

# Sebastian Reich

## List of Publications by Citations

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119  
papers

3,384  
citations

30  
h-index

55  
g-index

129  
ext. papers

3,833  
ext. citations

3.1  
avg, IF

5.97  
L-index

#	Paper	IF	Citations
119	Multi-symplectic integrators: numerical schemes for Hamiltonian PDEs that conserve symplecticity. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , <b>2001</b> , 284, 184-193	2.3	323
118	Multi-Symplectic Runge-Kutta Collocation Methods for Hamiltonian Wave Equations. <i>Journal of Computational Physics</i> , <b>2000</b> , 157, 473-499	4.1	232
117	Simulating Hamiltonian Dynamics <b>2005</b> ,		193
116	Backward Error Analysis for Numerical Integrators. <i>SIAM Journal on Numerical Analysis</i> , <b>1999</b> , 36, 1549-1570	15.7	179
115	Longer time steps for molecular dynamics. <i>Journal of Chemical Physics</i> , <b>1999</b> , 110, 9853-9864	3.9	153
114	Numerical methods for Hamiltonian PDEs. <i>Journal of Physics A</i> , <b>2006</b> , 39, 5287-5320		150
113	Backward error analysis for multi-symplectic integration methods. <i>Numerische Mathematik</i> , <b>2003</b> , 95, 625-652	2.2	100
112	Stabilization of DAEs and invariant manifolds. <i>Numerische Mathematik</i> , <b>1994</b> , 67, 131-149	2.2	97
111	Probabilistic Forecasting and Bayesian Data Assimilation <b>2015</b> ,		95
110	Multi-symplectic spectral discretizations for the Zakharov-Kuznetsov and shallow water equations. <i>Physica D: Nonlinear Phenomena</i> , <b>2001</b> , 152-153, 491-504	3.3	81
109	Stabilization of Constrained Mechanical Systems with DAEs and Invariant Manifolds. <i>Mechanics Based Design of Structures and Machines</i> , <b>1995</b> , 23, 135-157		76
108	A Nonparametric Ensemble Transform Method for Bayesian Inference. <i>SIAM Journal of Scientific Computing</i> , <b>2013</b> , 35, A2013-A2024	2.6	64
107	Multi-symplectic integration methods for Hamiltonian PDEs. <i>Future Generation Computer Systems</i> , <b>2003</b> , 19, 395-402	7.5	61
106	Momentum conserving symplectic integrators. <i>Physica D: Nonlinear Phenomena</i> , <b>1994</b> , 76, 375-383	3.3	58
105	Particle filters for high-dimensional geoscience applications: A review. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2019</b> , 145, 2335-2365	6.4	55
104	A dynamical systems framework for intermittent data assimilation. <i>BIT Numerical Mathematics</i> , <b>2011</b> , 51, 235-249	1.7	52
103	LBB stability of a mixed Galerkin finite element pair for fluid flow simulations. <i>Journal of Computational Physics</i> , <b>2009</b> , 228, 336-348	4.1	51

