

# Fernando Casas

## List of Publications by Year in Descending Order

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**Version:** 2024-04-28

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

86

papers

1,927

citations

21

h-index

42

g-index

87

ext. papers

2,246

ext. citations

2.6

avg, IF

4.93

L-index

#	Paper	IF	Citations
86	An efficient algorithm to compute the exponential of skew-Hermitian matrices for the time integration of the Schrödinger equation. <i>Mathematics and Computers in Simulation</i> , <b>2022</b> , 194, 383-400	3.3	0
85	Applying splitting methods with complex coefficients to the numerical integration of unitary problems. <i>Journal of Computational Dynamics</i> , <b>2021</b> ,	2.6	3
84	A Unifying Framework for Perturbative Exponential Factorizations. <i>Mathematics</i> , <b>2021</b> , 9, 637	2.3	1
83	Computing the matrix sine and cosine simultaneously with a reduced number of products. <i>Applied Numerical Mathematics</i> , <b>2021</b> , 163, 96-107	2.5	2
82	Compositions of pseudo-symmetric integrators with complex coefficients for the numerical integration of differential equations. <i>Journal of Computational and Applied Mathematics</i> , <b>2021</b> , 381, 113006	2.4	4
81	Convergence analysis of high-order commutator-free quasi-Magnus exponential integrators for nonautonomous linear Schrödinger equations. <i>IMA Journal of Numerical Analysis</i> , <b>2021</b> , 41, 594-617	1.8	
80	A Note on the Baker-Campbell-Hausdorff Series in Terms of Right-Nested Commutators. <i>Mediterranean Journal of Mathematics</i> , <b>2021</b> , 18, 1	0.9	
79	Splitting Methods for Rotations: Application to Vlasov Equations. <i>SIAM Journal of Scientific Computing</i> , <b>2020</b> , 42, A666-A697	2.6	5
78	Composition Methods for Dynamical Systems Separable into Three Parts. <i>Mathematics</i> , <b>2020</b> , 8, 533	2.3	4
77	Numerical integrators based on the Magnus expansion for nonlinear dynamical systems. <i>Applied Mathematics and Computation</i> , <b>2020</b> , 369, 124844	2.7	1
76	Exponential Perturbative Expansions and Coordinate Transformations. <i>Mathematical and Computational Applications</i> , <b>2020</b> , 25, 50	1	1
75	Symplectic propagators for the Kepler problem with time-dependent mass. <i>Celestial Mechanics and Dynamical Astronomy</i> , <b>2019</b> , 131, 1	1.4	1
74	Continuous changes of variables and the Magnus expansion. <i>Journal of Physics Communications</i> , <b>2019</b> , 3, 095014	1.2	1
73	Splitting and composition methods with embedded error estimators. <i>Applied Numerical Mathematics</i> , <b>2019</b> , 146, 400-415	2.5	2
72	Efficient time integration methods for Gross-Pitaevskii equations with rotation term. <i>Journal of Computational Dynamics</i> , <b>2019</b> , 6, 147-169	2.6	2
71	Computing the Matrix Exponential with an Optimized Taylor Polynomial Approximation. <i>Mathematics</i> , <b>2019</b> , 7, 1174	2.3	10
70	Novel symplectic integrators for the Klein-Gordon equation with space- and time-dependent mass. <i>Journal of Computational and Applied Mathematics</i> , <b>2019</b> , 350, 130-138	2.4	2

