James M Hyman

List of Publications by Year
in descending order

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144 papers	14,328 citations	36203 51 h-index	21474 114 g-index
154 all docs	154 docs citations	154 times ranked	12545 citing authors

#	Article	IF	Citations
1	Determining Important Parameters in the Spread of Malaria Through the Sensitivity Analysis of a Mathematical Model. Bulletin of Mathematical Biology, 2008, 70, 1272-1296.	0.9	992
2	Compactons: Solitons with finite wavelength. Physical Review Letters, 1993, 70, 564-567.	2.9	890
3	Accelerating Markov Chain Monte Carlo Simulation by Differential Evolution with Self-Adaptive Randomized Subspace Sampling. International Journal of Nonlinear Sciences and Numerical Simulation, 2009, 10, .	0.4	807
4	A New Integrable Shallow Water Equation. Advances in Applied Mechanics, 1994, , 1-33.	1.4	720
5	Treatment of input uncertainty in hydrologic modeling: Doing hydrology backward with Markov chain Monte Carlo simulation. Water Resources Research, 2008, 44, .	1.7	664
6	Self adjusting grid methods for one-dimensional hyperbolic conservation laws. Journal of Computational Physics, 1983, 50, 235-269.	1.9	648
7	Being Sensitive to Uncertainty. Computing in Science and Engineering, 2007, 9, 10-20.	1.2	617
8	Real-time forecasts of the COVID-19 epidemic in China from February 5th to February 24th, 2020. Infectious Disease Modelling, 2020, 5, 256-263.	1.2	534
9	The basic reproductive number of Ebola and the effects of public health measures: the cases of Congo and Uganda. Journal of Theoretical Biology, 2004, 229, 119-126.	0.8	466
10	On finite-difference approximations and entropy conditions for shocks. Communications on Pure and Applied Mathematics, 1976, 29, 297-322.	1.2	348
11	Bifurcation Analysis of a Mathematical Model for Malaria Transmission. SIAM Journal on Applied Mathematics, 2006, 67, 24-45.	0.8	327
12	Self-Adaptive Multimethod Search for Global Optimization in Real-Parameter Spaces. IEEE Transactions on Evolutionary Computation, 2009, 13, 243-259.	7.5	285
13	The Kuramoto-Sivashinsky equation: A bridge between PDE'S and dynamical systems. Physica D: Nonlinear Phenomena, 1986, 18, 113-126.	1.3	259
14	The differential infectivity and staged progression models for the transmission of HIV. Mathematical Biosciences, 1999, 155, 77-109.	0.9	233
15	Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions. Journal of Theoretical Biology, 2006, 241, 193-204.	0.8	230
16	Using mathematical models to understand the AIDS epidemic. Mathematical Biosciences, 1988, 90, 415-473.	0.9	222
17	Natural discretizations for the divergence, gradient, and curl on logically rectangular grids. Computers and Mathematics With Applications, 1997, 33, 81-104.	1.4	202
18	Model Parameters and Outbreak Control for SARS. Emerging Infectious Diseases, 2004, 10, 1258-1263.	2.0	195

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19	Short-term Forecasts of the COVID-19 Epidemic in Guangdong and Zhejiang, China: February 13â€“23, 2020. Journal of Clinical Medicine, 2020, 9, 596.	1.0	174
20	Estimation of the reproduction number of dengue fever from spatial epidemic data. Mathematical Biosciences, 2007, 208, 571-589.	0.9	173
21	Numerical methods for tracking interfaces. Physica D: Nonlinear Phenomena, 1984, 12, 396-407.	1.3	172
22	Order and complexity in the Kuramoto-Sivashinsky model of weakly turbulent interfaces. Physica D: Nonlinear Phenomena, 1986, 23, 265-292.	1.3	171
23	The Numerical Solution of Diffusion Problems in Strongly Heterogeneous Non-isotropic Materials. Journal of Computational Physics, 1997, 132, 130-148.	1.9	171