102	Smoothed dynamics of highly oscillatory Hamiltonian systems. <i>Physica D: Nonlinear Phenomena</i> , <b>1995</b> , 89, 28-42	3.3	44
101	An ensemble Kalman-Bucy filter for continuous data assimilation. <i>Meteorologische Zeitschrift</i> , <b>2012</b> , 21, 213-219	3.1	43
100	On a geometrical interpretation of differential-algebraic equations. <i>Circuits, Systems, and Signal Processing</i> , <b>1990</b> , 9, 367-382	2.2	43
99	Symplectic Integration of Constrained Hamiltonian Systems by Composition Methods. <i>SIAM Journal on Numerical Analysis</i> , <b>1996</b> , 33, 475-491	2.4	42
98	A mollified ensemble Kalman filter. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2010</b> , 136, 1636-1643	4.1	41
97	GSHMC: An efficient method for molecular simulation. <i>Journal of Computational Physics</i> , <b>2008</b> , 227, 4934-4954	4.0	40
96	Linear PDEs and Numerical Methods That Preserve a Multisymplectic Conservation Law. <i>SIAM Journal of Scientific Computing</i> , <b>2006</b> , 28, 260-277	2.6	40
95	A comparison of generalized hybrid Monte Carlo methods with and without momentum flip. <i>Journal of Computational Physics</i> , <b>2009</b> , 228, 2256-2265	4.1	39
94	Integration Methods for Molecular Dynamics. <i>The IMA Volumes in Mathematics and Its Applications</i> , <b>1996</b> , 161-185	0.5	38
93	Computing Lyapunov exponents on a Stiefel manifold. <i>Physica D: Nonlinear Phenomena</i> , <b>2001</b> , 156, 219-233	3.7	37
92	On an existence and uniqueness theory for nonlinear differential-algebraic equations. <i>Circuits, Systems, and Signal Processing</i> , <b>1991</b> , 10, 343-359	2.2	37
91	On the local qualitative behavior of differential-algebraic equations. <i>Circuits, Systems, and Signal Processing</i> , <b>1995</b> , 14, 427-443	2.2	36
90	Nonlinear Data Assimilation. <i>Frontiers in Applied Dynamical Systems: Reviews and Tutorials</i> , <b>2015</b> ,	0.5	32
89	Long-Time Stability and Accuracy of the Ensemble Kalman-Bucy Filter for Fully Observed Processes and Small Measurement Noise. <i>SIAM Journal on Applied Dynamical Systems</i> , <b>2018</b> , 17, 1152-1181	2.8	30
88	Conservation Properties of Smoothed Particle Hydrodynamics Applied to the Shallow Water Equation. <i>BIT Numerical Mathematics</i> , <b>2003</b> , 43, 41-55	1.7	30
87	Explicit variable step-size and time-reversible integration. <i>Applied Numerical Mathematics</i> , <b>2001</b> , 39, 367-377	3.7	30
86	A Reversible Averaging Integrator for Multiple Time-Scale Dynamics. <i>Journal of Computational Physics</i> , <b>2001</b> , 171, 95-114	4.1	28
85	Sequential Data Assimilation of the Stochastic SEIR Epidemic Model for Regional COVID-19 Dynamics. <i>Bulletin of Mathematical Biology</i> , <b>2020</b> , 83, 1	2.1	27

84	Elastic molecular dynamics with self-consistent flexible constraints. <i>Journal of Chemical Physics</i> , <b>2000</b> , 112, 7919-7929	3.9	25
83	A Hybrid Ensemble Transform Particle Filter for Nonlinear and Spatially Extended Dynamical Systems. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , <b>2016</b> , 4, 592-608	1.8	24
82	Vorticity and symplecticity in Lagrangian fluid dynamics. <i>Journal of Physics A</i> , <b>2005</b> , 38, 1403-1418		24
81	A Gaussian-mixture ensemble transform filter. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2012</b> , 138, 222-233	6.4	23
80	The Midpoint Scheme and Variants for Hamiltonian Systems: Advantages and Pitfalls. <i>SIAM Journal of Scientific Computing</i> , <b>1999</b> , 21, 1045-1065	2.6	22
79	Can GNSS Reflectometry Detect Precipitation Over Oceans?. <i>Geophysical Research Letters</i> , <b>2018</b> , 45, 12,515-12,522	4.9	21
78	Improved sampling for simulations of interfacial membrane proteins: application of generalized shadow hybrid Monte Carlo to a peptide toxin/bilayer system. <i>Journal of Physical Chemistry B</i> , <b>2008</b> , 112, 5710-7	3.4	20
77	Data assimilation: The Schrödinger perspective. <i>Acta Numerica</i> , <b>2019</b> , 28, 635-711	15.1	19
76	Ensemble transform Kalman-Bucy filters. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2014</b> , 140, 995-1004	6.4	19
75	On higher-order semi-explicit symplectic partitioned Runge-Kutta methods for constrained Hamiltonian systems. <i>Numerische Mathematik</i> , <b>1997</b> , 76, 231-247	2.2	16
74	Adiabatic Invariance and Applications: From Molecular Dynamics to Numerical Weather Prediction. <i>BIT Numerical Mathematics</i> , <b>2004</b> , 44, 439-455	1.7	16
73	Smoothed Langevin dynamics of highly oscillatory systems. <i>Physica D: Nonlinear Phenomena</i> , <b>2000</b> , 138, 210-224	3.3	16
72	Preservation of adiabatic invariants under symplectic discretization. <i>Applied Numerical Mathematics</i> , <b>1999</b> , 29, 45-55	2.5	16
71	Multiple Time Scales in Classical and Quantum-Classical Molecular Dynamics. <i>Journal of Computational Physics</i> , <b>1999</b> , 151, 49-73	4.1	16
70	Finite Volume Methods for Multi-Symplectic PDES. <i>BIT Numerical Mathematics</i> , <b>2000</b> , 40, 559-582	1.7	15
69	Likelihood-based parameter estimation and comparison of dynamical cognitive models. <i>Psychological Review</i> , <b>2017</b> , 124, 505-524	6.3	15
68	A GNSS-R Geophysical Model Function: Machine Learning for Wind Speed Retrievals. <i>IEEE Geoscience and Remote Sensing Letters</i> , <b>2020</b> , 17, 1333-1337	4.1	15
67	Affine Invariant Interacting Langevin Dynamics for Bayesian Inference. <i>SIAM Journal on Applied Dynamical Systems</i> , <b>2020</b> , 19, 1633-1658	2.8	15

