-4646.	2.9	67
140	Hexagons and interfaces in a vibrated granular layer. Physical Review E, 1999, 59, R1327-R1330.	0.8	30
141	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
142	Nonequilibrium dislocation dynamics and instability of driven vortex lattices in two dimensions. Physical Review B, 1998, 58, 14541-14547.	1.1	20
143	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
144	Spiral Motion in a Noisy Complex Ginzburg-Landau Equation. Physical Review Letters, 1998, 80, 2646-2649.	2.9	28

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145	Ginzburg-Landau Theory of Spiral Surface Growth. Physical Review Letters, 1998, 80, 1770-1773.	2.9	22
146	Instability and Stretching of Vortex Lines in the Three-Dimensional Complex Ginzburg-Landau Equation. Physical Review Letters, 1997, 79, 4174-4177.	2.9	23
147	Localized and Cellular Patterns in a Vibrated Granular Layer. Physical Review Letters, 1997, 79, 213-216.	2.9	158
148	Theory of interaction and bound states of spiral waves in oscillatory media. Physical Review E, 1993, 47, 3231-3241.	0.8	69
149	Formation of asymmetric states of spiral waves in oscillatory media. Physical Review E, 1993, 48, R9-R12.	0.8	36
150	Stability limits of spirals and traveling waves in nonequilibrium media. Physical Review A, 1992, 46, R2992-R2995.	1.0	124
151	Dynamics of vortices in current-carrying superconducting films. Journal of Low Temperature Physics, 1992, 89, 859-868.	0.6	8
152	Interaction of spirals in oscillatory media. Physical Review Letters, 1991, 67, 404-404.	2.9	19
153	Stability of spatially homogeneous chaotic regimes in unidirectional chains. Nonlinearity, 1990, 3, 639-651.	0.6	16
154	Nonlinear dynamics of the localized states of multidimensional fields. Uspekhi Fizicheskikh Nauk, 1990, 33, 300-302.	0.3	0
155	Dynamics of quasiperiodic wave motions in unidirectional strings of oscillators. Radiophysics and Quantum Electronics, 1988, 31, 22-31.	0.1	0
156	Collisions of deformable cells lead to collective migration. , 0, .		1