Sergio Blanes

List of Publications by Year
in descending order

76 papers	2,559 citations	346980 22 h-index	232693 48 g-index
77 all docs	77 docs citations	77 times ranked	1888 citing authors

#	Article	IF	Citations
1	Applying splitting methods with complex coefficients to the numerical integration of unitary problems. Journal of Computational Dynamics, 2022, 9, 85.	0.4	6
2	An efficient algorithm to compute the exponential of skew-Hermitian matrices for the time integration of the SchrÃ¶dinger equation. Mathematics and Computers in Simulation, 2022, 194, 383-400.	2.4	4
3	Preface for the special issue â€œGeometric numerical integration, twenty-five years laterâ€• International Journal of Computer Mathematics, 2022, 99, 1-3.	1.0	1
4	Performance of fourth and sixthâ€•order commutatorâ€•free Magnus expansion integrators for Ehrenfest dynamics. Computational and Mathematical Methods, 2021, 3, e1100.	0.3	0
5	Convergence analysis of high-order commutator-free quasi-Magnus exponential integrators for nonautonomous linear SchrÃ¶dinger equations. IMA Journal of Numerical Analysis, 2021, 41, 594-617.	1.5	0
6	Computing the matrix sine and cosine simultaneously with a reduced number of products. Applied Numerical Mathematics, 2021, 163, 96-107.	1.2	3
7	Novel parallel in time integrators for ODEs. Applied Mathematics Letters, 2021, 122, 107542.	1.5	1
8	High order efficient splittings for the semiclassical timeâ€“dependent SchrÃ¶dinger equation. Journal of Computational Physics, 2020, 405, 109157.	1.9	5
9	Propagators for Quantum-Classical Models: Commutator-Free Magnus Methods. Journal of Chemical Theory and Computation, 2020, 16, 1420-1430.	2.3	3
10	Splitting and composition methods with embedded error estimators. Applied Numerical Mathematics, 2019, 146, 400-415.	1.2	5
11	On the construction of symmetric second order methods for ODEs. Applied Mathematics Letters, 2019, 98, 41-48.	1.5	2
12	Symplectic propagators for the Kepler problem with time-dependent mass. Celestial Mechanics and Dynamical Astronomy, 2019, 131, 1.	0.5	3
13	Computing the Matrix Exponential with an Optimized Taylor Polynomial Approximation. Mathematics, 2019, 7, 1174.	1.1	21
14	Novel symplectic integrators for the Kleinâ€“Gordon equation with space- and time-dependent mass. Journal of Computational and Applied Mathematics, 2019, 350, 130-138.	1.1	5
15	Efficient time integration methods for Gross-Pitaevskii equations with rotation term. Journal of Computational Dynamics, 2019, 6, 147-169.	0.4	2
16	Symplectic integrators for second-order linear non-autonomous equations. Journal of Computational and Applied Mathematics, 2018, 330, 909-919.	1.1	7
17	Convergence analysis of high-order commutator-free quasi-Magnus exponential integrators for nonautonomous linear evolution equations of parabolic type. IMA Journal of Numerical Analysis, 2018, 38, 743-778.	1.5	4
18	Exponential propagators for the SchrÃ¶dinger equation with a time-dependent potential. Journal of Chemical Physics, 2018, 148, 244109.	1.2	10

