

Heinz Koeppel

List of Publications by Year in descending order

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125
papers

2,027
citations

331538

21
h-index

315616

38
g-index

134
all docs

134
docs citations

134
times ranked

2310
citing authors

#	ARTICLE	IF	CITATIONS
1	Inferring causal molecular networks: empirical assessment through a community-based effort. <i>Nature Methods</i> , 2016, 13, 310-318.	9.0	209
2	Moment-based inference predicts bimodality in transient gene expression. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2012, 109, 8340-8345.	3.3	207
3	Scalable inference of heterogeneous reaction kinetics from pooled single-cell recordings. <i>Nature Methods</i> , 2014, 11, 197-202.	9.0	131
4	Strengths and limitations of microarray-based phenotype prediction: lessons learned from the IMPROVER Diagnostic Signature Challenge. <i>Bioinformatics</i> , 2013, 29, 2892-2899.	1.8	108
5	Verification of systems biology research in the age of collaborative competition. <i>Nature Biotechnology</i> , 2011, 29, 811-815.	9.4	83
6	â€˜Globalâ€™ Robustness Analysis and Model Discrimination for Circadian Oscillators. <i>PLoS Computational Biology</i> , 2009, 5, e1000534.	1.5	57
7	Effect of Network Architecture on Synchronization and Entrainment Properties of the Circadian Oscillations in the Suprachiasmatic Nucleus. <i>PLoS Computational Biology</i> , 2012, 8, e1002419.	1.5	50
8	A Cellular System for Spatial Signal Decoding in Chemical Gradients. <i>Developmental Cell</i> , 2015, 35, 458-470.	3.1	50
9	Spatial Simulations in Systems Biology: From Molecules to Cells. <i>International Journal of Molecular Sciences</i> , 2012, 13, 7798-7827.	1.8	49
10	Lumpability abstractions of rule-based systems. <i>Theoretical Computer Science</i> , 2012, 431, 137-164.	0.5	45
11	Uncoupled Analysis of Stochastic Reaction Networks in Fluctuating Environments. <i>PLoS Computational Biology</i> , 2014, 10, e1003942.	1.5	42
12	Attention-Based Transformers for Instance Segmentation of Cells in Microstructures. , 2020, , .		40
13	Jump-Diffusion Approximation of Stochastic Reaction Dynamics: Error Bounds and Algorithms. <i>Multiscale Modeling and Simulation</i> , 2015, 13, 1390-1419.	0.6	35
14	Cell-Free Prototyping of AND-Logic Gates Based on Heterogeneous RNA Activators. <i>ACS Synthetic Biology</i> , 2019, 8, 2163-2173.	1.9	35
15	Spatial Modeling of Vesicle Transport and the Cytoskeleton: The Challenge of Hitting the Right Road. <i>PLoS ONE</i> , 2012, 7, e29645.	1.1	34
16	Digitally enhanced analog circuits: System aspects. , 2008, , .		33
17	Parallel feedback loops control the basal activity of the HOG MAPK signaling cascade. <i>Integrative Biology (United Kingdom)</i> , 2015, 7, 412-422.	0.6	29
18	Hybrid spatial Gillespie and particle tracking simulation. <i>Bioinformatics</i> , 2012, 28, i549-i555.	1.8	27

