

Alexander Ostermann

List of Publications by Year in descending order

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140
papers

3,821
citations

182225

30
h-index

162838

57
g-index

158
all docs

158
docs citations

158
times ranked

1622
citing authors

#	ARTICLE	IF	CITATIONS
1	Error estimates at low regularity of splitting schemes for NLS. <i>Mathematics of Computation</i> , 2022, 91, 169-182.	1.1	3
2	A pseudo-spectral Strang splitting method for linear dispersive problems with transparent boundary conditions. <i>Numerische Mathematik</i> , 2022, 150, 105-135.	0.9	0
3	A $\hat{1}/4$ -mode integrator for solving evolution equations in Kronecker form. <i>Journal of Computational Physics</i> , 2022, 455, 110989.	1.9	7
4	A Fully Discrete Low-Regularity Integrator for the Nonlinear Schrödinger Equation. <i>Journal of Scientific Computing</i> , 2022, 91, 1.	1.1	3
5	A second-order low-regularity integrator for the nonlinear Schrödinger equation. , 2022, 2022, .		5
6	Error estimates of a Fourier integrator for the cubic Schrödinger equation at low regularity. <i>Foundations of Computational Mathematics</i> , 2021, 21, 725-765.	1.5	29
7	A splitting/polynomial chaos expansion approach for stochastic evolution equations. <i>Journal of Evolution Equations</i> , 2021, 21, 1345-1381.	0.6	1
8	A pseudo-spectral splitting method for linear dispersive problems with transparent boundary conditions. <i>Journal of Computational and Applied Mathematics</i> , 2021, 385, 113240.	1.1	1
9	An efficient second-order energy stable BDF scheme for the space fractional Cahn-Hilliard equation. <i>BIT Numerical Mathematics</i> , 2021, 61, 1061-1092.	1.0	8
10	A Preconditioning Technique for an All-at-once System from Volterra Subdiffusion Equations with Graded Time Steps. <i>Journal of Scientific Computing</i> , 2021, 88, 1.	1.1	32
11	An accurate and time-parallel rational exponential integrator for hyperbolic and oscillatory PDEs. <i>Journal of Computational Physics</i> , 2021, 437, 110289.	1.9	9
12	Fast numerical schemes for nonlinear space-fractional multidelay reaction-diffusion equations by implicit integration factor methods. <i>Applied Mathematics and Computation</i> , 2021, 408, 126360.	1.4	2
13	A low-rank Lie-Trotter splitting approach for nonlinear fractional complex Ginzburg-Landau equations. <i>Journal of Computational Physics</i> , 2021, 446, 110652.	1.9	10
14	An exponential integrator/WENO discretization for sonic-boom simulation on modern computer hardware. <i>Computer Physics Communications</i> , 2021, 269, 108133.	3.0	1
15	Fast IIF-WENO Method on Non-uniform Meshes for Nonlinear Space-Fractional Convection-Diffusion-Reaction Equations. <i>Journal of Scientific Computing</i> , 2021, 89, 1.	1.1	3
16	A Lawson-type exponential integrator for the Korteweg-de Vries equation. <i>IMA Journal of Numerical Analysis</i> , 2020, 40, 2399-2414.	1.5	15
17	A low-rank projector-splitting integrator for the Vlasov-Maxwell equations with divergence correction. <i>Journal of Computational Physics</i> , 2020, 403, 109063.	1.9	22
18	On the convergence of Lawson methods for semilinear stiff problems. <i>Numerische Mathematik</i> , 2020, 145, 553-580.	0.9	5