69	Symplectic integrators for second-order linear non-autonomous equations. <i>Journal of Computational and Applied Mathematics</i> , <b>2018</b> , 330, 909-919	2.4	4
68	A note on trigonometric identities involving non-commuting matrices. <i>SeMA Journal</i> , <b>2018</b> , 75, 35-44	1.2	
67	A general formula for the Magnus expansion in terms of iterated integrals of right-nested commutators. <i>Journal of Physics Communications</i> , <b>2018</b> , 2, 035024	1.2	9
66	The Lie-group method based on radial basis functions for solving nonlinear high dimensional generalized BenjaminBonaMahonyBurgers equation in arbitrary domains. <i>Applied Mathematics and Computation</i> , <b>2018</b> , 321, 223-243	2.7	12
65	Computational Aspects of Some Exponential Identities. <i>Springer Proceedings in Mathematics and Statistics</i> , <b>2018</b> , 185-229	0.2	
64	Convergence analysis of high-order commutator-free quasi-Magnus exponential integrators for nonautonomous linear evolution equations of parabolic type. <i>IMA Journal of Numerical Analysis</i> , <b>2018</b> , 38, 743-778	1.8	4
63	High-order Hamiltonian splitting for the VlasovBoisson equations. <i>Numerische Mathematik</i> , <b>2017</b> , 135, 769-801	2.2	16
62	Symplectic time-average propagators for the Schrödinger equation with a time-dependent Hamiltonian. <i>Journal of Chemical Physics</i> , <b>2017</b> , 146, 114109	3.9	10
61	On the structure and convergence of the symmetric Zassenhaus formula. <i>Computer Physics Communications</i> , <b>2017</b> , 217, 58-65	4.2	3
60	High-order commutator-free quasi-Magnus exponential integrators for non-autonomous linear evolution equations. <i>Computer Physics Communications</i> , <b>2017</b> , 220, 243-262	4.2	25
59	Novel multipactor studies in RF satellite payloads: Single-carrier digital modulated signals and ferrite materials <b>2017</b> ,		2
58	Efficient numerical integration of Nth-order non-autonomous linear differential equations. <i>Journal of Computational and Applied Mathematics</i> , <b>2016</b> , 291, 380-390	2.4	3
57	Analysis of Multipactor RF Breakdown in a Waveguide Containing a Transversely Magnetized Ferrite. <i>IEEE Transactions on Electron Devices</i> , <b>2016</b> , 63, 4939-4947	2.9	9
56	A perturbative algorithm for quasi-periodic linear systems close to constant coefficients. <i>Applied Mathematics and Computation</i> , <b>2016</b> , 273, 398-409	2.7	2
55	Efficient numerical integration of neutrino oscillations in matter. <i>Physical Review D</i> , <b>2016</b> , 94,	4.9	3
54	On time-dependent perturbation theory in matrix mechanics and time averaging. <i>European Journal of Physics</i> , <b>2015</b> , 36, 055049	0.8	1
53	An efficient algorithm based on splitting for the time integration of the Schrödinger equation. <i>Journal of Computational Physics</i> , <b>2015</b> , 303, 396-412	4.1	9
52	Numerical Integrators for the Hybrid Monte Carlo Method. <i>SIAM Journal of Scientific Computing</i> , <b>2014</b> , 36, A1556-A1580	2.6	28

51	Simulations of kinetic electrostatic electron nonlinear (KEEN) waves with variable velocity resolution grids and high-order time-splitting. <i>European Physical Journal D</i> , <b>2014</b> , 68, 1	1.3	12
50	Exponential polar factorization of the fundamental matrix of linear differential systems. <i>Journal of Computational and Applied Mathematics</i> , <b>2014</b> , 268, 168-178	2.4	
49	A Lie--Deprit perturbation algorithm for linear differential equations with periodic coefficients. <i>Discrete and Continuous Dynamical Systems</i> , <b>2014</b> , 34, 959-975	2	2
48	New families of symplectic splitting methods for numerical integration in dynamical astronomy. <i>Applied Numerical Mathematics</i> , <b>2013</b> , 68, 58-72	2.5	59
47	Solving the Schrödinger eigenvalue problem by the imaginary time propagation technique using splitting methods with complex coefficients. <i>Journal of Chemical Physics</i> , <b>2013</b> , 139, 124117	3.9	39
46	High precision symplectic integrators for the Solar System. <i>Celestial Mechanics and Dynamical Astronomy</i> , <b>2013</b> , 116, 141-174	1.4	41
45	Splitting methods in the numerical integration of non-autonomous dynamical systems. <i>Revista De La Real Academia De Ciencias Exactas, Fisicas Y Naturales - Serie A: Matematicas</i> , <b>2012</b> , 106, 49-66	1.6	10
44	Efficient computation of the Zassenhaus formula. <i>Computer Physics Communications</i> , <b>2012</b> , 183, 2386-2391	4.1	53
43	Unitary transformations depending on a small parameter. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , <b>2012</b> , 468, 685-700	2.4	6
42	Optimized high-order splitting methods for some classes of parabolic equations. <i>Mathematics of Computation</i> , <b>2012</b> , 82, 1559-1576	1.6	31
41	Error Analysis of Splitting Methods for the Time Dependent Schrödinger Equation. <i>SIAM Journal of Scientific Computing</i> , <b>2011</b> , 33, 1525-1548	2.6	6
40	New analytic approximations based on the Magnus expansion. <i>Journal of Mathematical Chemistry</i> , <b>2011</b> , 49, 1741-1758	2.1	4
39	On processed splitting methods and high-order actions in path-integral Monte Carlo simulations. <i>Journal of Chemical Physics</i> , <b>2010</b> , 133, 154114	3.9	
38	Splitting methods with complex coefficients. <i>Boletín De La Sociedad Española De Matemática Aplicada</i> , <b>2010</b> , 50, 47-60		4
37	A pedagogical approach to the Magnus expansion. <i>European Journal of Physics</i> , <b>2010</b> , 31, 907-918	0.8	32
36	An efficient algorithm for computing the Baker-Campbell-Hausdorff series and some of its applications. <i>Journal of Mathematical Physics</i> , <b>2009</b> , 50, 033513	1.2	47
35	The Magnus expansion and some of its applications. <i>Physics Reports</i> , <b>2009</b> , 470, 151-238	27.7	675
34	On the Linear Stability of Splitting Methods. <i>Foundations of Computational Mathematics</i> , <b>2008</b> , 8, 357-393	3.7	15