66	Ensemble propagation and continuous matrix factorization algorithms. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2009</b> , 135, 1560-1572	6.4	14
65	Semigeostrophic Particle Motion and Exponentially Accurate Normal forms. <i>Multiscale Modeling and Simulation</i> , <b>2006</b> , 5, 476-496	1.8	14
64	Kalman Filter and Its Modern Extensions for the Continuous-Time Nonlinear Filtering Problem. <i>Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME</i> , <b>2018</b> , 140,	1.6	14
63	TDS-1 GNSS Reflectometry: Development and Validation of Forward Scattering Winds. <i>IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i> , <b>2018</b> , 11, 4534-4541	4.7	13
62	A localization technique for ensemble Kalman filters. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2010</b> , 136, n/a-n/a	6.4	12
61	Hamiltonian Particle-Mesh Method for Two-Layer Shallow-Water Equations Subject to the Rigid-Lid Approximation. <i>SIAM Journal on Applied Dynamical Systems</i> , <b>2004</b> , 3, 69-83	2.8	12
60	On Some Difficulties in Integrating Highly Oscillatory Hamiltonian Systems. <i>Lecture Notes in Computational Science and Engineering</i> , <b>1999</b> , 281-296	0.3	12
59	Multiple-time-stepping generalized hybrid Monte Carlo methods. <i>Journal of Computational Physics</i> , <b>2015</b> , 280, 1-20	4.1	11
58	Assimilation of pseudo-tree-ring-width observations into an atmospheric general circulation model. <i>Climate of the Past</i> , <b>2017</b> , 13, 545-557	3.9	11
57	Second-order Accurate Ensemble Transform Particle Filters. <i>SIAM Journal of Scientific Computing</i> , <b>2017</b> , 39, A1834-A1850	2.6	11
56	Phase Space Volume Conservation under Space and Time Discretization Schemes for the Shallow-Water Equations. <i>Monthly Weather Review</i> , <b>2010</b> , 138, 4229-4236	2.4	11
55	Controlling Overestimation of Error Covariance in Ensemble Kalman Filters with Sparse Observations: A Variance-Limiting Kalman Filter. <i>Monthly Weather Review</i> , <b>2011</b> , 139, 2650-2667	2.4	11
54	A Time-Reversible Variable-Stepsize Integrator for Constrained Dynamics. <i>SIAM Journal of Scientific Computing</i> , <b>1999</b> , 21, 1027-1044	2.6	11
53	Enhancing energy conserving methods. <i>BIT Numerical Mathematics</i> , <b>1996</b> , 36, 122-134	1.7	11
52	Supervised learning from noisy observations: Combining machine-learning techniques with data assimilation. <i>Physica D: Nonlinear Phenomena</i> , <b>2021</b> , 423, 132911	3.3	11
51	An explicit and conservative remapping strategy for semi-Lagrangian advection. <i>Atmospheric Science Letters</i> , <b>2007</b> , 8, 58-63	2.4	10
50	Fokker-Planck Particle Systems for Bayesian Inference: Computational Approaches. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , <b>2021</b> , 9, 446-482	1.8	10
49	Evaluating Impact of Rain Attenuation on Space-borne GNSS Reflectometry Wind Speeds. <i>Remote Sensing</i> , <b>2019</b> , 11, 1048	5	9