24	Mixing patterns between age groups in social networks. Social Networks, 2007, 29, 539-554.	1.3	161
25	Effects of behavioral changes in a smallpox attack model. Mathematical Biosciences, 2005, 195, 228-251.	0.9	155
26	Scaling laws for the movement of people between locations in a large city. Physical Review E, 2003, 68, 066102.	0.8	151
27	Comparing dengue and chikungunya emergence and endemic transmission in A. aegypti and A. albopictus. Journal of Theoretical Biology, 2014, 356, 174-191.	0.8	139
28	Mimetic Discretizations for Maxwell's Equations. Journal of Computational Physics, 1999, 151, 881-909.	1.9	131
29	Forecasting the 2013â€“2014 Influenza Season Using Wikipedia. PLoS Computational Biology, 2015, 11, e1004239.	1.5	122
30	Nonnegativity-, monotonicity-, or convexity-preserving cubic and quintic Hermite interpolation. Mathematics of Computation, 1989, 52, 471-494.	1.1	120
31	Mathematical Modeling of the Effectiveness of Facemasks in Reducing the Spread of Novel Influenza A (H1N1). PLoS ONE, 2010, 5, e9018.	1.1	120
32	An Age-Structured Model of HIV Infection that Allows for Variations in the Production Rate of Viral Particles and the Death Rate of Productively Infected Cells. Mathematical Biosciences and Engineering, 2004, 1, 267-288.	1.0	120
33	A novel sub-epidemic modeling framework for short-term forecasting epidemic waves. BMC Medicine, 2019, 17, 164.	2.3	110
34	Adjoint operators for the natural discretizations of the divergence, gradient and curl on logically rectangular grids. Applied Numerical Mathematics, 1997, 25, 413-442.	1.2	104
35	An intuitive formulation for the reproductive number for the spread of diseases in heterogeneous populations. Mathematical Biosciences, 2000, 167, 65-86.	0.9	104
36	The Orthogonal Decomposition Theorems for Mimetic Finite Difference Methods. SIAM Journal on Numerical Analysis, 1999, 36, 788-818.	1.1	103

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37	A data-driven network model for the emerging COVID-19 epidemics in Wuhan, Toronto and Italy. Mathematical Biosciences, 2020, 326, 108391.	0.9	88
38	The Western Africa Ebola Virus Disease Epidemic Exhibits Both Global Exponential and Local Polynomial Growth Rates. PLOS Currents, 2015, 7, .	1.4	84
39	Modeling the impact of random screening and contact tracing in reducing the spread of HIV. Mathematical Biosciences, 2003, 181, 17-54.	0.9	81
40	Estimation of the reproductive number of the Spanish flu epidemic in Geneva, Switzerland. Vaccine, 2006, 24, 6747-6750.	1.7	80
41	New coronavirus outbreak: Framing questions for pandemic prevention. Science Translational Medicine, 2020, 12, .	5.8	79
42	Mathematical models: A key tool for outbreak response. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 18095-18096.	3.3	78
43	Compacton solutions in a class of generalized fifth-order Kortewegâ€“de Vries equations. Physical Review E, 2001, 64, 026608.	0.8	76
44	Principles of Mimetic Discretizations of Differential Operators. , 2006, , 89-119.		76
45	Epidemic Forecasting is Messier Than Weather Forecasting: The Role of Human Behavior and Internet Data Streams in Epidemic Forecast. Journal of Infectious Diseases, 2016, 214, S404-S408.	1.9	76
46	Risk behavior-based model of the cubic growth of acquired immunodeficiency syndrome in the United States.. Proceedings of the National Academy of Sciences of the United States of America, 1989, 86, 4793-4797.	3.3	68
47	Mathematical models of contact patterns between age groups for predicting the spread of infectious diseases. Mathematical Biosciences and Engineering, 2013, 10, 1475-1497.	1.0	68