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19	An intergranular strain concept for material models formulated as rate equations. International Journal for Numerical and Analytical Methods in Geomechanics, 2020, 44, 1003-1018.	1.7	20
20	Co-deposition of gas hydrates by pressurized thermal evaporation. Physical Chemistry Chemical Physics, 2020, 22, 4266-4275.	1.3	0
21	A Fourier Integrator for the Cubic Nonlinear Schrödinger Equation with Rough Initial Data. SIAM Journal on Numerical Analysis, 2019, 57, 1967-1986.	1.1	32
22	Two exponential-type integrators for the "good" Boussinesq equation. Numerische Mathematik, 2019, 143, 683-712.	0.9	16
23	Macroscopic defects upon decomposition of CO ₂ clathrate hydrate crystals. Physical Chemistry Chemical Physics, 2019, 21, 9694-9708.	1.3	8
24	Convergence of a Low-Rank Lie-Trotter Splitting for Stiff Matrix Differential Equations. SIAM Journal on Numerical Analysis, 2019, 57, 1947-1966.	1.1	16
25	Nonlinear Evolution Equations: Analysis and Numerics. Oberwolfach Reports, 2019, 16, 305-405.	0.0	0
26	Magnus integrators on multicore CPUs and GPUs. Computer Physics Communications, 2018, 228, 115-122.	3.0	16
27	Numerical low-rank approximation of matrix differential equations. Journal of Computational and Applied Mathematics, 2018, 340, 602-614.	1.1	22
28	Low Regularity Exponential-Type Integrators for Semilinear Schrödinger Equations. Foundations of Computational Mathematics, 2018, 18, 731-755.	1.5	54
29	Analysis for Computer Scientists. Undergraduate Topics in Computer Science, 2018, , .	0.1	2
30	A split step Fourier/discontinuous Galerkin scheme for the Kadomtsev-Petviashvili equation. Applied Mathematics and Computation, 2018, 334, 311-325.	1.4	5
31	Efficient boundary corrected Strang splitting. Applied Mathematics and Computation, 2018, 332, 76-89.	1.4	4
32	A comparison of boundary correction methods for Strang splitting. Discrete and Continuous Dynamical Systems - Series B, 2018, 23, 2641-2660.	0.5	1
33	Definite Integrals. Undergraduate Topics in Computer Science, 2018, , 149-163.	0.1	0
34	Fractals and L-systems. Undergraduate Topics in Computer Science, 2018, , 123-138.	0.1	0
35	Vector-Valued Functions of Two Variables. Undergraduate Topics in Computer Science, 2018, , 231-239.	0.1	0
36	Limits and Continuity of Functions. Undergraduate Topics in Computer Science, 2018, , 69-79.	0.1	0

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37	The Derivative of a Function. Undergraduate Topics in Computer Science, 2018, , 81-103.	0.1	0
38	Integration of Functions of Two Variables. Undergraduate Topics in Computer Science, 2018, , 241-254.	0.1	0
39	Curves. Undergraduate Topics in Computer Science, 2018, , 185-207.	0.1	0
40	Applications of the Derivative. Undergraduate Topics in Computer Science, 2018, , 105-121.	0.1	0
41	Splitting methods for constrained diffusionâ€“reaction systems. Computers and Mathematics With Applications, 2017, 74, 962-976.	1.4	8
42	Alternating direction implicit type preconditioners for the steady state inhomogeneous Vlasov equation. Journal of Plasma Physics, 2017, 83, .	0.7	4
43	A splitting approach for the magnetic SchrÃ¶dinger equation. Journal of Computational and Applied Mathematics, 2017, 316, 74-85.	1.1	10
44	Micro-Tomographic Investigation of Ice and Clathrate Formation and Decomposition under Thermodynamic Monitoring. Materials, 2016, 9, 668.	1.3	4
45	Evaluation of the partitioned global address space (PGAS) model for an inviscid Euler solver. Parallel Computing, 2016, 60, 22-40.	1.3	3
46	Overcoming Order Reduction in Diffusion-Reaction Splitting. Part 2: Oblique Boundary Conditions. SIAM Journal of Scientific Computing, 2016, 38, A3741-A3757.	1.3	19
47	Detecting structural changes with ARMA processes. Mathematical and Computer Modelling of Dynamical Systems, 2016, 22, 524-538.	1.4	8
48	The Leja Method Revisited: Backward Error Analysis for the Matrix Exponential. SIAM Journal of Scientific Computing, 2016, 38, A1639-A1661.	1.3	41
49	Stability analysis of explicit exponential integrators for delay differential equations. Applied Numerical Mathematics, 2016, 109, 96-108.	1.2	6
50	The error structure of the Douglasâ€“Rachford splitting method for stiff linear problems. Journal of Computational and Applied Mathematics, 2016, 303, 140-145.	1.1	1
51	High-order splitting schemes for semilinear evolution equations. BIT Numerical Mathematics, 2016, 56, 1303-1316.	1.0	8
52	Parallel exponential Rosenbrock methods. Computers and Mathematics With Applications, 2016, 71, 1137-1150.	1.4	29
53	Discussion on â€œNumerical study on finite element implementation of hypoplastic modelsâ€“by Yutang Ding, Wenxiong Huang, Daichao Sheng, and Scott W. Sloan [Comput. Geotech. 68 (2015) 78â€“90]. Computers and Geotechnics, 2016, 71, 276-277.	2.3	1
54	Splitting methods for time integration of trajectories in combined electric and magnetic fields. Physical Review E, 2015, 92, 063310.	0.8	14

