Stefan Klumpp

List of Publications by Year in descending order

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126 papers	6,125 citations	94433 37 h-index	82547 72 g-index
135 all docs	135 docs citations	135 times ranked	4925 citing authors

#	Article	IF	Citations
1	Growth Rate-Dependent Global Effects on Gene Expression in Bacteria. Cell, 2009, 139, 1366-1375.	28.9	614
2	Tug-of-war as a cooperative mechanism for bidirectional cargo transport by molecular motors. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 4609-4614.	7.1	467
3	Emergence of robust growth laws from optimal regulation of ribosome synthesis. Molecular Systems Biology, 2014, 10, 747.	7.2	374
4	Cooperative cargo transport by several molecular motors. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 17284-17289.	7.1	347
5	Molecular crowding limits translation and cell growth. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 16754-16759.	7.1	241
6	Random Walks of Cytoskeletal Motors in Open and Closed Compartments. Physical Review Letters, 2001, 87, 108101.	7.8	240
7	Traffic of Molecular Motors Through Tube-Like Compartments. Journal of Statistical Physics, 2003, 113, 233-268.	1.2	193
8	Growth-rate-dependent partitioning of RNA polymerases in bacteria. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 20245-20250.	7.1	189
9	Bacterial growth: global effects on gene expression, growth feedback and proteome partition. Current Opinion in Biotechnology, 2014, 28, 96-102.	6.6	182
10	Transport of Beads by Several Kinesin Motors. Biophysical Journal, 2008, 94, 532-541.	0.5	177
11	Large-scale reduction of the Bacillus subtilis genome: consequences for the transcriptional network, resource allocation, and metabolism. Genome Research, 2017, 27, 289-299.	5.5	137
12	Stochasticity and traffic jams in the transcription of ribosomal RNA: Intriguing role of termination and antitermination. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 18159-18164.	7.1	126
13	Diversity of Magneto-Aerotactic Behaviors and Oxygen Sensing Mechanisms in Cultured Magnetotactic Bacteria. Biophysical Journal, 2014, 107, 527-538.	0.5	122
14	Bidirectional Transport by Molecular Motors: Enhanced Processivity and Response to External Forces. Biophysical Journal, 2010, 98, 2610-2618.	0.5	99
15	Molecular motor traffic: From biological nanomachines to macroscopic transport. Physica A: Statistical Mechanics and Its Applications, 2006, 372, 34-51.	2.6	94
16	â€˜Life is motionâ€™: multiscale motility of molecular motors. Physica A: Statistical Mechanics and Its Applications, 2005, 352, 53-112.	2.6	90
17	Bacterial twitching motility is coordinated by a two-dimensional tug-of-war with directional memory. Nature Communications, 2014, 5, 3759.	12.8	83
18	A Model for Sigma Factor Competition in Bacterial Cells. PLoS Computational Biology, 2014, 10, e1003845.	3.2	81

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19	Phase transitions in systems with two species of molecular motors. Europhysics Letters, 2004, 66, 90-96.	2.0	78
20	Distinct Transport Regimes for Two Elastically Coupled Molecular Motors. Physical Review Letters, 2012, 108, 208101.	7.8	63
21	Noise-induced transport of two coupled particles. Physical Review E, 2001, 63, 031914.	2.1	62
22	Selecting for Function: Solution Synthesis of Magnetic Nanopropellers. Nano Letters, 2013, 13, 5373-5378.	9.1	61
23	Fast Magnetic Micropropellers with Random Shapes. Nano Letters, 2015, 15, 7064-7070.	9.1	61
24	Motility States of Molecular Motors Engaged inÂaÂStochastic Tug-of-War. Journal of Statistical Physics, 2008, 133, 1059-1081.	1.2	57
25	Swimming with magnets: From biological organisms to synthetic devices. Physics Reports, 2019, 789, 1-54.	25.6	57
26	Self-Organized Density Patterns of Molecular Motors in Arrays of Cytoskeletal Filaments. Biophysical Journal, 2005, 88, 3118-3132.	0.5	56
27	Growth-Rate Dependence Reveals Design Principles of Plasmid Copy Number Control. PLoS ONE, 2011, 6, e20403.	2.5	56
28	Stochastic simulations of cargo transport by processive molecular motors. Journal of Chemical Physics, 2009, 131, 245107.	3.0	55
29	Kinesinâ€™s backsteps under mechanical load. Physical Chemistry Chemical Physics, 2009, 11, 4899.	2.8	53
30	Vimentin intermediate filaments stabilize dynamic microtubules by direct interactions. Nature Communications, 2021, 12, 3799.	12.8	52
31	Active Diffusion of Motor Particles. Physical Review Letters, 2005, 95, 268102.	7.8	51
32	Population Dynamics of Bacterial Persistence. PLoS ONE, 2013, 8, e62814.	2.5	49
33	Influence of Magnetic Fields on Magneto-Aerotaxis. PLoS ONE, 2014, 9, e101150.	2.5	49
34	Control of transcription elongation by GreA determines rate of gene expression in Streptococcus pneumoniae. Nucleic Acids Research, 2014, 42, 10987-10999.	14.5	48
35	Segregation of prokaryotic magnetosomes organelles is driven by treadmilling of a dynamic actin-like MamK filament. BMC Biology, 2016, 14, 88.	3.8	48
36	Random walks of molecular motors arising from diffusional encounters with immobilized filaments. Physical Review E, 2004, 69, 061911.	2.1	42