48	Modelling vertical transmission in vector-borne diseases with applications to Rift Valley fever. Journal of Biological Dynamics, 2013, 7, 11-40.	0.8	67
49	Spatial and temporal dynamics of dengue fever in Peru: 1994â€“2006. Epidemiology and Infection, 2008, 136, 1667-1677.	1.0	65
50	The Black Box Multigrid Numerical Homogenization Algorithm. Journal of Computational Physics, 1998, 142, 80-108.	1.9	63
51	High order finite volume approximations of differential operators on nonuniform grids. Physica D: Nonlinear Phenomena, 1992, 60, 112-138.	1.3	61
52	Effective vaccination strategies for realistic social networks. Physica A: Statistical Mechanics and Its Applications, 2007, 386, 780-785.	1.2	58
53	A Spatial Model of Mosquito Host-Seeking Behavior. PLoS Computational Biology, 2012, 8, e1002500.	1.5	54
54	Digital Removal of Random Media Image Degradations by Solving the Diffusion Equation Backwards in Time. SIAM Journal on Numerical Analysis, 1978, 15, 344-367.	1.1	52

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55	Mimetic Finite Difference Methods for Maxwell's Equations and the Equations of Magnetic Diffusion. Progress in Electromagnetics Research, 2001, 32, 89-121.	1.6	50
56	Multidimensional Compactons. Physical Review Letters, 2007, 98, 024101.	2.9	50
57	Differential susceptibility epidemic models. Journal of Mathematical Biology, 2005, 50, 626-644.	0.8	49
58	Bounded and unbounded patterns of the Benney equation. Physics of Fluids A, Fluid Dynamics, 1992, 4, 1102-1104.	1.6	48
59	Approximation of boundary conditions for mimetic finite-difference methods. Computers and Mathematics With Applications, 1998, 36, 79-99.	1.4	47
60	Modeling the Effectiveness of Isolation Strategies in Preventing STD Epidemics. SIAM Journal on Applied Mathematics, 1998, 58, 912-925.	0.8	46
61	The reproductive number for an HIV model with differential infectivity and staged progression. Linear Algebra and Its Applications, 2005, 398, 101-116.	0.4	46
62	Two-sex mosquito model for the persistence of<i>Wolbachia</i>. Journal of Biological Dynamics, 2017, 11, 216-237.	0.8	46
63	Nonlinear waves and solitons in physical systems. Physica D: Nonlinear Phenomena, 1998, 123, 1-20.	1.3	45
64	Behavior Changes in SIS STD Models with Selective Mixing. SIAM Journal on Applied Mathematics, 1997, 57, 1082-1094.	0.8	43
65	Fourth- and sixth-order conservative finite difference approximations of the divergence and gradient. Applied Numerical Mathematics, 2001, 37, 171-187.	1.2	42
66	Periodic Solutions of a Logistic Difference Equation. SIAM Journal on Applied Mathematics, 1977, 32, 73-81.	0.8	41
67	Plasma diffusion across a magnetic field. Physica D: Nonlinear Phenomena, 1986, 20, 444-446.	1.3	41
68	Nonlinear pattern selection in a mechanical model for morphogenesis. Journal of Mathematical Biology, 1986, 24, 525-541.	0.8	39
69	Ebola: Mobility data. Science, 2014, 346, 433-433.	6.0	39
70	Lessons from Nigeria: the role of roads in the geo-temporal progression of avian influenza (H5N1) virus. Epidemiology and Infection, 2010, 138, 192-198.	1.0	38
71	The Effect of Social Mixing Patterns on the Spread of AIDS. Lecture Notes in Biomathematics, 1989, , 190-219.	0.3	38
72	The Initialization and Sensitivity of Multigroup Models for the Transmission of HIV. Journal of Theoretical Biology, 2001, 208, 227-249.	0.8	37

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73	Epidemiological Models for Mutating Pathogens. SIAM Journal on Applied Mathematics, 2004, 65, 1-23.	0.8	37
