Sebastian Reich

List of Publications by Year
in descending order

117 papers	4,430 citations	117625 34 h-index	133252 59 g-index
129 all docs	129 docs citations	129 times ranked	2175 citing authors

#	Article	IF	Citations
1	Multi-symplectic integrators: numerical schemes for Hamiltonian PDEs that conserve symplecticity. Physics Letters, Section A: General, Atomic and Solid State Physics, 2001, 284, 184-193.	2.1	370
2	Multi-Symplectic Runge–Kutta Collocation Methods for Hamiltonian Wave Equations. Journal of Computational Physics, 2000, 157, 473-499.	3.8	262
3	Backward Error Analysis for Numerical Integrators. SIAM Journal on Numerical Analysis, 1999, 36, 1549-1570.	2.3	202
4	Numerical methods for Hamiltonian PDEs. Journal of Physics A, 2006, 39, 5287-5320.	1.6	178
5	Longer time steps for molecular dynamics. Journal of Chemical Physics, 1999, 110, 9853-9864.	3.0	164
6	Particle filters for high‐dimensional geoscience applications: A review. Quarterly Journal of the Royal Meteorological Society, 2019, 145, 2335-2365.	2.7	128
7	Stabilization of DAEs and invariant manifolds. Numerische Mathematik, 1994, 67, 131-149.	1.9	117
8	Backward error analysis for multi-symplectic integration methods. Numerische Mathematik, 2003, 95, 625-652.	1.9	114
9	Sequential Data Assimilation of the Stochastic SEIR Epidemic Model for Regional COVID-19 Dynamics. Bulletin of Mathematical Biology, 2021, 83, 1.	1.9	113
10	Stabilization of Constrained Mechanical Systems with DAEs and Invariant Manifolds. Mechanics Based Design of Structures and Machines, 1995, 23, 135-157.	0.6	103
11	Multi-symplectic spectral discretizations for the Zakharov–Kuznetsov and shallow water equations. Physica D: Nonlinear Phenomena, 2001, 152-153, 491-504.	2.8	98
12	A Nonparametric Ensemble Transform Method for Bayesian Inference. SIAM Journal of Scientific Computing, 2013, 35, A2013-A2024.	2.8	97
13	A dynamical systems framework for intermittent data assimilation. BIT Numerical Mathematics, 2011, 51, 235-249.	2.0	68
14	Multi-symplectic integration methods for Hamiltonian PDEs. Future Generation Computer Systems, 2003, 19, 395-402.	7.5	66
15	Momentum conserving symplectic integrators. Physica D: Nonlinear Phenomena, 1994, 76, 375-383.	2.8	63
16	Integration Methods for Molecular Dynamics. The IMA Volumes in Mathematics and Its Applications, 1996, , 161-185.	0.5	58
17	An ensemble Kalman-Bucy filter for continuous data assimilation. Meteorologische Zeitschrift, 2012, 21, 213-219.	1.0	57
18	On an existence and uniqueness theory for nonlinear differential-algebraic equations. Circuits, Systems, and Signal Processing, 1991, 10, 343-359.	2.0	53