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37	Effects of the chemomechanical stepping cycle on the traffic of molecular motors. Physical Review E, 2008, 78, 041909.	2.1	41
38	Walks of molecular motors in two and three dimensions. Europhysics Letters, 2002, 58, 468-474.	2.0	40
39	Pausing and Backtracking in Transcription Under Dense Traffic Conditions. Journal of Statistical Physics, 2011, 142, 1252-1267.	1.2	39
40	Cooperative behavior of molecular motors: Cargo transport and traffic phenomena. Physica E: Low-Dimensional Systems and Nanostructures, 2010, 42, 649-661.	2.7	38
41	Probing the Mechanical Properties of Magnetosome Chains in Living Magnetotactic Bacteria. Nano Letters, 2014, 14, 4653-4659.	9.1	34
42	Biologically controlled synthesis and assembly of magnetite nanoparticles. Faraday Discussions, 2015, 181, 71-83.	3.2	34
43	Differences between cotranscriptional and free riboswitch folding. Nucleic Acids Research, 2014, 42, 2687-2696.	14.5	33
44	Interplay of Magnetic Interactions and Active Movements in the Formation of Magnetosome Chains. PLoS ONE, 2012, 7, e33562.	2.5	33
45	On Ribosome Load, Codon Bias and Protein Abundance. PLoS ONE, 2012, 7, e48542.	2.5	33
46	Elastic properties of magnetosome chains. New Journal of Physics, 2015, 17, 043007.	2.9	32
47	Asymmetric simple exclusion processes with diffusive bottlenecks. Physical Review E, 2004, 70, 066104.	2.1	30
48	Molecular motor traffic in a half-open tube. Journal of Physics Condensed Matter, 2005, 17, S3839-S3850.	1.8	30
49	On Protein Folding in Crowded Conditions. Journal of Physical Chemistry Letters, 2019, 10, 7650-7656.	4.6	29
50	Dilution and the theoretical description of growth-rate dependent gene expression. Journal of Biological Engineering, 2013, 7, 22.	4.7	28
51	Biochemical reactions in crowded environments: revisiting the effects of volume exclusion with simulations. Frontiers in Physics, 2015, 3, .	2.1	27
52	Lateral Subunit Coupling Determines Intermediate Filament Mechanics. Physical Review Letters, 2019, 123, 188102.	7.8	27
53	High-speed motility originates from cooperatively pushing and pulling flagella bundles in bilophotrichous bacteria. ELife, 2020, 9, .	6.0	27
54	Magnetotactic bacteria. European Physical Journal: Special Topics, 2016, 225, 2173-2188.	2.6	26