48	Towards the assimilation of tree-ring-width records using ensemble Kalman filtering techniques. <i>Climate Dynamics</i> , <b>2016</b> , 46, 1909-1920	4.2	9
47	Linearly implicit time stepping methods for numerical weather prediction. <i>BIT Numerical Mathematics</i> , <b>2006</b> , 46, 607-616	1.7	9
46	Torsion dynamics of molecular systems. <i>Physical Review E</i> , <b>1996</b> , 53, 4176-4181	2.4	9
45	Symplectic Multiple-Time-Stepping Integrators for Quantum-Classical Molecular Dynamics. <i>Lecture Notes in Computational Science and Engineering</i> , <b>1999</b> , 412-420	0.3	9
44	Sequential data assimilation of the stochastic SEIR epidemic model for regional COVID-19 dynamics		9
43	Spectral Convergence of Diffusion Maps: Improved Error Bounds and an Alternative Normalization. <i>SIAM Journal on Numerical Analysis</i> , <b>2021</b> , 59, 1687-1734	2.4	9
42	The Targeted Shadowing Hybrid Monte Carlo (TSHMC) Method. <i>Lecture Notes in Computational Science and Engineering</i> , <b>2006</b> , 141-153	0.3	9
41	An improved regularization for time-staggered discretization and its link to the semi-implicit method. <i>Atmospheric Science Letters</i> , <b>2006</b> , 7, 21-25	2.4	8
40	Symplectic Time-Stepping for Particle Methods. <i>GAMM Mitteilungen</i> , <b>2004</b> , 27, 9-24	1.8	8
39	Meso-GSHMC: A stochastic algorithm for meso-scale constant temperature simulations. <i>Procedia Computer Science</i> , <b>2011</b> , 4, 1353-1362	1.6	7
38	Modified potential energy functions for constrained molecular dynamics. <i>Numerical Algorithms</i> , <b>1998</b> , 19, 213-221	2.1	7
37	A Metropolis adjusted Nosé-Hoover thermostat. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , <b>2009</b> , 43, 743-755	1.8	6
36	State and Parameter Estimation from Observed Signal Increments. <i>Entropy</i> , <b>2019</b> , 21,	2.8	5
35	Bayesian parameter estimation for the SWIFT model of eye-movement control during reading. <i>Journal of Mathematical Psychology</i> , <b>2020</b> , 95, 102313	1.2	5
34	A Particle-Mesh Method for the Shallow Water Equations Near Geostrophic Balance. <i>Journal of Computational Physics</i> , <b>2002</b> , 180, 407-426	4.1	4
33	McKean–Vlasov SDEs in Nonlinear Filtering. <i>SIAM Journal on Control and Optimization</i> , <b>2021</b> , 59, 4188-4215	1.5	4
32	Combining machine learning and data assimilation to forecast dynamical systems from noisy partial observations. <i>Chaos</i> , <b>2021</b> , 31, 101103	3.3	4
31	Atmospheric Predictability: Revisiting the Inherent Finite-Time Barrier. <i>Journals of the Atmospheric Sciences</i> , <b>2019</b> , 76, 3883-3892	2.1	3