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19	On a geometrical interpretation of differential-algebraic equations. Circuits, Systems, and Signal Processing, 1990, 9, 367-382.	2.0	52
20	LBB stability of a mixed Galerkin finite element pair for fluid flow simulations. Journal of Computational Physics, 2009, 228, 336-348.	3.8	52
21	Symplectic Integration of Constrained Hamiltonian Systems by Composition Methods. SIAM Journal on Numerical Analysis, 1996, 33, 475-491.	2.3	50
22	A mollified ensemble Kalman filter. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 1636-1643.	2.7	50
23	Nonlinear Data Assimilation. Frontiers in Applied Dynamical Systems: Reviews and Tutorials, 2015, , .	0.5	50
24	GSHMC: An efficient method for molecular simulation. Journal of Computational Physics, 2008, 227, 4934-4954.	3.8	49
25	Computing Lyapunov exponents on a Stiefel manifold. Physica D: Nonlinear Phenomena, 2001, 156, 219-238.	2.8	47
26	Smoothed dynamics of highly oscillatory Hamiltonian systems. Physica D: Nonlinear Phenomena, 1995, 89, 28-42.	2.8	46
27	A comparison of generalized hybrid Monte Carlo methods with and without momentum flip. Journal of Computational Physics, 2009, 228, 2256-2265.	3.8	43
28	On the local qualitative behavior of differential-algebraic equations. Circuits, Systems, and Signal Processing, 1995, 14, 427-443.	2.0	42
29	Linear PDEs and Numerical Methods That Preserve a Multisymplectic Conservation Law. SIAM Journal of Scientific Computing, 2006, 28, 260-277.	2.8	42
30	Supervised learning from noisy observations: Combining machine-learning techniques with data assimilation. Physica D: Nonlinear Phenomena, 2021, 423, 132911.	2.8	42
31	Long-Time Stability and Accuracy of the Ensemble Kalman--Bucy Filter for Fully Observed Processes and Small Measurement Noise. SIAM Journal on Applied Dynamical Systems, 2018, 17, 1152-1181.	1.6	40
32	Can GNSS Reflectometry Detect Precipitation Over Oceans?. Geophysical Research Letters, 2018, 45, 12,585.	4.0	38
33	Data assimilation: The Schrödinger perspective. Acta Numerica, 2019, 28, 635-711.	10.7	38
34	Explicit variable step-size and time-reversible integration. Applied Numerical Mathematics, 2001, 39, 367-377.	2.1	35
35	A GNSS-R Geophysical Model Function: Machine Learning for Wind Speed Retrievals. IEEE Geoscience and Remote Sensing Letters, 2020, 17, 1333-1337.	3.1	33
36	A Reversible Averaging Integrator for Multiple Time-Scale Dynamics. Journal of Computational Physics, 2001, 171, 95-114.	3.8	32

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37	Conservation Properties of Smoothed Particle Hydrodynamics Applied to the Shallow Water Equation. BIT Numerical Mathematics, 2003, 43, 41-55.	2.0	31
38	Affine Invariant Interacting Langevin Dynamics for Bayesian Inference. SIAM Journal on Applied Dynamical Systems, 2020, 19, 1633-1658.	1.6	30
39	A Hybrid Ensemble Transform Particle Filter for Nonlinear and Spatially Extended Dynamical Systems. SIAM-ASA Journal on Uncertainty Quantification, 2016, 4, 592-608.	2.0	29
40	The Midpoint Scheme and Variants for Hamiltonian Systems: Advantages and Pitfalls. SIAM Journal of Scientific Computing, 1999, 21, 1045-1065.	2.8	28
41	Vorticity and symplecticity in Lagrangian fluid dynamics. Journal of Physics A, 2005, 38, 1403-1418.	1.6	28
42	Elastic molecular dynamics with self-consistent flexible constraints. Journal of Chemical Physics, 2000, 112, 7919-7929.	3.0	27
43	A Gaussianâ€mixture ensemble transform filter. Quarterly Journal of the Royal Meteorological Society, 2012, 138, 222-233.	2.7	27
44	Kalman Filter and Its Modern Extensions for the Continuous-Time Nonlinear Filtering Problem. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2018, 140, .	1.6	26
45	Likelihood-based parameter estimation and comparison of dynamical cognitive models.. Psychological Review, 2017, 124, 505-524.	3.8	26
46	Multiple Time Scales in Classical and Quantumâ€"Classical Molecular Dynamics. Journal of Computational Physics, 1999, 151, 49-73.	3.8	22
47	Improved Sampling for Simulations of Interfacial Membrane Proteins:â€‰ Application of Generalized Shadow Hybrid Monte Carlo to a Peptide Toxin/Bilayer System. Journal of Physical Chemistry B, 2008, 112, 5710-5717.	2.6	22
48	Ensemble transform Kalmanâ€"Bucy filters. Quarterly Journal of the Royal Meteorological Society, 2014, 140, 995-1004.	2.7	22
49	TDS-1 GNSS Reflectometry: Development and Validation of Forward Scattering Winds. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2018, 11, 4534-4541.	4.9	21
50	Smoothed Langevin dynamics of highly oscillatory systems. Physica D: Nonlinear Phenomena, 2000, 138, 210-224.	2.8	19
51	Adiabatic Invariance and Applications: From Molecular Dynamics to Numerical Weather Prediction. BIT Numerical Mathematics, 2004, 44, 439-455.	2.0	19
52	A localization technique for ensemble Kalman filters. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 701-707.	2.7	19
53	Combining machine learning and data assimilation to forecast dynamical systems from noisy partial observations. Chaos, 2021, 31, 101103.	2.5	19
54	Preservation of adiabatic invariants under symplectic discretization. Applied Numerical Mathematics, 1999, 29, 45-55.	2.1	18