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19	Dynamical properties of Discrete Reaction Networks. <i>Journal of Mathematical Biology</i> , 2014, 69, 55-72.	0.8	27
20	Quasi-Steady-State Approximations Derived from the Stochastic Model of Enzyme Kinetics. <i>Bulletin of Mathematical Biology</i> , 2019, 81, 1303-1336.	0.9	24
21	Minimum Mean-Square Error Equalization for Second-Order Volterra Systems. <i>IEEE Transactions on Signal Processing</i> , 2008, 56, 4729-4737.	3.2	23
22	Accounting for extrinsic variability in the estimation of stochastic rate constants. <i>International Journal of Robust and Nonlinear Control</i> , 2012, 22, 1103-1119.	2.1	23
23	Self-propelled chimeras. <i>Physical Review E</i> , 2018, 98, .	0.8	23
24	A tightly regulated and adjustable CRISPR-dCas9 based AND gate in yeast. <i>Nucleic Acids Research</i> , 2019, 47, 509-520.	6.5	22
25	An Efficient Scheme for Nonlinear Modeling and Predistortion in Mixed-Signal Systems. <i>IEEE Transactions on Circuits and Systems Part 2: Express Briefs</i> , 2006, 53, 1368-1372.	2.3	21
26	A variational approach to moment-closure approximations for the kinetics of biomolecular reaction networks. <i>Journal of Chemical Physics</i> , 2018, 148, 014105.	1.2	21
27	Global injectivity and multiple equilibria in uni- and bi-molecular reaction networks. <i>Discrete and Continuous Dynamical Systems - Series B</i> , 2012, 17, 2153-2170.	0.5	20
28	Traveling bands, clouds, and vortices of chiral active matter. <i>Physical Review E</i> , 2020, 102, 022604.	0.8	18
29	A game theoretical model of deforestation in human-environment relationships. <i>Journal of Theoretical Biology</i> , 2009, 258, 127-134.	0.8	16
30	ROCO-Ribo: Characterizing a Riboswitching Expression System by Modeling Single-Cell Data. <i>ACS Synthetic Biology</i> , 2017, 6, 1211-1224.	1.9	16
31	Inferring gene expression networks with hubs using a degree weighted Lasso approach. <i>Bioinformatics</i> , 2019, 35, 987-994.	1.8	16
32	Trajectory enclosures for nonlinear systems with uncertain initial conditions and parameters. , 2012, , .		15
33	Bayesian inference of reaction kinetics from single-cell recordings across a heterogeneous cell population. <i>Methods</i> , 2015, 85, 22-35.	1.9	15
34	Yeast cell segmentation in microstructured environments with deep learning. <i>BioSystems</i> , 2022, 211, 104557.	0.9	15
35	Deterministic characterization of phase noise in biomolecular oscillators. <i>Physical Biology</i> , 2011, 8, 055008.	0.8	14
36	Almost sure stability and stabilization of discrete-time stochastic systems. <i>Systems and Control Letters</i> , 2015, 82, 26-32.	1.3	14

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37	Optimal Kullback-Leibler Aggregation via Information Bottleneck. IEEE Transactions on Automatic Control, 2015, 60, 1010-1022.	3.6	14
38	Transitions: A Protocol-Independent View of the Future Internet. Proceedings of the IEEE, 2019, 107, 835-846.	16.4	14
39	Markov chain aggregation and its applications to combinatorial reaction networks. Journal of Mathematical Biology, 2014, 69, 767-797.	0.8	13
40	A low-rate identification method for digital predistorters based on Volterra kernel interpolation. , 0, , .		12
41	Volterra kernel interpolation for system modeling and predistortion purposes. , 0, , .		12
42	Combining Model Reductions. Electronic Notes in Theoretical Computer Science, 2010, 265, 73-96.	0.9	12
43	Mapping behavioral specifications to model parameters in synthetic biology. BMC Bioinformatics, 2013, 14, S9.	1.2	12
44	Marginal process framework: A model reduction tool for Markov jump processes. Physical Review E, 2018, 97, 062147.	0.8	12
45	Solitary states in the mean-field limit. Chaos, 2020, 30, 111104.	1.0	12
46	Reconstructing dynamic molecular states from single-cell time series. Journal of the Royal Society Interface, 2016, 13, 20160533.	1.5	11
47	Context in synthetic biology: Memory effects of environments with mono-molecular reactions. Journal of Chemical Physics, 2019, 150, 024106.	1.2	11
48	Microfluidic platforms for the dynamic characterisation of synthetic circuitry. Current Opinion in Biotechnology, 2020, 63, 167-176.	3.3	11
49	Under-Approximating Cut Sets for Reachability in Large Scale Automata Networks. Lecture Notes in Computer Science, 2013, , 69-84.	1.0	11
50	Recursive Bayesian estimation of stochastic rate constants from heterogeneous cell populations. , 2011, , .		10
51	Automated Design of Robust Genetic Circuits: Structural Variants and Parameter Uncertainty. ACS Synthetic Biology, 2021, 10, 3316-3329.	1.9	10
52	Inverse problems from biomedicine. Journal of Mathematical Biology, 2013, 67, 143-168.	0.8	9
53	Multiclass Yeast Segmentation in Microstructured Environments with Deep Learning. , 2020, , .		9
54	Tensor-train approximation of the chemical master equation and its application for parameter inference. Journal of Chemical Physics, 2021, 155, 034102.	1.2	9