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55	Analysis of exponential splitting methods for inhomogeneous parabolic equations. IMA Journal of Numerical Analysis, 2015, 35, 161-178.	1.5	18
56	Modification of dimension-splitting methodsâ€”overcoming the order reduction due to corner singularities. IMA Journal of Numerical Analysis, 2015, 35, 1078-1091.	1.5	11
57	On the error propagation of semi-Lagrange and Fourier methods for advection problems. Computers and Mathematics With Applications, 2015, 69, 170-179.	1.4	5
58	A splitting approach for the Kadomtsevâ€”Petviashvili equation. Journal of Computational Physics, 2015, 299, 716-730.	1.9	16
59	Overcoming Order Reduction in Diffusion-Reaction Splitting. Part 1: Dirichlet Boundary Conditions. SIAM Journal of Scientific Computing, 2015, 37, A1577-A1592.	1.3	34
60	Tomography based numerical simulation of the demagnetizing field in soft magnetic composites. Journal of Applied Physics, 2015, 117, .	1.1	12
61	Exponential Integrators. , 2015, , 468-472.		0
62	Nonlinear Evolution Equations: Analysis and Numerics. Oberwolfach Reports, 2014, 11, 781-868.	0.0	0
63	Convergence Analysis of a Discontinuous Galerkin/Strang Splitting Approximation for the Vlasov-Poisson Equations. SIAM Journal on Numerical Analysis, 2014, 52, 757-778.	1.1	26
64	A Moment-Matching Arnoldi Iteration for Linear Combinations of φ Functions. SIAM Journal on Matrix Analysis and Applications, 2014, 35, 1344-1363.	0.7	1
65	Reprint of â€œExplicit exponential Rungeâ€”Kutta methods of high order for parabolic problemsâ€” Journal of Computational and Applied Mathematics, 2014, 262, 361-372.	1.1	1
66	Explicit exponential Rungeâ€”Kutta methods of high order for parabolic problems. Journal of Computational and Applied Mathematics, 2014, 256, 168-179.	1.1	45
67	Comparison of software for computing the action of the matrix exponential. BIT Numerical Mathematics, 2014, 54, 113-128.	1.0	43
68	Exponential Rosenbrock methods of order five â€” construction, analysis and numerical comparisons. Journal of Computational and Applied Mathematics, 2014, 255, 417-431.	1.1	44
69	A residual based error estimate for Leja interpolation of matrix functions. Linear Algebra and Its Applications, 2014, 456, 157-173.	0.4	5
70	Convergence Analysis of Strang Splitting for Vlasov-Type Equations. SIAM Journal on Numerical Analysis, 2014, 52, 140-155.	1.1	32
71	A strategy to suppress recurrence in grid-based Vlasov solvers. European Physical Journal D, 2014, 68, 1.	0.6	12
72	Compatibility conditions for Dirichlet and Neumann problems of Poisson's equation on a rectangle. Journal of Mathematical Analysis and Applications, 2014, 420, 1005-1023.	0.5	8

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73	An almost symmetric Strang splitting scheme for the construction of high order composition methods. <i>Journal of Computational and Applied Mathematics</i> , 2014, 271, 307-318.	1.1	10
74	An almost symmetric Strang splitting scheme for nonlinear evolution equations. <i>Computers and Mathematics With Applications</i> , 2014, 67, 2144-2157.	1.4	11
75	Stiff Order Conditions for Exponential Runge-Kutta Methods of Order Five. , 2014, , 133-143.		2
76	Constitutive Models in Finite Element Codes. , 2014, , 1-42.		0
77	The critical state behaviour of barodesy compared with the Matsuoka-Nakai failure criterion. <i>International Journal for Numerical and Analytical Methods in Geomechanics</i> , 2013, 37, 299-308.	1.7	29
78	Exponential integrators on graphic processing units. , 2013, , .		2
79	Stability of Exponential Operator Splitting Methods for Noncontractive Semigroups. <i>SIAM Journal on Numerical Analysis</i> , 2013, 51, 191-203.	1.1	10
80	Numerical investigation of the elastic scattering of hydrogen (isotopes) and helium at graphite (0001) surfaces at beam energies of 1 to 4 ÅeV using a split-step Fourier method. <i>Theoretical Chemistry Accounts</i> , 2013, 132, 1337.	0.5	3
81	Meshfree Exponential Integrators. <i>SIAM Journal of Scientific Computing</i> , 2013, 35, A431-A452.	1.3	7
82	Exponential Taylor methods: Analysis and implementation. <i>Computers and Mathematics With Applications</i> , 2013, 65, 487-499.	1.4	14
83	Exponential B-Series: The Stiff Case. <i>SIAM Journal on Numerical Analysis</i> , 2013, 51, 3431-3445.	1.1	29
84	A Meshfree Splitting Method for Soliton Dynamics in Nonlinear Schrödinger Equations. <i>Lecture Notes in Computational Science and Engineering</i> , 2013, , 127-139.	0.1	0
85	Physics and parameters in Galactic CR transport models. , 2012, , .		0
86	Error analysis of splitting methods for inhomogeneous evolution equations. <i>Applied Numerical Mathematics</i> , 2012, 62, 1436-1446.	1.2	9
87	A second-order positivity preserving scheme for semilinear parabolic problems. <i>Applied Numerical Mathematics</i> , 2012, 62, 1428-1435.	1.2	21
88	Physically-based modelling of granular flows with Open Source GIS. <i>Natural Hazards and Earth System Sciences</i> , 2012, 12, 187-200.	1.5	46
89	Investigation of the recombination of the retarded shell of α -born-again-CSPNe by time-dependent radiative transfer models. <i>Proceedings of the International Astronomical Union</i> , 2011, 7, 412-413.	0.0	0
90	Exponential multistep methods of Adams-type. <i>BIT Numerical Mathematics</i> , 2011, 51, 889-908.	1.0	62