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55	On higher-order semi-explicit symplectic partitioned Runge-Kutta methods for constrained Hamiltonian systems. Numerische Mathematik, 1997, 76, 231-247.	1.9	17
56	Assimilation of pseudo-tree-ring-width observations into anÂatmospheric general circulation model. Climate of the Past, 2017, 13, 545-557.	3.4	17
57	On Some Difficulties in Integrating Highly Oscillatory Hamiltonian Systems. Lecture Notes in Computational Science and Engineering, 1999, , 281-296.	0.3	17
58	Finite Volume Methods for Multi-Symplectic PDES. BIT Numerical Mathematics, 2000, 40, 559-582.	2.0	16
59	Semigeostrophic Particle Motion and Exponentially Accurate Normal forms. Multiscale Modeling and Simulation, 2006, 5, 476-496.	1.6	16
60	Enhancing energy conserving methods. BIT Numerical Mathematics, 1996, 36, 122-134.	2.0	15
61	Second-order Accurate Ensemble Transform Particle Filters. SIAM Journal of Scientific Computing, 2017, 39, A1834-A1850.	2.8	15
62	Ensemble propagation and continuous matrix factorization algorithms. Quarterly Journal of the Royal Meteorological Society, 2009, 135, 1560-1572.	2.7	14
63	Evaluating Impact of Rain Attenuation on Space-borne GNSS Reflectometry Wind Speeds. Remote Sensing, 2019, 11, 1048.	4.0	14
64	Fokker--Planck Particle Systems for Bayesian Inference: Computational Approaches. SIAM-ASA Journal on Uncertainty Quantification, 2021, 9, 446-482.	2.0	14
65	Spectral Convergence of Diffusion Maps: Improved Error Bounds and an Alternative Normalization. SIAM Journal on Numerical Analysis, 2021, 59, 1687-1734.	2.3	14
66	Hamiltonian Particle-Mesh Method for Two-Layer Shallow-Water Equations Subject to the Rigid-Lid Approximation. SIAM Journal on Applied Dynamical Systems, 2004, 3, 69-83.	1.6	13
67	Multiple-time-stepping generalized hybrid Monte Carlo methods. Journal of Computational Physics, 2015, 280, 1-20.	3.8	13
68	A Time-Reversible Variable-Stepsize Integrator for Constrained Dynamics. SIAM Journal of Scientific Computing, 1999, 21, 1027-1044.	2.8	12
69	An explicit and conservative remapping strategy for semi-Lagrangian advection. Atmospheric Science Letters, 2007, 8, 58-63.	1.9	12
70	Phase Space Volume Conservation under Space and Time Discretization Schemes for the Shallow-Water Equations. Monthly Weather Review, 2010, 138, 4229-4236.	1.4	11
71	Controlling Overestimation of Error Covariance in Ensemble Kalman Filters with Sparse Observations: A Variance-Limiting Kalman Filter. Monthly Weather Review, 2011, 139, 2650-2667.	1.4	11
72	Towards the assimilation of tree-ring-width records using ensemble Kalman filtering techniques. Climate Dynamics, 2016, 46, 1909-1920.	3.8	11

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73	Symplectic Multiple-Time-Stepping Integrators for Quantum-Classical Molecular Dynamics. Lecture Notes in Computational Science and Engineering, 1999, , 412-420.	0.3	11
74	McKean–Vlasov SDEs in Nonlinear Filtering. SIAM Journal on Control and Optimization, 2021, 59, 4188-4215.	2.1	11
75	Torsion dynamics of molecular systems. Physical Review E, 1996, 53, 4176-4181.	2.1	10
76	Linearly implicit time stepping methods for numerical weather prediction. BIT Numerical Mathematics, 2006, 46, 607-616.	2.0	10
77	Meso-GSHMC: A stochastic algorithm for meso-scale constant temperature simulations. Procedia Computer Science, 2011, 4, 1353-1362.	2.0	10
78	State and Parameter Estimation from Observed Signal Increments. Entropy, 2019, 21, 505.	2.2	10
79	Bayesian parameter estimation for the SWIFT model of eye-movement control during reading. Journal of Mathematical Psychology, 2020, 95, 102313.	1.8	10
80	A mathematical model of local and global attention in natural scene viewing. PLoS Computational Biology, 2020, 16, e1007880.	3.2	10
81	Symplectic Time‐Stepping for Particle Methods. GAMM Mitteilungen, 2004, 27, 9-24.	5.5	8
82	An improved regularization for time-staggered discretization and its link to the semi-implicit method. Atmospheric Science Letters, 2006, 7, 21-25.	1.9	8
83	A Metropolis adjusted Nosé-Hoover thermostat. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 743-755.	1.9	8
84	Modified potential energy functions for constrained molecular dynamics. Numerical Algorithms, 1998, 19, 213-221.	1.9	7
85	Interacting Particle Solutions of Fokker–Planck Equations Through Gradient–Log–Density Estimation. Entropy, 2020, 22, 802.	2.2	7
86	GP-ETAS: semiparametric Bayesian inference for the spatio-temporal epidemic type aftershock sequence model. Statistics and Computing, 2022, 32, 1.	1.5	7
87	Impact of the Mesoscale Range on Error Growth and the Limits to Atmospheric Predictability. Journals of the Atmospheric Sciences, 2020, 77, 3769-3779.	1.7	6
88	Atmospheric Predictability: Revisiting the Inherent Finite-Time Barrier. Journals of the Atmospheric Sciences, 2019, 76, 3883-3892.	1.7	5
89	A Particle-Mesh Method for the Shallow Water Equations Near Geostrophic Balance. Journal of Computational Physics, 2002, 180, 407-426.	3.8	4
90	Large-scale turbulence modelling via α-regularisation for atmospheric simulations. Journal of Turbulence, 2015, 16, 367-391.	1.4	4

