Christian Lubich

List of Publications by Year
in descending order

65 papers	5,882 citations	117625 34 h-index	123424 61 g-index
65 all docs	65 docs citations	65 times ranked	2680 citing authors

#	Article	IF	Citations
1	Geometric Numerical Integration. Springer Series in Computational Mathematics, 2002, , .	0.2	801
2	On Krylov Subspace Approximations to the Matrix Exponential Operator. SIAM Journal on Numerical Analysis, 1997, 34, 1911-1925.	2.3	613
3	Geometric numerical integration illustrated by the StÃ¶rmerâ€“Verlet method. Acta Numerica, 2003, 12, 399-450.	10.7	436
4	Exponential Integrators for Large Systems of Differential Equations. SIAM Journal of Scientific Computing, 1998, 19, 1552-1574.	2.8	398
5	Unifying time evolution and optimization with matrix product states. Physical Review B, 2016, 94, .	3.2	387
6	Convolution quadrature time discretization of fractional diffusion-wave equations. Mathematics of Computation, 2006, 75, 673-697.	2.1	213
7	A Gautschi-type method for oscillatory second-order differential equations. Numerische Mathematik, 1999, 83, 403-426.	1.9	204
8	Long-Time Energy Conservation of Numerical Methods for Oscillatory Differential Equations. SIAM Journal on Numerical Analysis, 2000, 38, 414-441.	2.3	195
9	Dynamical Lowâ€Rank Approximation. SIAM Journal on Matrix Analysis and Applications, 2007, 29, 434-454.	1.4	174
10	Error Bounds for Exponential Operator Splittings. BIT Numerical Mathematics, 2000, 40, 735-744.	2.0	172
11	Fast Convolution for Nonreflecting Boundary Conditions. SIAM Journal of Scientific Computing, 2002, 24, 161-182.	2.8	167
12	Convolution Quadrature Revisited. BIT Numerical Mathematics, 2004, 44, 503-514.	2.0	125
13	Fast and Oblivious Convolution Quadrature. SIAM Journal of Scientific Computing, 2006, 28, 421-438.	2.8	124
14	Time Integration of Tensor Trains. SIAM Journal on Numerical Analysis, 2015, 53, 917-941.	2.3	117
15	Dynamical Approximation by Hierarchical Tucker and Tensor-Train Tensors. SIAM Journal on Matrix Analysis and Applications, 2013, 34, 470-494.	1.4	110
16	Conservation of energy, momentum and actions in numerical discretizations of non-linear wave equations. Numerische Mathematik, 2008, 110, 113-143.	1.9	98
17	A projector-splitting integrator for dynamical low-rank approximation. BIT Numerical Mathematics, 2014, 54, 171-188.	2.0	94
18	Dynamical Tensor Approximation. SIAM Journal on Matrix Analysis and Applications, 2010, 31, 2360-2375.	1.4	87

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19	On Magnus Integrators for Time-Dependent SchrÃ¶dinger Equations. SIAM Journal on Numerical Analysis, 2003, 41, 945-963.	2.3	79
20	Geometric Numerical Integration. Oberwolfach Reports, 2006, 3, 805-882.	0.0	75
21	Computing Semiclassical Quantum Dynamics with Hagedorn Wavepackets. SIAM Journal of Scientific Computing, 2009, 31, 3027-3041.	2.8	72
22	Exponential Integrators for Quantum-Classical Molecular Dynamics. BIT Numerical Mathematics, 1999, 39, 620-645.	2.0	67
23	Adaptive, Fast, and Oblivious Convolution in Evolution Equations with Memory. SIAM Journal of Scientific Computing, 2008, 30, 1015-1037.	2.8	65
24	Stable numerical coupling of exterior and interior problems for the wave equation. Numerische Mathematik, 2015, 129, 611-646.	1.9	57
25	Discretized Dynamical Low-Rank Approximation in the Presence of Small Singular Values. SIAM Journal on Numerical Analysis, 2016, 54, 1020-1038.	2.3	54
26	Time Integration in the Multiconfiguration Time-Dependent Hartree Method of Molecular Quantum Dynamics. Applied Mathematics Research EXpress, 2015, 2015, 311-328.	1.0	48
27	Symmetric multistep methods over long times. Numerische Mathematik, 2004, 97, 699-723.	1.9	47
28	Long-Time Analysis of Nonlinearly Perturbed Wave Equations Via Modulated Fourier Expansions. Archive for Rational Mechanics and Analysis, 2008, 187, 341-368.	2.4	46
29	A Low-Rank Projector-Splitting Integrator for the Vlasov–Poisson Equation. SIAM Journal of Scientific Computing, 2018, 40, B1330-B1360.	2.8	45
30	Low-Rank Dynamics for Computing Extremal Points of Real Pseudospectra. SIAM Journal on Matrix Analysis and Applications, 2013, 34, 40-66.	1.4	43
31	Computing quantum dynamics in the semiclassical regime. Acta Numerica, 2020, 29, 229-401.	10.7	42
32	Numerical Integrators for Highly Oscillatory Hamiltonian Systems: A Review. , 2006, , 553-576.		40
33	On variational approximations in quantum molecular dynamics. Mathematics of Computation, 2004, 74, 765-780.	2.1	37
34	An error analysis of the multi-configuration time-dependent Hartree method of quantum dynamics. ESAIM: Mathematical Modelling and Numerical Analysis, 2010, 44, 759-780.	1.9	36
35	Nonlinear SchrÃ¶dinger Equations and Their Spectral Semi-Discretizations Over Long Times. Foundations of Computational Mathematics, 2010, 10, 141-169.	2.5	35
36	Dynamical low-rank approximation: applications and numerical experiments. Mathematics and Computers in Simulation, 2008, 79, 1346-1357.	4.4	34