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91	Lie splitting on polygonal domains. Proceedings in Applied Mathematics and Mechanics, 2011, 11, 787-788.	0.2	0
92	Exponential integrators. Acta Numerica, 2010, 19, 209-286.	6.3	775
93	Unconditional convergence of DIRK schemes applied to dissipative evolution equations. Applied Numerical Mathematics, 2010, 60, 55-63.	1.2	3
94	Improved peak analysis of signals based on counting systems: Illustrated for proton-transfer-reaction time-of-flight mass spectrometry. International Journal of Mass Spectrometry, 2010, 295, 72-77.	0.7	39
95	Dimension splitting for quasilinear parabolic equations. IMA Journal of Numerical Analysis, 2010, 30, 857-869.	1.5	12
96	Exponential Time Integration of Evolution Equations. , 2010, , .		1
97	A dynamic proof of Thibault's theorem. Elemente Der Mathematik, 2010, 65, 12-16.	0.1	0
98	A convergence analysis of the exponential Euler iteration for nonlinear ill-posed problems. Inverse Problems, 2009, 25, 075009.	1.0	15
99	Adaptive integration of constitutive rate equations. Computers and Geotechnics, 2009, 36, 698-708.	2.3	15
100	High order splitting methods for analytic semigroups exist. BIT Numerical Mathematics, 2009, 49, 527-542.	1.0	66
101	A minimisation approach for computing the ground state of Gross-Pitaevskii systems. Journal of Computational Physics, 2009, 228, 349-360.	1.9	42
102	Implementation of exponential Rosenbrock-type integrators. Applied Numerical Mathematics, 2009, 59, 568-581.	1.2	83
103	Exponential Rosenbrock-Type Methods. SIAM Journal on Numerical Analysis, 2009, 47, 786-803.	1.1	172
104	Regularization of nonlinear ill-posed problems by exponential integrators. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 709-720.	0.8	8
105	Exponential splitting for unbounded operators. Mathematics of Computation, 2009, 78, 1485-1496.	1.1	64
106	Dimension splitting for evolution equations. Numerische Mathematik, 2008, 108, 557-570.	0.9	30
107	Finite Element Runge-Kutta Discretizations of Porous Medium-Type Equations. SIAM Journal on Numerical Analysis, 2008, 46, 1769-1779.	1.1	2
108	Positivity of exponential Runge-Kutta methods. BIT Numerical Mathematics, 2007, 47, 419-426.	1.0	9