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55	Reconstructing species-based dynamics from reduced stochastic rule-based models. , 2012, , .		8
56	CBA: Contextual Quality Adaptation for Adaptive Bitrate Video Streaming. , 2019, , .		8
57	Approximate lumpability for Markovian agent-based models using local symmetries. Journal of Applied Probability, 2019, 56, 647-671.	0.4	8
58	Maximizing information gain for the characterization of biomolecular circuits. , 2018, , .		8
59	Parallelized agent-based simulation on CPU and graphics hardware for spatial and stochastic models in biology. , 2011, , .		7
60	Finding invariant sets for biological systems using monomial domination. , 2012, , .		7
61	From microscopy data to in silico environments for in vivo-oriented simulations. Eurasip Journal on Bioinformatics and Systems Biology, 2012, 2012, 7.	1.4	7
62	Enabling crowdsourced live event coverage with adaptive collaborative upload strategies. , 2016, , .		7
63	Graph reconstruction using covariance-based methods. Eurasip Journal on Bioinformatics and Systems Biology, 2016, 2016, 19.	1.4	7
64	Optimizing stochastic scheduling in fork-join queueing models: Bounds and applications. , 2017, , .		7
65	A finite volume method for continuum limit equations of nonlocally interacting active chiral particles. Journal of Computational Physics, 2021, 440, 110275.	1.9	7
66	Marginal dynamics of stochastic biochemical networks in random environments. , 2013, , .		7
67	Reaction schemes, escape times and geminate recombinations in particle-based spatial simulations of biochemical reactions. Physical Biology, 2013, 10, 046005.	0.8	5
68	From biochemical reaction networks to 3D dynamics in the cell: The ZigCell3D modeling, simulation and visualisation framework. , 2013, , .		5
69	Generalized Cost-Based Job Scheduling in Very Large Heterogeneous Cluster Systems. IEEE Transactions on Parallel and Distributed Systems, 2020, 31, 2594-2604.	4.0	5
70	Coarse-Grained Brownian Dynamics Simulation of Rule-Based Models. Lecture Notes in Computer Science, 2013, , 64-77.	1.0	5
71	The Cramer-Rao Bound and DMT Signal Optimisation for the Identification of a Wiener-Type Model. Eurasip Journal on Advances in Signal Processing, 2004, 2004, 1.	1.0	4
72	Network Inference by Combining Biologically Motivated Regulatory Constraints with Penalized Regression. Annals of the New York Academy of Sciences, 2009, 1158, 114-124.	1.8	4

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73	Rational Design of Robust Biomolecular Circuits: from Specification to Parameters. , 2011, , 253-279.		4
74	Collaborative Uploading in Heterogeneous Networks: Optimal and Adaptive Strategies. , 2018, , .		4
75	On the Throughput Optimization in Large-scale Batch-processing Systems. Performance Evaluation, 2020, 144, 102142.	0.9	4
76	Multi-StyleGAN: Towards Image-Based Simulation of Time-Lapse Live-Cell Microscopy. Lecture Notes in Computer Science, 2021, , 476-486.	1.0	4
77	Functional Nanopore Screen: A Versatile High-Throughput Assay to Study and Engineer Protein Nanopores in <i>Escherichia coli</i> . ACS Synthetic Biology, 2022, 11, 2070-2079.	1.9	4
78	A Local Nonlinear Model for the Approximation and Identification of a Class of Systems. IEEE Transactions on Circuits and Systems II: Express Briefs, 2009, 56, 315-319.	2.2	3
79	Probability metrics to calibrate stochastic chemical kinetics. , 2010, , .		3
80	Optimal Perturbations for the Identification of Stochastic Reaction Dynamics. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 686-691.	0.4	3
81	Model Decomposition and Stochastic Fragments. Electronic Notes in Theoretical Computer Science, 2012, 284, 105-124.	0.9	3
82	Optimal variational perturbations for the inference of stochastic reaction dynamics. , 2012, , .		3
83	Cross-Layer QoE-Based Incentive Mechanism for Video Streaming in Multi-Hop Wireless Networks. , 2017, , .		3
84	Reinforcement learning in a continuum of agents. Swarm Intelligence, 2018, 12, 23-51.	1.3	3
85	Provisioning and Performance Evaluation of Parallel Systems with Output Synchronization. ACM Transactions on Modeling and Performance Evaluation of Computing Systems, 2019, 4, 1-31.	0.8	3
86	Hybrid master equation for jump-diffusion approximation of biomolecular reaction networks. BIT Numerical Mathematics, 2020, 60, 261-294.	1.0	3
87	Functionalizing Cell-Free Systems with CRISPR-Associated Proteins: Application to RNA-Based Circuit Engineering. ACS Synthetic Biology, 2021, 10, 2138-2150.	1.9	3
88	Discrete-Time Mean Field Control with Environment States. , 2021, , .		3
89	Motif-based mean-field approximation of interacting particles on clustered networks. Physical Review E, 2022, 105, L042301.	0.8	3
90	An Adaptive Cellular Network for Subspace Extraction. , 2006, , .		2