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55	External forces influence the elastic coupling effects during cargo transport by molecular motors. Physical Review E, 2015, 91, 022701.	2.1	24
56	Movements of molecular motors: Ratchets, random walks and traffic phenomena. Physica E: Low-Dimensional Systems and Nanostructures, 2005, 29, 380-389.	2.7	23
57	Traffic by multiple species of molecular motors. Physical Review E, 2009, 80, 041928.	2.1	23
58	Co-operative transport by molecular motors. Biochemical Society Transactions, 2011, 39, 1211-1215.	3.4	23
59	Mechanism of Facilitated Diffusion during a DNA Search in Crowded Environments. Journal of Physical Chemistry B, 2016, 120, 11113-11122.	2.6	23
60	Backtracking dynamics of RNA polymerase: pausing and error correction. Journal of Physics Condensed Matter, 2013, 25, 374104.	1.8	22
61	Emergence of phenotype switching through continuous and discontinuous evolutionary transitions. Physical Biology, 2015, 12, 046004.	1.8	22
62	Elastic Coupling Effects in Cooperative Transport by a Pair of Molecular Motors. Cellular and Molecular Bioengineering, 2013, 6, 48-64.	2.1	20
63	Steering magnetic micropropellers along independent trajectories. Journal Physics D: Applied Physics, 2016, 49, 065003.	2.8	20
64	Entrainment and Unit Velocity: Surprises in an Accelerated Exclusion Process. Physical Review Letters, 2012, 109, 130602.	7.8	19
65	Transport by Molecular Motors in the Presence of Static Defects. Journal of Statistical Physics, 2009, 135, 241-260.	1.2	18
66	Transcriptional proofreading in dense RNA polymerase traffic. Europhysics Letters, 2011, 96, 60004.	2.0	18
67	Interplay between Population Dynamics and Drug Tolerance of <i>Staphylococcus aureus</i> Persister Cells. Journal of Molecular Microbiology and Biotechnology, 2012, 22, 381-391.	1.0	17
68	Magnetosome Organization in Magnetotactic Bacteria Unraveled by Ferromagnetic Resonance Spectroscopy. Biophysical Journal, 2017, 113, 637-644.	0.5	17
69	Force-Dependent Unbinding Rate of Molecular Motors from Stationary Optical Trap Data. Nano Letters, 2019, 19, 2598-2602.	9.1	17
70	Deterministic and Stochastic Descriptions of Gene Expression Dynamics. Journal of Statistical Physics, 2012, 148, 608-627.	1.2	16
71	Modeling stochastic gene expression in growing cells. Journal of Theoretical Biology, 2014, 348, 1-11.	1.7	16
72	Facilitated diffusion in the presence of obstacles on the DNA. Physical Chemistry Chemical Physics, 2016, 18, 11184-11192.	2.8	16

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73	Traffic patrol in the transcription of ribosomal RNA. RNA Biology, 2009, 6, 392-394.	3.1	15
74	Impact of the cell division cycle on gene circuits. Physical Biology, 2015, 12, 066003.	1.8	14
75	Simulation of colony pattern formation under differential adhesion and cell proliferation. Soft Matter, 2018, 14, 1908-1916.	2.7	14
76	Molecular Motors: Cooperative Phenomena of Multiple Molecular Motors. , 2015, , 27-61.		14
77	Phenotypically heterogeneous populations in spatially heterogeneous environments. Physical Review E, 2014, 89, 030702.	2.1	13
78	Positioning the Flagellum at the Center of a Dividing Cell To Combine Bacterial Division with Magnetic Polarity. MBio, 2015, 6, e02286.	4.1	13
79	Chemotaxis in external fields: Simulations for active magnetic biological matter. PLoS Computational Biology, 2019, 15, e1007548.	3.2	13
80	ACTIVE BIO-SYSTEMS: FROM SINGLE MOTOR MOLECULES TO COOPERATIVE CARGO TRANSPORT. Biophysical Reviews and Letters, 2009, 04, 77-137.	0.8	12
81	Navigation with magnetic nanoparticles: magnetotactic bacteria and magnetic micro-robots. Physica Scripta, 2015, T165, 014044.	2.5	12
82	Dynamic blockage in an exclusion process. Journal of Physics A: Mathematical and Theoretical, 2015, 48, 015007.	2.1	12
83	Life in crowded conditions. European Physical Journal: Special Topics, 2019, 227, 2315-2328.	2.6	12
84	Quasi-essentiality of RNase Y inBacillus subtilisis caused by its critical role in the control of mRNA homeostasis. Nucleic Acids Research, 2021, 49, 7088-7102.	14.5	12
85	Multiscale mechanics and temporal evolution of vimentin intermediate filament networks. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	12
86	Distinct Transport Regimes of Two Elastically Coupled Molecular Motors. Biophysical Journal, 2013, 104, 325a.	0.5	10
87	Asymmetric exclusion process with a dynamic roadblock and open boundaries. Journal of Physics A: Mathematical and Theoretical, 2016, 49, 315001.	2.1	10
88	Self-organization and stability of magnetosome chainsâ€"A simulation study. PLoS ONE, 2018, 13, e0190265.	2.5	10
89	Twitching motility of bacteria with type-IV pili: Fractal walks, first passage time, and their consequences on microcolonies. Physical Review E, 2017, 96, 052411.	2.1	9
90	Visualization of tandem repeat mutagenesis in Bacillus subtilis. DNA Repair, 2018, 63, 10-15.	2.8	9