74	A network-patch methodology for adapting agent-based models for directly transmitted disease to mosquito-borne disease. Journal of Biological Dynamics, 2015, 9, 52-72.	0.8	37
75	Predicting scorpion sting incidence in an endemic region using climatological variables *. International Journal of Environmental Health Research, 2005, 15, 425-435.	1.3	36
76	Connecting Network Properties of Rapidly Disseminating Epizoonotics. PLoS ONE, 2012, 7, e39778.	1.1	35
77	The sensitivity and accuracy of fourth order finite-difference schemes on nonuniform grids in one dimension. Computers and Mathematics With Applications, 1995, 30, 41-55.	1.4	34
78	Comparing the effectiveness of different strains of Wolbachia for controlling chikungunya, dengue fever, and zika. PLoS Neglected Tropical Diseases, 2018, 12, e0006666.	1.3	34
79	Differential susceptibility and infectivity epidemic models. Mathematical Biosciences and Engineering, 2006, 3, 89-100.	1.0	34
80	Towards an Early Warning System for Forecasting Human West Nile Virus Incidence. PLOS Currents, 2014, 6, .	1.4	32
81	The role of spatial mixing in the spread of foot-and-mouth disease. Preventive Veterinary Medicine, 2006, 73, 297-314.	0.7	30
82	Humanâ€"Mosquito Contact: A Missing Link in Our Understanding of Mosquito-Borne Disease Transmission Dynamics. Annals of the Entomological Society of America, 2021, 114, 397-414.	1.3	30
83	Estimating the reproduction number from the initial phase of the Spanish flu pandemic waves in Geneva, Switzerland. Mathematical Biosciences and Engineering, 2007, 4, 457-470.	1.0	29
84	A mathematical model for the spread of west nile virus in migratory and resident birds. Mathematical Biosciences and Engineering, 2016, 13, 401-424.	1.0	29
85	Modelling HIV/AIDS and monkeypox co-infection. Applied Mathematics and Computation, 2012, 218, 9504-9518.	1.4	28
86	Sensitivity Analysis for Uncertainty Quantification in Mathematical Models. , 2009, , 195-247.		28
87	Threshold Conditions for the Spread of the HIV Infection in Age-structured Populations of Homosexual Men. Journal of Theoretical Biology, 1994, 166, 9-31.	0.8	27
88	The basic reproduction number R_0 and effectiveness of reactive interventions during dengue epidemics: The 2002 dengue outbreak in Easter Island, Chile. Mathematical Biosciences and Engineering, 2013, 10, 1455-1474.	1.0	26
89	Modeling the Transmission of <i>Wolbachia</i> in Mosquitoes for Controlling Mosquito-Borne Diseases. SIAM Journal on Applied Mathematics, 2018, 78, 826-852.	0.8	25
90	ACC Theta Improves Hippocampal Contextual Processing during Remote Recall. Cell Reports, 2019, 27, 2313-2327.e4.	2.9	25

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91	10. Modeling the Spread of Influenza among Cities. , 2003, , 211-236.		24
92	Modelling the transmission dynamics of acute haemorrhagic conjunctivitis: application to the 2003 outbreak in Mexico. Statistics in Medicine, 2006, 25, 1840-1857.	0.8	24
93	The convergence of mimetic discretization for rough grids. Computers and Mathematics With Applications, 2004, 47, 1565-1610.	1.4	22
94	Modified asymptotic approach to modeling a dilute-binary-alloy solidification front. Physical Review B, 1988, 37, 7603-7608.	1.1	21
95	Disease transmission models with biased partnership selection. Applied Numerical Mathematics, 1997, 24, 379-392.	1.2	21
96	The effect of inner products for discrete vector fields on the accuracy of mimetic finite difference methods. Computers and Mathematics With Applications, 2001, 42, 1527-1547.	1.4	20
97	An adaptive moving mesh method with static rezoning for partial differential equations. Computers and Mathematics With Applications, 2003, 46, 1511-1524.	1.4	20
