Ivo F Sbalzarini

List of Publications by Year in descending order

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103 papers	4,151 citations	136740 32 h-index	128067 60 g-index
109 all docs	109 docs citations	109 times ranked	5818 citing authors

#	Article	IF	Citations
1	Objective comparison of particle tracking methods. Nature Methods, 2014, 11, 281-289.	9.0	805
2	Single-particle tracking of murine polyoma virus-like particles on live cells and artificial membranes. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 15110-15115.	3.3	235
3	Segmentation and quantification of subcellular structures in fluorescence microscopy images using Squassh. Nature Protocols, 2014, 9, 586-596.	5.5	216
4	PPM â€“ A highly efficient parallel particleâ€“mesh library for the simulation of continuum systems. Journal of Computational Physics, 2006, 215, 566-588.	1.9	153
5	Septin-dependent compartmentalization of the endoplasmic reticulum during yeast polarized growth. Journal of Cell Biology, 2005, 169, 897-908.	2.3	145
6	ClearVolume: open-source live 3D visualization for light-sheet microscopy. Nature Methods, 2015, 12, 480-481.	9.0	141
7	Thermophoretic Motion of Water Nanodroplets Confined inside Carbon Nanotubes. Nano Letters, 2009, 9, 66-71.	4.5	127
8	Effects of Organelle Shape on Fluorescence Recovery after Photobleaching. Biophysical Journal, 2005, 89, 1482-1492.	0.2	119
9	Self-organized shape dynamics of active surfaces. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 29-34.	3.3	101
10	Curvature Filters Efficiently Reduce Certain Variational Energies. IEEE Transactions on Image Processing, 2017, 26, 1786-1798.	6.0	96
11	A novel supervised trajectory segmentation algorithm identifies distinct types of human adenovirus motion in host cells. Journal of Structural Biology, 2007, 159, 347-358.	1.3	92
12	Simulations of (An)Isotropic Diffusion on Curved Biological Surfaces. Biophysical Journal, 2006, 90, 878-885.	0.2	90
13	Beyond co-localization: inferring spatial interactions between sub-cellular structures from microscopy images. BMC Bioinformatics, 2010, 11, 372.	1.2	80
14	A Predictive 3D Multi-Scale Model of Biliary Fluid Dynamics in the Liver Lobule. Cell Systems, 2017, 4, 277-290.e9.	2.9	79
15	Histone Deacetylase 8 Is Required for Centrosome Cohesion and Influenza A Virus Entry. PLoS Pathogens, 2011, 7, e1002316.	2.1	78
16	MosaicIA: an ImageJ/Fiji plugin for spatial pattern and interaction analysis. BMC Bioinformatics, 2013, 14, 349.	1.2	71
17	Coupling Image Restoration and Segmentation: A Generalized Linear Model/Bregman Perspective. International Journal of Computer Vision, 2013, 104, 69-93.	10.9	68
18	Antimicrobial Peptides Induce Growth of Phosphatidylglycerol Domains in a Model Bacterial Membrane. Journal of Physical Chemistry Letters, 2010, 1, 3108-3111.	2.1	65