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19	Time-Average on the Numerical Integration of Nonautonomous Differential Equations. SIAM Journal on Numerical Analysis, 2018, 56, 2513-2536.	1.1	1
20	Symplectic time-average propagators for the SchrÃ¶dinger equation with a time-dependent Hamiltonian. Journal of Chemical Physics, 2017, 146, 114109.	1.2	13
21	High-order commutator-free quasi-Magnus exponential integrators for non-autonomousÂlinear evolution equations. Computer Physics Communications, 2017, 220, 243-262.	3.0	30
22	Symplectic integrators for the matrix Hill equation. Journal of Computational and Applied Mathematics, 2017, 316, 47-59.	1.1	7
23	Efficient numerical integration of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si20.gif" display="inline" overflow="scroll"><mml:mi>N</mml:mi></mml:math>th-order non-autonomous linear differential equations. Journal of Computational and Applied Mathematics, 2016, 291, 380-390.	1.1	3
24	The Scaling, Splitting, and Squaring Method for the Exponential of Perturbed Matrices. SIAM Journal on Matrix Analysis and Applications, 2015, 36, 594-614.	0.7	6
25	Explicit symplectic RKN methods for perturbed non-autonomous oscillators: Splitting, extended and exponentially fitting methods. Computer Physics Communications, 2015, 193, 10-18.	3.0	9
26	An efficient algorithm based on splitting for the time integration of the SchrÃ¶dinger equation. Journal of Computational Physics, 2015, 303, 396-412.	1.9	15
27	High order structure preserving explicit methods for solving linear-quadratic optimal control problems. Numerical Algorithms, 2015, 69, 271-290.	1.1	6
28	Numerical Integrators for the Hybrid Monte Carlo Method. SIAM Journal of Scientific Computing, 2014, 36, A1556-A1580.	1.3	44
29	Structure preserving integrators for solving (non-)linear quadratic optimal control problems with applications to describe the flight of a quadrotor. Journal of Computational and Applied Mathematics, 2014, 262, 223-233.	1.1	18
30	High-order splitting methods for separable non-autonomous parabolic equations. Applied Numerical Mathematics, 2014, 84, 22-32.	1.2	17
31	Exponential integrators for coupled self-adjoint non-autonomous partial differential systems. Applied Mathematics and Computation, 2014, 243, 1-11.	1.4	0
32	Solving the Pertubed Quantum Harmonic Oscillator in Imaginary Time Using Splitting Methods with Complex Coefficients. SEMA SIMAI Springer Series, 2014, , 217-227.	0.4	0
33	New families of symplectic splitting methods for numerical integration in dynamical astronomy. Applied Numerical Mathematics, 2013, 68, 58-72.	1.2	71
34	Solving the SchrÃ¶dinger eigenvalue problem by the imaginary time propagation technique using splitting methods with complex coefficients. Journal of Chemical Physics, 2013, 139, 124117.	1.2	47
35	High precision symplectic integrators for the Solar System. Celestial Mechanics and Dynamical Astronomy, 2013, 116, 141-174.	0.5	53
36	Beating the Verlet integrator in Monte Carlo simulations. , 2013, , .		0

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37	Optimized high-order splitting methods for some classes of parabolic equations. Mathematics of Computation, 2012, 82, 1559-1576.	1.1	45
38	Explicit adaptive symplectic integrators for solving Hamiltonian systems. Celestial Mechanics and Dynamical Astronomy, 2012, 114, 297-317.	0.5	20
39	Magnus integrators for solving linear-quadratic differential games. Journal of Computational and Applied Mathematics, 2012, 236, 3394-3408.	1.1	6
40	Time-averaging and exponential integrators for non-homogeneous linear IVPs and BVPs. Applied Numerical Mathematics, 2012, 62, 875-894.	1.2	13
41	Splitting methods in the numerical integration of non-autonomous dynamical systems. Revista De La Real Academia De Ciencias Exactas, Fisicas Y Naturales - Serie A: Matematicas, 2012, 106, 49-66.	0.6	12
42	Error Analysis of Splitting Methods for the Time Dependent SchrÃ¶dinger Equation. SIAM Journal of Scientific Computing, 2011, 33, 1525-1548.	1.3	7
43	New efficient numerical methods to describe the heat transfer in a solid medium. Mathematical and Computer Modelling, 2011, 54, 1858-1862.	2.0	5
44	Fourier methods for the perturbed harmonic oscillator in linear and nonlinear SchrÃ¶dinger equations. Physical Review E, 2011, 83, 046711.	0.8	14
45	A pedagogical approach to the Magnus expansion. European Journal of Physics, 2010, 31, 907-918.	0.3	47
46	Splitting and composition methods for explicit time dependence in separable dynamical systems. Journal of Computational and Applied Mathematics, 2010, 235, 646-659.	1.1	34
47	Splitting methods with complex coefficients. BoletÃn De La Sociedad EspaÃ‘ola De MatemÃ¡tica Aplicada, 2010, 50, 47-60.	0.9	5
48	The Magnus expansion and some of its applications. Physics Reports, 2009, 470, 151-238.	10.3	874
49	On the Linear Stability of Splitting Methods. Foundations of Computational Mathematics, 2008, 8, 357-393.	1.5	21
50	Splitting methods for non-autonomous linear systems. International Journal of Computer Mathematics, 2007, 84, 713-727.	1.0	11
51	Composition Methods for Differential Equations with Processing. SIAM Journal of Scientific Computing, 2006, 27, 1817-1843.	1.3	13
52	Fourth- and sixth-order commutator-free Magnus integrators for linear and non-linear dynamical systems. Applied Numerical Mathematics, 2006, 56, 1519-1537.	1.2	69
53	Splitting methods for non-autonomous separable dynamical systems. Journal of Physics A, 2006, 39, 5405-5423.	1.6	18
54	Symplectic splitting operator methods for the time-dependent SchrÃ¶dinger equation. Journal of Chemical Physics, 2006, 124, 234105.	1.2	31