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91	Discrete gradients for computational Bayesian inference. Journal of Computational Dynamics, 2019, 6, 385-400.	1.1	4
92	Affine-Invariant Ensemble Transform Methods for Logistic Regression. Foundations of Computational Mathematics, 0, , 1.	2.5	4
93	Data assimilation in dynamical cognitive science. Trends in Cognitive Sciences, 2022, 26, 99-102.	7.8	4
94	Randomized maximum likelihood based posterior sampling. Computational Geosciences, 2022, 26, 217-239.	2.4	4
95	Semi-implicit methods, nonlinear balance, and regularized equations. Atmospheric Science Letters, 2007, 8, 1-6.	1.9	3
96	Evaluation of three spatial discretization schemes with the Galewsky *et al*. test. Atmospheric Science Letters, 2010, 11, 223-228.	1.9	3
97	Ensemble Transform Algorithms for Nonlinear Smoothing Problems. SIAM Journal of Scientific Computing, 2020, 42, A87-A114.	2.8	3
98	Balanced data assimilation for highly oscillatory mechanical systems. Communications in Applied Mathematics and Computational Science, 2021, 16, 119-154.	1.8	3
99	A Test Set for Molecular Dynamics Algorithms. Lecture Notes in Computational Science and Engineering, 2002, , 73-103.	0.3	3
100	Analysis of a regularized, time-staggered discretization applied to a vertical slice model. Atmospheric Science Letters, 2006, 7, 86-92.	1.9	2
101	Hydrostatic Hamiltonian particle–mesh (HPM) methods for atmospheric modelling. Quarterly Journal of the Royal Meteorological Society, 2012, 138, 1388-1399.	2.7	2
102	On the consistency of ensemble transform filter formulations. Journal of Computational Dynamics, 2014, 1, 177-189.	1.1	2
103	Convergence Tests for Transdimensional Markov Chains in Geoscience Imaging. Mathematical Geosciences, 2020, 52, 651-668.	2.4	2
104	Forecast verification: Relating deterministic and probabilistic metrics. Quarterly Journal of the Royal Meteorological Society, 2021, 147, 3124-3134.	2.7	2
105	Constrained mechanical systems. , 2005, , 169-198.		1
106	Molecular dynamics. , 2005, , 287-315.		1
107	A multigrid solver for modeling complex interseismic stress fields. Computers and Geosciences, 2011, 37, 1075-1082.	4.2	1
108	Hamiltonian mechanics. , 2005, , 36-69.		0

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109	Geometric integrators. , 2005, , 70-104.		0
110	The modified equations. , 2005, , 105-141.		0
111	Adaptive geometric integrators. , 2005, , 234-256.		0
112	Highly oscillatory problems. , 2005, , 257-286.		0
113	Hamiltonian PDEs. , 2005, , 316-356.		0
114	Rigid body dynamics. , 2005, , 199-233.		0
115	Higher-order methods. , 2005, , 142-168.		0
116	Explicit symplectic integration of rod dynamics. , 1997, , 368-368.		0
117	Datenassimilation: Die nahtlose Verschmelzung von Daten und Modellen. Mitteilungen Der Deutschen Mathematiker-Vereinigung, 2022, 30, 108-112.	0.0	0