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19	Cell-Free Transmission of Human Adenovirus by Passive Mass Transfer in Cell Culture Simulated in a Computer Model. Journal of Virology, 2012, 86, 10123-10137.	1.5	60
20	Highâ€resolution cell outline segmentation and tracking from phaseâ€contrast microscopy images. Journal of Microscopy, 2012, 245, 161-170.	0.8	58
21	Largeâ€scale parallel discrete element simulations of granular flow. Engineering Computations, 2009, 26, 688-697.	0.7	56
22	A new class of highly efficient exact stochastic simulation algorithms for chemical reaction networks. Journal of Chemical Physics, 2009, 130, 244104.	1.2	54
23	Discretization correction of general integral PSE Operators for particle methods. Journal of Computational Physics, 2010, 229, 4159-4182.	1.9	50
24	Discreteness-induced concentration inversion in mesoscopic chemical systems. Nature Communications, 2012, 3, 779.	5.8	49
25	Receptor Concentration and Diffusivity Control Multivalent Binding of Sv40 to Membrane Bilayers. PLoS Computational Biology, 2013, 9, e1003310.	1.5	44
26	Dynamic measurement of the height and volume of migrating cells by a novel fluorescence microscopy technique. Lab on A Chip, 2011, 11, 3855.	3.1	42
27	Minimal Model of Cellular Symmetry Breaking. Physical Review Letters, 2019, 123, 188101.	2.9	40
28	OpenFPM: A scalable open framework for particle and particle-mesh codes on parallel computers. Computer Physics Communications, 2019, 241, 155-177.	3.0	38
29	Modeling and simulation of biological systems from image data. BioEssays, 2013, 35, 482-490.	1.2	37
30	A Lagrangian particle method for reactionâ€“diffusion systems on deforming surfaces. Journal of Mathematical Biology, 2010, 61, 649-663.	0.8	33
31	Contact Angle at the Leading Edge Controls Cell Protrusion Rate. Current Biology, 2014, 24, 1126-1132.	1.8	33
32	Automatic optimal filament segmentation with sub-pixel accuracy using generalized linear models and B-spline level-sets. Medical Image Analysis, 2016, 32, 157-172.	7.0	33
33	Discrete Region Competition for Unknown Numbers of Connected Regions. IEEE Transactions on Image Processing, 2012, 21, 3531-3545.	6.0	32
34	Local weighted Gaussian curvature for image processing. , 2013, , .		32
35	Seeing Is Believing: Quantifying Is Convincing: Computational Image Analysis in Biology. Advances in Anatomy, Embryology and Cell Biology, 2016, 219, 1-39.	1.0	30
36	Minimal model for spontaneous cell polarization and edge activity in oscillating, rotating and migrating cells. Nature Physics, 2016, 12, 367-373.	6.5	30

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37	A Natural-Scene Gradient Distribution Prior and its Application in Light-Microscopy Image Processing. IEEE Journal on Selected Topics in Signal Processing, 2016, 10, 99-114.	7.3	29
38	A non-linear system patterns Rab5 GTPase on the membrane. ELife, 2020, 9, .	2.8	29
39	A partial-propensity variant of the composition-rejection stochastic simulation algorithm for chemical reaction networks. Journal of Chemical Physics, 2010, 132, 044102.	1.2	28
40	Using DC PSE operator discretization in Eulerian meshless collocation methods improves their robustness in complex geometries. Computers and Fluids, 2016, 136, 285-300.	1.3	28
41	A self-organizing Lagrangian particle method for adaptive-resolution advectionâ€“diffusion simulations. Journal of Computational Physics, 2012, 231, 3623-3646.	1.9	27
42	Proteome sequence features carry signatures of the environmental niche of prokaryotes. BMC Evolutionary Biology, 2011, 11, 26.	3.2	25
43	Global Characterization of the CEC 2005 Fitness Landscapes Using Fitness-Distance Analysis. Lecture Notes in Computer Science, 2011, , 294-303.	1.0	25
44	Particle Swarm CMA Evolution Strategy for the optimization of multi-funnel landscapes. , 2009, , .		21
45	Fast neighbor lists for adaptive-resolution particle simulations. Computer Physics Communications, 2012, 183, 1073-1081.	3.0	21
46	Intrinsically Disordered Regions May Lower the Hydration Free Energy in Proteins: A Case Study of Nudix Hydrolase in the Bacterium Deinococcus radiodurans. PLoS Computational Biology, 2010, 6, e1000854.	1.5	19
47	Coupled signed-distance functions for implicit surface reconstruction. , 2012, , .		18
48	Energy Landscapes of Atomic Clusters as Black Box Optimization Benchmarks. Evolutionary Computation, 2012, 20, 543-573.	2.3	17
49	Abstractions and Middleware for Petascale Computing and Beyond. International Journal of Distributed Systems and Technologies, 2010, 1, 40-56.	0.6	15
50	Adaptive particle representation of fluorescence microscopy images. Nature Communications, 2018, 9, 5160.	5.8	15
51	Exact on-lattice stochastic reaction-diffusion simulations using partial-propensity methods. Journal of Chemical Physics, 2011, 135, 244103.	1.2	14
52	Intrinsic noise alters the frequency spectrum of mesoscopic oscillatory chemical reaction systems. Scientific Reports, 2011, 1, 154.	1.6	14
53	Image Enhancement by Gradient Distribution Specification. Lecture Notes in Computer Science, 2015, , 47-62.	1.0	14
54	Inverse Dirichlet weighting enables reliable training of physics informed neural networks. Machine Learning: Science and Technology, 2022, 3, 015026.	2.4	14