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91	Simulating Genetic Circuits in Bacterial Populations with Growth Heterogeneity. Biophysical Journal, 2018, 114, 484-492.	0.5	9
92	Decoding Biomineralization: Interaction of a Mad10-Derived Peptide with Magnetite Thin Films. Nano Letters, 2019, 19, 8207-8215.	9.1	9
93	Simulations of structure formation by confined dipolar active particles. Soft Matter, 2020, 16, 10537-10547.	2.7	9
94	Coarse graining of biochemical systems described by discrete stochastic dynamics. Physical Review E, 2020, 102, 062149.	2.1	8
95	Kinetic Monte Carlo approach to RNA folding dynamics using structure-based models. Physical Review E, 2013, 88, 052701.	2.1	7
96	Bead-Based Hydrodynamic Simulations of Rigid Magnetic Micropropellers. Frontiers in Robotics and AI, 2018, 5, 109.	3.2	7
97	Is F₁-ATPase a Rotary Motor with Nearly 100% Efficiency? Quantitative Analysis of Chemomechanical Coupling and Mechanical Slip. Nano Letters, 2019, 19, 3370-3378.	9.1	7
98	Enhanced diffusion of a tracer particle in a lattice model of a crowded active system. Physical Review E, 2021, 103, 052601.	2.1	7
99	Buckling of elastic filaments by discrete magnetic moments. European Physical Journal E, 2017, 40, 86.	1.6	5
100	Modeling sRNA-Regulated Plasmid Maintenance. PLoS ONE, 2017, 12, e0169703.	2.5	5
101	Opportunities and utilization of branching and step-out behavior in magnetic microswimmers with a nonlinear response. Applied Physics Letters, 2021, 118, .	3.3	5
102	Walks of molecular motors interacting with immobilized filaments. Physica A: Statistical Mechanics and Its Applications, 2005, 350, 122-130.	2.6	4
103	COOPERATIVE TRANSPORT BY SMALL TEAMS OF MOLECULAR MOTORS. Biophysical Reviews and Letters, 2006, 01, 353-361.	0.8	4
104	Traffic of Molecular Motors. , 2007, , 251-261.		4
105	A Superresolution Census of RNA Polymerase. Biophysical Journal, 2013, 105, 2613-2614.	0.5	3
106	Mass transport perspective on an accelerated exclusion process: Analysis of augmented current and unit-velocity phases. Physical Review E, 2013, 87, 022146.	2.1	3
107	Speed Limit for Cell Growth. Physics Magazine, 0, 13, .	0.1	3
108	Stokesian dynamics simulations of a magnetotactic bacterium. European Physical Journal E, 2021, 44, 40.	1.6	3

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109	Selection for Function: From Chemically Synthesized Prototypes to 3Dâ€Printed Microdevices. Advanced Intelligent Systems, 2020, 2, 2000078.	6.1	2
110	Accuracy and speed of elongation in a minimal model of DNA replication. Physical Review E, 2021, 104, 034417.	2.1	2
111	Mechanisms and economy of molecular machines. Physica Scripta, 2012, T151, 014066.	2.5	1
112	Sources of stochasticity in constitutive and autoregulated gene expression. Physica Scripta, 2012, T151, 014068.	2.5	1
113	Magneto-Aerotaxis: Bacterial Motility in Magnetic Fields. Biophysical Journal, 2017, 112, 567a.	0.5	1
114	Reflections on COVID-19â€“Induced Online Teaching in Biophysics Courses. The Biophysicist, 2021, 2, 20-22.	0.3	1
115	Role of bacterial persistence in spatial population expansion. Physical Review E, 2021, 104, 034401.	2.1	1
116	Transcriptional Proofreading in Dense RNA Polymerase Traffic. Biophysical Journal, 2012, 102, 287a.	0.5	0
117	Modeling Stochastic Gene Expression in Growing Cells. Biophysical Journal, 2013, 104, 551a-552a.	0.5	0
118	Computational Analysis of Co-Transcriptional Riboswitch Folding. Biophysical Journal, 2014, 106, 284a.	0.5	0
119	Tug-of-War: Mechanical Coordination of Molecular Motors. Biophysical Journal, 2014, 106, 10a.	0.5	0
120	Elastic Properties of Magnetosome Chains. Biophysical Journal, 2016, 110, 469a.	0.5	0
121	Modeling Colony Pattern Formation under Differential Adhesion and Cell Proliferation. Biophysical Journal, 2018, 114, 328a.	0.5	0
122	Focus on bacterial mechanics. New Journal of Physics, 2019, 21, 040201.	2.9	0
123	Cooperative Transport by Amoeboid Cells: A Cellular Tug-of-War. Biophysical Journal, 2019, 116, 122a.	0.5	0
124	Orientation fluctuations in magnetotactic swimming. European Physical Journal: Special Topics, 2021, 230, 1099-1103.	2.6	0
125	Traffic by Small Teams of Molecular Motors. , 2009, , 695-700.		0
126	Synchronization of a genetic oscillator with the cell division cycle. New Journal of Physics, 2022, 24, 033050.	2.9	0