Brynjulf Owren

List of Publications by Year
in descending order

62 papers	1,863 citations	257101 24 h-index	264894 42 g-index
63 all docs	63 docs citations	63 times ranked	730 citing authors

#	Article	IF	Citations
1	Preserving energy resp. dissipation in numerical PDEs using the â€œAverage Vector Fieldâ€•method. Journal of Computational Physics, 2012, 231, 6770-6789.	1.9	198
2	Computations in a free Lie algebra. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 1999, 357, 957-981.	1.6	124
3	Energy-preserving Runge-Kutta methods. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 645-649.	0.8	89
4	Topics in structure-preserving discretization. Acta Numerica, 2011, 20, 1-119.	6.3	89
5	A General Framework for Deriving Integral Preserving Numerical Methods for PDEs. SIAM Journal of Scientific Computing, 2011, 33, 2318-2340.	1.3	87
6	Derivation of Efficient, Continuous, Explicit Rungeâ€"Kutta Methods. SIAM Journal on Scientific and Statistical Computing, 1992, 13, 1488-1501.	1.5	78
7	Symmetric Exponential Integrators with an Application to the Cubic SchrÃ¶dinger Equation. Foundations of Computational Mathematics, 2008, 8, 303-317.	1.5	78
8	Commutator-free Lie group methods. Future Generation Computer Systems, 2003, 19, 341-352.	4.9	69
9	Multi-symplectic integration of the Camassaâ€"Holm equation. Journal of Computational Physics, 2008, 227, 5492-5512.	1.9	67
10	Runge-Kutta Methods Adapted to Manifolds and Based on Rigid Frames. BIT Numerical Mathematics, 1999, 39, 116-142.	1.0	64
11	Lie group methods for rigid body dynamics and time integration on manifolds. Computer Methods in Applied Mechanics and Engineering, 2003, 192, 421-438.	3.4	64
12	An introduction to Lie group integrators â€" basics, new developments and applications. Journal of Computational Physics, 2014, 257, 1040-1061.	1.9	56
13	Energy-Preserving Integrators and the Structure ofÂB-series. Foundations of Computational Mathematics, 2010, 10, 673-693.	1.5	51
14	The Newton Iteration on Lie Groups. BIT Numerical Mathematics, 2000, 40, 121-145.	1.0	49
15	Geometric properties of Kahan's method. Journal of Physics A: Mathematical and Theoretical, 2013, 46, 025201.	0.7	48
16	Order barriers for continuous explicit Runge-Kutta methods. Mathematics of Computation, 1991, 56, 645-661.	1.1	48
17	Alternative integration methods for problems in structural dynamics. Computer Methods in Applied Mechanics and Engineering, 1995, 122, 1-10.	3.4	43
18	B-series and Order Conditions for Exponential Integrators. SIAM Journal on Numerical Analysis, 2005, 43, 1715-1727.	1.1	42

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19	Preserving multiple first integrals by discrete gradients. Journal of Physics A: Mathematical and Theoretical, 2011, 44, 305205.	0.7	31
20	Integration methods based on canonical coordinates of the second kind. Numerische Mathematik, 2001, 87, 763-790.	0.9	30
21	Deep learning as optimal control problems: Models and numerical methods. Journal of Computational Dynamics, 2019, 6, 171-198.	0.4	29
22	Integrability properties of KahanÊ¼s method. Journal of Physics A: Mathematical and Theoretical, 2014, 47, 365202.	0.7	28
23	A Class of Intrinsic Schemes for Orthogonal Integration. SIAM Journal on Numerical Analysis, 2002, 40, 2069-2084.	1.1	27
24	The minimal stage, energy preserving Rungeâ€“Kutta method for polynomial Hamiltonian systems is the averaged vector field method. Mathematics of Computation, 2014, 83, 1689-1700.	1.1	25
25	Solving the nonlinear SchrÃ¶dinger equation using exponential integrators. Modeling, Identification and Control, 2006, 27, 201-218.	0.6	23
26	Order conditions for commutator-free Lie group methods. Journal of Physics A, 2006, 39, 5585-5599.	1.6	22
27	On the Implementation of Lie Group Methods on the Stiefel Manifold. Numerical Algorithms, 2003, 32, 163-183.	1.1	21
28	Simulation of ordinary differential equations on manifolds: some numerical experiments and verifications. Modeling, Identification and Control, 1997, 18, 75-88.	0.6	20
29	Structure-preserving deep learning. European Journal of Applied Mathematics, 2021, 32, 888-936.	1.4	17
30	Construction of Rungeâ€“Kutta methods of Crouchâ€“Grossman type of high order. Advances in Computational Mathematics, 2000, 13, 405-415.	0.8	16
31	The behaviour of the local error in splitting methods applied to stiff problems. Journal of Computational Physics, 2004, 195, 576-593.	1.9	16
32	Order barriers and characterizations for continuous mono-implicit Runge-Kutta schemes. Mathematics of Computation, 1993, 61, 675-699.	1.1	15
33	Plane wave stability of some conservative schemes for the cubic SchrÃ¶dinger equation. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 677-687.	0.8	15
34	Discretization of polynomial vector fields by polarization. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150390.	1.0	13
35	Cost Efficient Lie Group Integrators in the RKMK Class. BIT Numerical Mathematics, 2003, 43, 723-742.	1.0	11
36	Using discrete Darboux polynomials to detect and determine preserved measures and integrals of rational maps. Journal of Physics A: Mathematical and Theoretical, 2019, 52, 31LT01.	0.7	11