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109	A second-order Magnus-type integrator for nonautonomous parabolic problems. <i>Journal of Computational and Applied Mathematics</i> , 2006, 189, 142-156.	1.1	19
110	A Class of Explicit Exponential General Linear Methods. <i>BIT Numerical Mathematics</i> , 2006, 46, 409-431.	1.0	82
111	Parameter sensitivity in finite element analysis with constitutive models of the rate type. <i>International Journal for Numerical and Analytical Methods in Geomechanics</i> , 2006, 30, 91-112.	1.7	9
112	Positivity of Exponential Multistep Methods. , 2006, , 564-571.		3
113	Exponential Runge-Kutta methods for parabolic problems. <i>Applied Numerical Mathematics</i> , 2005, 53, 323-339.	1.2	136
114	Explicit Exponential Runge-Kutta Methods for Semilinear Parabolic Problems. <i>SIAM Journal on Numerical Analysis</i> , 2005, 43, 1069-1090.	1.1	289
115	Stability of linear multistep methods and applications to nonlinear parabolic problems. <i>Applied Numerical Mathematics</i> , 2004, 48, 389-407.	1.2	15
116	Using constitutive models of the rate type in implicit finite-element calculations: error-controlled stress update and consistent tangent operator. <i>Lecture Notes in Applied and Computational Mechanics</i> , 2003, , 211-237.	2.0	1
117	Consistent tangent operators for constitutive rate equations. <i>International Journal for Numerical and Analytical Methods in Geomechanics</i> , 2002, 26, 1213-1233.	1.7	53
118	Stability of W-methods with applications to operator splitting and to geometric theory. <i>Applied Numerical Mathematics</i> , 2002, 42, 353-366.	1.2	8
119	Convergence of Runge-Kutta methods for nonlinear parabolic equations. <i>Applied Numerical Mathematics</i> , 2002, 42, 367-380.	1.2	24
120	Backward Euler discretization of fully nonlinear parabolic problems. <i>Mathematics of Computation</i> , 2001, 71, 125-146.	1.1	24
121	Long-term stability of variable stepsize approximations of semigroups. <i>Mathematics of Computation</i> , 2001, 71, 1545-1568.	1.1	12
122	Non-smooth data error estimates for linearly implicit Runge-Kutta methods. <i>IMA Journal of Numerical Analysis</i> , 2000, 20, 167-184.	1.5	13
123	Shadowing for Nonautonomous Parabolic Problems with Applications to Long-Time Error Bounds. <i>SIAM Journal on Numerical Analysis</i> , 2000, 37, 1399-1419.	1.1	11
124	Book review. The problem of solidarity: theories and models. P Doreian, T Fararo [edd]. <i>European Sociological Review</i> , 2000, 16, 115-117.	1.3	2
125	Title is missing!. <i>BIT Numerical Mathematics</i> , 1999, 39, 79-95.	1.0	5
126	Hopf bifurcation of reaction-diffusion and Navier-Stokes equations under discretization. <i>Numerische Mathematik</i> , 1998, 81, 53-84.	0.9	14

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127	Runge-Kutta time discretization of reaction-diffusion and Navier-Stokes equations: nonsmooth-data error estimates and applications to long-time behaviour. Applied Numerical Mathematics, 1996, 22, 279-292.	1.2	34
128	Runge-Kutta approximation of quasi-linear parabolic equations. Mathematics of Computation, 1995, 64, 601-627.	1.1	69
129	Interior estimates for time discretizations of parabolic equations. Applied Numerical Mathematics, 1995, 18, 241-251.	1.2	19
130	Linearly implicit time discretization of non-linear parabolic equations. IMA Journal of Numerical Analysis, 1995, 15, 555-583.	1.5	71
131	A class of half-explicit Runge-Kutta methods for differential-algebraic systems of index 3. Applied Numerical Mathematics, 1993, 13, 165-179.	1.2	13
132	Rosenbrock Methods for Partial Differential Equations and Fractional Orders of Convergence. SIAM Journal on Numerical Analysis, 1993, 30, 1084-1098.	1.1	50
133	Runge-Kutta methods for parabolic equations and convolution quadrature. Mathematics of Computation, 1993, 60, 105-131.	1.1	121
134	Runge-Kutta methods for partial differential equations and fractional orders of convergence. Mathematics of Computation, 1992, 59, 403-420.	1.1	57
135	Continuous extensions of Rosenbrock-type methods. Computing (Vienna/New York), 1990, 44, 59-68.	3.2	10
136	Dense output for extrapolation methods. Numerische Mathematik, 1990, 58, 419-439.	0.9	32
137	A Half-Explicit Extrapolation Method for Differential-Algebraic Systems of Index 3. IMA Journal of Numerical Analysis, 1990, 10, 171-180.	1.5	8
138	Rosenbrock Methods using few LU-Decompositions. IMA Journal of Numerical Analysis, 1989, 9, 15-27.	1.5	12
139	Multi-grid dynamic iteration for parabolic equations. BIT Numerical Mathematics, 1987, 27, 216-234.	1.0	130
140	The solution of a combustion problem with Rosenbrock methods. ACM Transactions on Mathematical Software, 1986, 12, 354-361.	1.6	7