98	Patch Dynamics for Multiscale Problems. Computing in Science and Engineering, 2005, 7, 47-53.	1.2	19
99	Infection-age structured epidemic models with behavior change or treatment. Journal of Biological Dynamics, 2007, 1, 109-131.	0.8	19
100	A Modified Haiâ€"Murphy Model of Uterine Smooth Muscle Contraction. Bulletin of Mathematical Biology, 2012, 74, 143-158.	0.9	18
101	Feedback-Based, System-Level Properties of Vertebrate-Microbial Interactions. PLoS ONE, 2013, 8, e53984.	1.1	18
102	Understanding the Impact of Face Mask Usage Through Epidemic Simulation of Large Social Networks. Intelligent Systems Reference Library, 2014, , 97-115.	1.0	17
103	Identifying coherent structures in nonlinear wave propagation. Chaos, 1991, 1, 77-94.	1.0	16
104	A New Age-Structured Multiscale Model of the Hepatitis C Virus Life-Cycle During Infection and Therapy With Direct-Acting Antiviral Agents. Frontiers in Microbiology, 2018, 9, 601.	1.5	16
105	Multi-model forecasts of the ongoing Ebola epidemic in the Democratic Republic of Congo, Marchâ€"October 2019. Journal of the Royal Society Interface, 2020, 17, 20200447.	1.5	16
106	Towards an Early Warning System for Forecasting Human West Nile Virus Incidence. PLOS Currents, 2014, 6, .	1.4	16
107	The numerical differentiation of discrete functions using polynomial interpolation methods. Applied Mathematics and Computation, 1982, 10-11, 487-506.	1.4	14
108	Pulsating multiplet solutions of quintic wave equations. Physica D: Nonlinear Phenomena, 1998, 123, 502-512.	1.3	14

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109	Identification of case clusters and counties with high infective connectivity in the 2001 epidemic of foot-and-mouth disease in Uruguay. American Journal of Veterinary Research, 2006, 67, 102-113.	0.3	13
110	Analysis of nonlinear mass and energy diffusion. Physical Review A, 1985, 32, 2370-2373.	1.0	12
111	Human-mediated Foot-and-mouth Disease Epidemic Dispersal: Disease and Vector Clusters. Zoonoses and Public Health, 2006, 53, 1-10.	1.4	12
112	Disease properties, geography, and mitigation strategies in a simulation spread of rinderpest across the United States. Veterinary Research, 2011, 42, 55.	1.1	12
113	An Algorithm for Aligning a Quadrilateral Grid with Internal Boundaries. Journal of Computational Physics, 2000, 163, 133-149.	1.9	11
114	Coupling Vector-host Dynamics with Weather Geography and Mitigation Measures to Model Rift Valley Fever in Africa. Mathematical Modelling of Natural Phenomena, 2014, 9, 161-177.	0.9	11
115	Mimetic finite difference operators for second-order tensors on unstructured grids. Computers and Mathematics With Applications, 2002, 44, 157-173.	1.4	10
116	Generating bipartite networks with a prescribed joint degree distribution. Journal of Complex Networks, 2017, 5, 839-857.	1.1	10
117	Dynamic rezone methods for partial differential equations in one space dimension. Applied Numerical Mathematics, 1989, 5, 435-450.	1.2	8
118	Optimizing human activity patterns using global sensitivity analysis. Computational and Mathematical Organization Theory, 2014, 20, 394-416.	1.5	8
119	The Biosurveillance Analytics Resource Directory (BARD): Facilitating the Use of Epidemiological Models for Infectious Disease Surveillance. PLoS ONE, 2016, 11, e0146600.	1.1	8
120	Epidemic models with differential susceptibility and staged progression and their dynamics. Mathematical Biosciences and Engineering, 2009, 6, 321-332.	1.0	8
121	Numerical Methods for Nonlinear Differential Equations. North-Holland Mathematics Studies, 1982, , 91-107.	0.2	7