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55	A hybrid particle-mesh method for incompressible active polar viscous gels. Journal of Computational Physics, 2015, 291, 334-361.	1.9	13
56	scenery: Flexible Virtual Reality Visualization on the Java VM. , 2019, , .		13
57	Deconvolving Active Contours for Fluorescence Microscopy Images. Lecture Notes in Computer Science, 2009, , 544-553.	1.0	13
58	Learning physically consistent differential equation models from data using group sparsity. Physical Review E, 2021, 103, 042310.	0.8	12
59	pCMALib. , 2009, , .		11
60	A partial-propensity formulation of the stochastic simulation algorithm for chemical reaction networks with delays. Journal of Chemical Physics, 2011, 134, 014106.	1.2	11
61	Choosing the Best Kernel: Performance Models for Diffusion Operators in Particle Methods. SIAM Journal of Scientific Computing, 2012, 34, A1607-A1634.	1.3	10
62	A Parallel Distributed-Memory Particle Method Enables Acquisition-Rate Segmentation of Large Fluorescence Microscopy Images. PLoS ONE, 2016, 11, e0152528.	1.1	10
63	L p -Adaptation: Simultaneous Design Centering and Robustness Estimation of Electronic and Biological Systems. Scientific Reports, 2017, 7, 6660.	1.6	10
64	A Domain-Specific Language and Editor for Parallel Particle Methods. ACM Transactions on Mathematical Software, 2018, 44, 1-32.	1.6	10
65	Gaussian Adaptation as a unifying framework for continuous black-box optimization and adaptive Monte Carlo sampling. , 2010, , .		9
66	A Method for Modeling Growth of Organs and Transplants Based on the General Growth Law: Application to the Liver in Dogs and Humans. PLoS ONE, 2014, 9, e99275.	1.1	9
67	Infectio: a Generic Framework for Computational Simulation of Virus Transmission between Cells. MSphere, 2016, 1, .	1.3	9
68	Gaussian Adaptation Revisited â€“ An Entropic View on Covariance Matrix Adaptation. Lecture Notes in Computer Science, 2010, , 432-441.	1.0	9
69	pSSAlib: The partial-propensity stochastic chemical network simulator. PLoS Computational Biology, 2017, 13, e1005865.	1.5	8
70	Noise-Induced Modulation of the Relaxation Kinetics around a Non-Equilibrium Steady State of Non-Linear Chemical Reaction Networks. PLoS ONE, 2011, 6, e16045.	1.1	8
71	How Computational Models Enable Mechanistic Insights into Virus Infection. Methods in Molecular Biology, 2018, 1836, 609-631.	0.4	7
72	Toward an Object-Oriented Core of the PPM Library. , 2010, , .		6