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55	Comment on â€œStructure of positive decompositions of exponential operatorsâ€• Physical Review E, 2006, 73, 048701.	0.8	0
56	On the necessity of negative coefficients for operator splitting schemes of order higher than two. Applied Numerical Mathematics, 2005, 54, 23-37.	1.2	55
57	Raising the order of geometric numerical integrators by composition and extrapolation. Numerical Algorithms, 2005, 38, 305-326.	1.1	7
58	Adaptive Geometric Integrators for Hamiltonian Problems with Approximate Scale Invariance. SIAM Journal of Scientific Computing, 2005, 26, 1089-1113.	1.3	17
59	Explicit Adaptive Symplectic (Easy) Integrators: A Scaling Invariant Generalisation of the Levi-Civitaand KS Regularisations. Celestial Mechanics and Dynamical Astronomy, 2004, 89, 383-405.	0.5	11
60	On the convergence and optimization of the Bakerâ€“Campbellâ€“Hausdorff formula. Linear Algebra and Its Applications, 2004, 378, 135-158.	0.4	35
61	On the Numerical Integration of Ordinary Differential Equations by Processed Methods. SIAM Journal on Numerical Analysis, 2004, 42, 531-552.	1.1	21
62	Optimization of Lie group methods for differential equations. Future Generation Computer Systems, 2003, 19, 331-339.	4.9	7
63	Symplectic maps for approximating polynomial Hamiltonian systems. Physical Review E, 2002, 65, 056703.	0.8	9
64	Practical symplectic partitioned Rungeâ€“Kutta and Rungeâ€“Kuttaâ€“NystrÃ¶m methods. Journal of Computational and Applied Mathematics, 2002, 142, 313-330.	1.1	187
65	High Order Optimized Geometric Integrators for Linear Differential Equations. BIT Numerical Mathematics, 2002, 42, 262-284.	1.0	58
66	High-order Rungeâ€“Kuttaâ€“NystrÃ¶m geometric methods with processing. Applied Numerical Mathematics, 2001, 39, 245-259.	1.2	25
67	High order numerical integrators for differential equations using composition and processing of low order methods. Applied Numerical Mathematics, 2001, 37, 289-306.	1.2	19
68	Splitting Methods for Non-autonomous Hamiltonian Equations. Journal of Computational Physics, 2001, 170, 205-230.	1.9	32
69	Splitting methods for the time-dependent SchrÃ¶dinger equation. Physics Letters, Section A: General, Atomic and Solid State Physics, 2000, 265, 35-42.	0.9	60
70	Approximate solutions with a priori error bounds for continuous coefficient matrix Riccati equations. Mathematical and Computer Modelling, 2000, 31, 1-15.	2.0	29
71	Processing Symplectic Methods for Near-Integrable Hamiltonian Systems. Celestial Mechanics and Dynamical Astronomy, 2000, 77, 17-36.	0.5	23
72	Improved High Order Integrators Based on the Magnus Expansion. BIT Numerical Mathematics, 2000, 40, 434-450.	1.0	71

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73	Continuous numerical solutions of coupled mixed partial differential systems using Fer's factorization. Journal of Computational and Applied Mathematics, 1999, 101, 189-202.	1.1	5
74	Extrapolation of symplectic Integrators. Celestial Mechanics and Dynamical Astronomy, 1999, 75, 149-161.	0.5	21
75	Symplectic Integration with Processing: A General Study. SIAM Journal of Scientific Computing, 1999, 21, 711-727.	1.3	41
76	Magnus and Fer expansions for matrix differential equations: the convergence problem. Journal of Physics A, 1998, 31, 259-268.	1.6	100