122	Mimetic Finite Difference Methods for Maxwell's Equations and the Equations of Magnetic Diffusion - Abstract. Journal of Electromagnetic Waves and Applications, 2001, 15, 107-108.	1.0	7
123	The origin of acquired immune deficiency syndrome: Darwinian or Lamarckian?. Philosophical Transactions of the Royal Society B: Biological Sciences, 2001, 356, 877-887.	1.8	7
124	Constructing Rigorous and Broad Biosurveillance Networks for Detecting Emerging Zoonotic Outbreaks. PLoS ONE, 2015, 10, e0124037.	1.1	7
125	Coherence and Chaos in the Kuramoto-Velarde Equation. , 1987, , 89-111.		6
126	On the quasi-continuous approximation of the Toda lattice. Physics Letters, Section A: General, Atomic and Solid State Physics, 1987, 124, 287-289.	0.9	6

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127	Stability, Relaxation, and Oscillation of Biodegradation Fronts. SIAM Journal on Applied Mathematics, 2000, 61, 472-505.	0.8	6
128	Analytical effective coefficient and a first-order approximation for linear flow through block permeability inclusions. Computers and Mathematics With Applications, 2008, 55, 2118-2133.	1.4	6
129	A risk-based model for predicting the impact of using condoms on the spread of sexually transmitted infections. Infectious Disease Modelling, 2017, 2, 100-112.	1.2	6
130	Improving the damage accumulation in a biomechanical bone remodelling model. Computer Methods in Biomechanics and Biomedical Engineering, 2009, 12, 341-352.	0.9	5
131	Modeling the influence of polls on elections: a population dynamics approach. Public Choice, 2009, 140, 395-420.	1.0	5
132	Generating a Hierarchy of Reduced Models for a System of Differential Equations Modeling the Spread of Wolbachia in Mosquitoes. SIAM Journal on Applied Mathematics, 2019, 79, 1675-1699.	0.8	5
133	An Investigation of Humanâ€“Mosquito Contact Using Surveys and Its Application in Assessing Dengue Viral Transmission Risk. Journal of Medical Entomology, 2020, 57, 1942-1954.	0.9	4
134	MOVING MESH METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS. , 1988, , 129-153.		4
135	Correction for Lofgren et al., Opinion: Mathematical models: A key tool for outbreak response. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, .	3.3	3
136	The Operator Approach to Problems of Stability and Convergence of Solutions of Difference Equations and the Convergence of Various Iteration Procedures. Mathematics of Computation, 1960, 14, 78.	1.1	2
137	A Multi-risk Model for Understanding the Spread of Chlamydia. , 2016, , 249-268.		2
138	Mask-Ematics: Modeling the Effects of Masks in COVID-19 Transmission in High-Risk Environments. Epidemiologia, 2021, 2, 207-226.	1.1	2
139	Staged progression epidemic models for the transmission of invasive nontyphoidal <i>Salmonella</i> (iNTS) with treatment. Mathematical Biosciences and Engineering, 2021, 18, 1529-1549.	1.0	2
140	Biased preference models for partnership formation. , 1996, , 3137-3148.		2
141	A divide-and-conquer algorithm for grid generation. Applied Numerical Mathematics, 1994, 14, 125-134.	1.2	1
142	A strategy for detecting extreme eigenvalues bounding gaps in the discrete spectrum of self-adjoint operators. Computers and Mathematics With Applications, 2007, 53, 1271-1283.	1.4	1
143	Comment on paper â€œMulti-strategy ensemble evolutionary algorithm for dynamic multi-objective optimizationâ€• by Wang and Li. Memetic Computing, 2010, 2, 161-162.	2.7	1
144	Learning from the past to prepare for the future: Modeling the impact of hypothetical interventions during the great influenza pandemic of 1918. Chance, 2008, 21, 55-60.	0.1	0