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73	A portable OpenCL implementation of generic particleâ€“mesh and meshâ€“particle interpolation in 2D and 3D. Parallel Computing, 2013, 39, 94-111.	1.3	5
74	Model-based autotuning of discretization methods in numerical simulations of partial differential equations. Journal of Computational Science, 2022, 57, 101489.	1.5	5
75	Fast Exact Stochastic Simulation Algorithms Using Partial Propensities. AIP Conference Proceedings, 2010, , .	0.3	4
76	An alternating split Bregman algorithm for multi-region segmentation. , 2011, , .		4
77	Exact stochastic simulations of intra-cellular transport by mechanically coupled molecular motors. Journal of Computational Science, 2011, 2, 324-334.	1.5	4
78	A Meshless Particle Method for Poisson and Diffusion Problems with Discontinuous Coefficients and Inhomogeneous Boundary Conditions. SIAM Journal of Scientific Computing, 2013, 35, A2469-A2493.	1.3	4
79	Fundamentals of the logarithmic measure for revealing multimodal diffusion. Biophysical Journal, 2021, 120, 829-843.	0.2	4
80	A C++ expression system for partial differential equations enables generic simulations of biological hydrodynamics. European Physical Journal E, 2021, 44, 117.	0.7	4
81	Quantifying Molecular Dynamics within Complex Cellular Morphologies using LLSMâ€FRAP. Small Methods, 2022, 6, e2200149.	4.6	4
82	Parallel Discrete Convolutions on Adaptive Particle Representations of Images. IEEE Transactions on Image Processing, 2022, 31, 4197-4212.	6.0	4
83	Stability selection enables robust learning of differential equations from limited noisy data. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2022, 478, .	1.0	4
84	Active Flows Cluster Cell Surface Proteins. Developmental Cell, 2012, 22, 1121-1122.	3.1	3
85	Robust Mapping of Process Networks to Many-Core Systems using Bio-Inspired Design Centering. , 2017, , .		3
86	Robustness of topological defects in discrete domains. Physical Review E, 2021, 103, 012602.	0.8	3
87	An Architecture for Interactive In Situ Visualization and its Transparent Implementation in OpenFPM. , 2020, , .		3
88	In the eye of the beholder: Inhomogeneous distribution of high-resolution shapes within the random-walk ensemble. Journal of Chemical Physics, 2009, 130, 214904.	1.2	2
89	An adaptive distributed resampling algorithm with non-proportional allocation. , 2014, , .		2
90	A Self-organizing Adaptive-resolution Particle Method with Anisotropic Kernels. Procedia IUTAM, 2015, 18, 40-55.	1.2	2

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91	A Proposed Framework for Interactive Virtual Reality In Situ Visualization of Parallel Numerical Simulations. , 2019, , .		2
92	Fast Interpolation and Fourier Transform in High-Dimensional Spaces. Advances in Intelligent Systems and Computing, 2019, , 53-75.	0.5	2
93	A robustness measure for singular point and index estimation in discretized orientation and vector fields. Proceedings in Applied Mathematics and Mechanics, 2021, 20, e202000261.	0.2	2
94	The OpenPME Problem Solving Environment for Numerical Simulations. Lecture Notes in Computer Science, 2021, , 614-627.	1.0	2
95	Global Parameter Identification of Stochastic Reaction Networks from Single Trajectories. Advances in Experimental Medicine and Biology, 2012, 736, 477-498.	0.8	2
96	A parallel particle method for solving the EEG source localization forward problem. , 2011, , .		1
97	A Pthreads Wrapper for Fortran 2003. ACM Transactions on Mathematical Software, 2014, 40, 1-15.	1.6	1
98	Spatiotemporal Modeling and Simulation in Biology. , 2009, , 381-432.		1
99	Bionic Tracking: Using Eye Tracking to Track Biological Cells in Virtual Reality. Lecture Notes in Computer Science, 2020, , 280-297.	1.0	1
100	Advances in Numerical Methods for Stochastic Simulation. , 2010, , .		0
101	Abstractions and Middleware for Petascale Computing and Beyond. , 0, , 161-178.		0
102	Abstractions and Middleware for Petascale Computing and Beyond. , 0, , 1998-2015.		0
103	Estimation of unordered core size using a robustness measure for topological defects in discretized orientation and vector fields. Proceedings in Applied Mathematics and Mechanics, 2021, 21, .	0.2	0