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37	An integral model based on slender body theory, with applications to curved rigid fibers. Physics of Fluids, 2021, 33, .	1.6	11
38	Adaptive energy preserving methods for partial differential equations. Advances in Computational Mathematics, 2018, 44, 815-839.	0.8	10
39	Dissipative Numerical Schemes on Riemannian Manifolds with Applications to Gradient Flows. SIAM Journal of Scientific Computing, 2018, 40, A3789-A3806.	1.3	10
40	Pseudospectra of waveform relaxation operators. Computers and Mathematics With Applications, 1998, 36, 67-85.	1.4	9
41	Energy-preserving methods on Riemannian manifolds. Mathematics of Computation, 2019, 89, 699-716.	1.1	9
42	Lie group integrators for mechanical systems. International Journal of Computer Mathematics, 2022, 99, 58-88.	1.0	9
43	Some stability results for explicit Runge-Kutta methods. BIT Numerical Mathematics, 1990, 30, 700-706.	1.0	8
44	Quadrature methods based on the Cayley transform. Applied Numerical Mathematics, 2001, 39, 403-413.	1.2	8
45	A Note on the Construction of Crouch-Grossman Methods. BIT Numerical Mathematics, 2001, 41, 207-214.	1.0	8
46	Three classes of quadratic vector fields for which the Kahan discretisation is the root of a generalised Manin transformation. Journal of Physics A: Mathematical and Theoretical, 2019, 52, 045204.	0.7	8
47	Stiffness detection and estimation of dominant spectrum with explicit Runge-Kutta methods. ACM Transactions on Mathematical Software, 1998, 24, 368-382.	1.6	7
48	The Magnus expansion and post-Lie algebras. Mathematics of Computation, 2020, 89, 2785-2799.	1.1	7
49	Preserving first integrals with symmetric Lie group methods. Discrete and Continuous Dynamical Systems, 2014, 34, 977-990.	0.5	7
50	Equivariant neural networks for inverse problems. Inverse Problems, 2021, 37, 085006.	1.0	6
51	Lie Group Integrators. Springer Proceedings in Mathematics and Statistics, 2018, , 29-69.	0.1	5
52	Detecting and determining preserved measures and integrals of birational maps. Journal of Computational Dynamics, 2022, 9, 553-574.	0.4	5
53	Nonnormality Effects in a Discretised Nonlinear Reaction-Convectionâ€"Diffusion Equation. Journal of Computational Physics, 1996, 124, 309-323.	1.9	4
54	Variable step size commutator free Lie group integrators. Numerical Algorithms, 2019, 82, 1359-1376.	1.1	4

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55	Geometric integration of non-autonomous linear Hamiltonian problems. Advances in Computational Mathematics, 2016, 42, 313-332.	0.8	3
56	A novel approach to rigid spheroid models in viscous flows using operator splitting methods. Numerical Algorithms, 2019, 81, 1423-1441.	1.1	3
57	Computational geometric methods for preferential clustering of particle suspensions. Journal of Computational Physics, 2022, 448, 110725.	1.9	3
58	Stability of Runge-Kutta methods used in modular integration. Journal of Computational and Applied Mathematics, 1995, 62, 89-101.	1.1	2
59	Deep learning as optimal control problems. IFAC-PapersOnLine, 2021, 54, 620-623.	0.5	2
60	A uniqueness result related to the stability of explicit Runge-Kutta methods. BIT Numerical Mathematics, 1991, 31, 373-374.	1.0	1
61	Structure of B-series for Some Classes of Geometric Integrators. , 2009, , .		0
62	Adaptive time stepping for commutator free Lie group integrators. IFAC-PapersOnLine, 2021, 54, 103-107.	0.5	0