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91	The Composition Rule for Multivariate Volterra Operators and its Application to Circuit Analysis. , 2007, , .		2
92	A low-rate identification method for digital predistorters based on Volterra kernel interpolation. Analog Integrated Circuits and Signal Processing, 2008, 56, 107-115.	0.9	2
93	Analysis and design of biological circuits and systems. , 2009, , .		2
94	Learning diagnostic signatures from microarray data using L1-regularized logistic regression. Systems Biomedicine (Austin, Tex), 2013, 1, 240-246.	0.7	2
95	Approximate model reductions for combinatorial reaction systems. , 2013, , .		2
96	Error bound and simulation algorithm for piecewise deterministic approximations of stochastic reaction systems. , 2015, , .		2
97	Analysing and leveraging client heterogeneity in swarming-based live streaming. , 2016, , .		2
98	A Bayesian Approach to Policy Recognition and State Representation Learning. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2018, 40, 1295-1308.	9.7	2
99	Daily Routine Recognition with Visual Interactive Labeling by Fusing Acceleration and Audio Signals. , 2019, , .		2
100	Improving Daily Routine Recognition in Hearing Aids Using Sequence Learning. IEEE Access, 2021, 9, 93237-93247.	2.6	2
101	Daily Routine Recognition for Hearing Aid Personalization. SN Computer Science, 2021, 2, 1.	2.3	2
102	Lumpability Abstractions of Rule-based Systems. Electronic Proceedings in Theoretical Computer Science, EPTCS, 0, 40, 142-161.	0.8	2
103	Non-Parametric Bayesian Inference for Change Point Detection in Neural Spike Trains. , 2018, , .		2
104	Automatic Reduction of Stochastic Rules-Based Models in a Nutshell. , 2010, , .		1
105	Computationally implementable sufficient conditions for the synchronisation of coupled dynamical systems with time delays in the coupling. , 2011, , .		1
106	Stochastic Semantics of Signaling as a Composition of Agent-view Automata. Electronic Notes in Theoretical Computer Science, 2011, 272, 3-17.	0.9	1
107	Computing enclosures for uncertain biochemical systems. IET Systems Biology, 2012, 6, 232-240.	0.8	1
108	Scalable inference using PMCMC and parallel tempering for high-throughput measurements of biomolecular reaction networks. , 2016, , .		1

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109	Efficient simulation of multiscale reaction networks: A multilevel partitioning approach. , 2016, , .		1
110	Policy recognition via expectation maximization. , 2016, , .		1
111	Sensitivity estimation for stochastic models of biochemical reaction networks in the presence of extrinsic variability. Journal of Chemical Physics, 2017, 146, 124122.	1.2	1
112	Poisson channel with binary Markov input and average sojourn time constraint. , 2020, , .		1
113	Stabilized Reconstruction of Signaling Networks from Single-Cell Cue-Response Data. Scientific Reports, 2020, 10, 1233.	1.6	1
114	Guaranteed and Randomized Methods for Stability Analysis of Uncertain Metabolic Networks. Lecture Notes in Control and Information Sciences, 2010, , 297-307.	0.6	1
115	Information Rate Maximization over a Resistive Grid. , 0, , .		0
116	A Bio-inspired Computer Fovea Model based on Hexagonal-type Cellular Neural Networks. , 0, , .		0
117	Information Rate Maximization over a Resistive Grid. , 2006, , .		0
118	A Bio-inspired Computer Fovea Model based on Hexagonal-type Cellular Neural Networks. , 2006, , .		0
119	Sparse Learning of Markovian Population Models in Random Environments. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 1723-1728.	0.4	0
120	A diagram technique for cumulant equations in biomolecular reaction networks with mass-action kinetics. , 2016, , .		0
121	Network Reconstruction From Time-Course Perturbation Data Using Multivariate Gaussian Processes. , 2018, , .		0
122	Collapsed Variational Inference for Nonparametric Bayesian Group Factor Analysis. , 2018, , .		0
123	On the Throughput Optimization in Large-Scale Batch-Processing Systems. Performance Evaluation Review, 2021, 48, 128-129.	0.4	0
124	Stochastic Simulations in Systems Biology. Advances in Computer and Electrical Engineering Book Series, 2012, , 267-286.	0.2	0
125	Active learning of continuous-time Bayesian networks through interventions*. Journal of Statistical Mechanics: Theory and Experiment, 2021, 2021, 124001.	0.9	0