30	Large-scale turbulence modelling via $\mathbb{F}$ -regularisation for atmospheric simulations. <i>Journal of Turbulence</i> , <b>2015</b> , 16, 367-391	2.1	3
29	Evaluation of three spatial discretization schemes with the Galewsky et al. test. <i>Atmospheric Science Letters</i> , <b>2010</b> , 11, 223-228	2.4	3
28	Semi-implicit methods, nonlinear balance, and regularized equations. <i>Atmospheric Science Letters</i> , <b>2007</b> , 8, 1-6	2.4	3
27	Impact of the Mesoscale Range on Error Growth and the Limits to Atmospheric Predictability. <i>Journals of the Atmospheric Sciences</i> , <b>2020</b> , 77, 3769-3779	2.1	3
26	A Test Set for Molecular Dynamics Algorithms. <i>Lecture Notes in Computational Science and Engineering</i> , <b>2002</b> , 73-103	0.3	3
25	Discrete gradients for computational Bayesian inference. <i>Journal of Computational Dynamics</i> , <b>2019</b> , 6, 385-400	2.6	2
24	GP-ETAS: semiparametric Bayesian inference for the spatio-temporal epidemic type aftershock sequence model. <i>Statistics and Computing</i> , <b>2022</b> , 32, 1	1.8	2
23	Randomized maximum likelihood based posterior sampling. <i>Computational Geosciences</i> , <b>2022</b> , 26, 217-239	2.7	2
22	Ensemble Transform Algorithms for Nonlinear Smoothing Problems. <i>SIAM Journal of Scientific Computing</i> , <b>2020</b> , 42, A87-A114	2.6	1
21	Hydrostatic Hamiltonian particle-mesh (HPM) methods for atmospheric modelling. <i>Quarterly Journal of the Royal Meteorological Society</i> , <b>2012</b> , 138, 1388-1399	6.4	1
20	A multigrid solver for modeling complex interseismic stress fields. <i>Computers and Geosciences</i> , <b>2011</b> , 37, 1075-1082	4.5	1
19	Analysis of a regularized, time-staggered discretization applied to a vertical slice model. <i>Atmospheric Science Letters</i> , <b>2006</b> , 7, 86-92	2.4	1
18	Molecular dynamics <b>2005</b> , 287-315		1
17	Data assimilation in dynamical cognitive science.. <i>Trends in Cognitive Sciences</i> , <b>2021</b> ,	14	1
16	A mathematical model of local and global attention in natural scene viewing. <i>PLoS Computational Biology</i> , <b>2020</b> , 16, e1007880	5	1
15	Convergence Tests for Transdimensional Markov Chains in Geoscience Imaging. <i>Mathematical Geosciences</i> , <b>2020</b> , 52, 651-668	2.5	1
14	Affine-Invariant Ensemble Transform Methods for Logistic Regression. <i>Foundations of Computational Mathematics</i> , 1	2.7	0
13	Balanced data assimilation for highly oscillatory mechanical systems. <i>Communications in Applied Mathematics and Computational Science</i> , <b>2021</b> , 16, 119-154	1.1	0

- 12 Forecast verification: Relating deterministic and probabilistic metrics. *Quarterly Journal of the Royal Meteorological Society*, **2021**, 147, 3124-3134 6.4 ○
- 11 On the consistency of ensemble transform filter formulations. *Journal of Computational Dynamics*, **2014**, 1, 177-189 2.6
- 10 Hamiltonian mechanics **2005**, 36-69
- 9 Geometric integrators **2005**, 70-104
- 8 The modified equations **2005**, 105-141
- 7 Adaptive geometric integrators **2005**, 234-256
- 6 Highly oscillatory problems **2005**, 257-286
- 5 Hamiltonian PDEs **2005**, 316-356
- 4 Rigid body dynamics **2005**, 199-233
- 3 Constrained mechanical systems **2005**, 169-198
- 2 Higher-order methods **2005**, 142-168
- 1 Explicit symplectic integration of rod dynamics **1997**, 368-368