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37	Energy behaviour of the Boris method for charged-particle dynamics. BIT Numerical Mathematics, 2018, 58, 969-979.	2.0	29
38	An unconventional robust integrator for dynamical low-rank approximation. BIT Numerical Mathematics, 2022, 62, 23-44.	2.0	29
39	Sobolev Stability of Plane Wave Solutions to the Cubic Nonlinear SchrÃ¶dinger Equation on a Torus. Communications in Partial Differential Equations, 2013, 38, 1123-1140.	2.2	28
40	A Poisson Integrator for Gaussian Wavepacket Dynamics. Computing and Visualization in Science, 2006, 9, 45-55.	1.2	27
41	Numerical analysis of parabolic problems with dynamic boundary conditions. IMA Journal of Numerical Analysis, 2017, 37, 1-39.	2.9	26
42	A variational splitting integrator for quantumÂmolecularÂdynamics. Applied Numerical Mathematics, 2004, 48, 355-368.	2.1	24
43	Fast Runge-Kutta approximation of inhomogeneous parabolic equations. Numerische Mathematik, 2005, 102, 277-291.	1.9	24
44	A Quasi-Conservative Dynamical Low-Rank Algorithm for the Vlasov Equation. SIAM Journal of Scientific Computing, 2019, 41, B1061-B1081.	2.8	23
45	Low rank differential equations for Hamiltonian matrix nearness problems. Numerische Mathematik, 2015, 129, 279-319.	1.9	22
46	Long-term analysis of the StÃ¶rmerâ€“Verlet method for Hamiltonian systems with a solution-dependent high frequency. Numerische Mathematik, 2016, 134, 119-138.	1.9	22
47	Invariant tori of dissipatively perturbed Hamiltonian systems under symplectic discretization. Applied Numerical Mathematics, 1999, 29, 57-71.	2.1	20
48	A rank-adaptive robust integrator for dynamical low-rank approximation. BIT Numerical Mathematics, 2022, 62, 1149-1174.	2.0	17
49	On the Nearest Singular Matrix Pencil. SIAM Journal on Matrix Analysis and Applications, 2017, 38, 776-806.	1.4	16
50	Time Integration of Tree Tensor Networks. SIAM Journal on Numerical Analysis, 2021, 59, 289-313.	2.3	16
51	PLANE WAVE STABILITY OF THE SPLIT-STEP FOURIER METHOD FOR THE NONLINEAR SCHRÃ–DINGER EQUATION. Forum of Mathematics, Sigma, 2014, 2, .	0.7	15
52	Long-term analysis of numerical integrators for oscillatory Hamiltonian systems under minimal non-resonance conditions. BIT Numerical Mathematics, 2015, 55, 705-732.	2.0	13
53	Stable and convergent fully discrete interiorâ€“exterior coupling of Maxwellâ€™s equations. Numerische Mathematik, 2017, 137, 91-117.	1.9	13
54	On the Energy Distribution in Fermiâ€“Pastaâ€“Ulam Lattices. Archive for Rational Mechanics and Analysis, 2012, 205, 993-1029.	2.4	12

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55	Matrix Stabilization Using Differential Equations. SIAM Journal on Numerical Analysis, 2017, 55, 3097-3119.	2.3	11
56	A Bunch of Time Integrators for Quantum/Classical Molecular Dynamics. Lecture Notes in Computational Science and Engineering, 1999, , 421-432.	0.3	11
57	Geometric numerical integration illustrated by the StÃ¶rmerâ€“Verlet method. , 2003, , 399-450.		10
58	Metastable Energy Strata in Weakly Nonlinear Wave Equations. Communications in Partial Differential Equations, 2012, 37, 1391-1413.	2.2	8
59	Free and constrained symplectic integrators for numerical general relativity. Classical and Quantum Gravity, 2008, 25, 225018.	4.0	7
60	Time integration of symmetric and anti-symmetric low-rank matrices and Tucker tensors. BIT Numerical Mathematics, 2020, 60, 591-614.	2.0	7
61	Computing Extremal Points of Symplectic Pseudospectra and Solving Symplectic Matrix Nearness Problems. SIAM Journal on Matrix Analysis and Applications, 2014, 35, 1407-1428.	1.4	6
62	On Dynamics and Bifurcations of Nonlinear Evolution Equations Under Numerical Discretization. , 2001, , 469-500.		5
63	Finding the Nearest Passive or Nonpassive System via Hamiltonian Eigenvalue Optimization. SIAM Journal on Matrix Analysis and Applications, 2021, 42, 1553-1580.	1.4	3
64	Geometric Numerical Integration. Oberwolfach Reports, 2016, 13, 869-948.	0.0	1
65	Low-Rank Dynamics. Lecture Notes in Computational Science and Engineering, 2014, , 381-396.	0.3	0