33	New numerical integrators based on solvability and splitting. <i>Journal of Computational and Applied Mathematics</i> , <b>2007</b> , 205, 802-813	2.4	
32	Sufficient conditions for the convergence of the Magnus expansion. <i>Journal of Physics A: Mathematical and Theoretical</i> , <b>2007</b> , 40, 15001-15017	2	39
31	Splitting methods for non-autonomous linear systems. <i>International Journal of Computer Mathematics</i> , <b>2007</b> , 84, 713-727	1.2	10
30	Explicit Magnus expansions for nonlinear equations. <i>Journal of Physics A</i> , <b>2006</b> , 39, 5445-5461		41
29	Splitting methods for non-autonomous separable dynamical systems. <i>Journal of Physics A</i> , <b>2006</b> , 39, 5405-5423	16	
28	Symplectic splitting operator methods for the time-dependent Schrodinger equation. <i>Journal of Chemical Physics</i> , <b>2006</b> , 124, 234105	3.9	22
27	Comment on "Structure of positive decompositions of exponential operators". <i>Physical Review E</i> , <b>2006</b> , 73, 048701	2.4	
26	Composition Methods for Differential Equations with Processing. <i>SIAM Journal of Scientific Computing</i> , <b>2006</b> , 27, 1817-1843	2.6	11
25	On the necessity of negative coefficients for operator splitting schemes of order higher than two. <i>Applied Numerical Mathematics</i> , <b>2005</b> , 54, 23-37	2.5	44
24	Raising the order of geometric numerical integrators by composition and extrapolation. <i>Numerical Algorithms</i> , <b>2005</b> , 38, 305-326	2.1	5
23	On the convergence and optimization of the Baker-Campbell-Hausdorff formula. <i>Linear Algebra and Its Applications</i> , <b>2004</b> , 378, 135-158	0.9	31
22	Numerical integration methods for the double-bracket flow. <i>Journal of Computational and Applied Mathematics</i> , <b>2004</b> , 166, 477-495	2.4	7
21	On the Numerical Integration of Ordinary Differential Equations by Processed Methods. <i>SIAM Journal on Numerical Analysis</i> , <b>2004</b> , 42, 531-552	2.4	19
20	Cost Efficient Lie Group Integrators in the RKMK Class. <i>BIT Numerical Mathematics</i> , <b>2003</b> , 43, 723-742	1.7	8
19	Optimization of Lie group methods for differential equations. <i>Future Generation Computer Systems</i> , <b>2003</b> , 19, 331-339	7.5	5
18	Extrapolation in Lie groups with approximated BCH-formula. <i>Applied Numerical Mathematics</i> , <b>2002</b> , 42, 465-472	2.5	1
17	High Order Optimized Geometric Integrators for Linear Differential Equations. <i>BIT Numerical Mathematics</i> , <b>2002</b> , 42, 262-284	1.7	51
16	High-order Runge-Kutta-Nyström geometric methods with processing. <i>Applied Numerical Mathematics</i> , <b>2001</b> , 39, 245-259	2.5	15

15	Floquet theory: exponential perturbative treatment. <i>Journal of Physics A</i> , <b>2001</b> , 34, 3379-3388		70
14	Processing Symplectic Methods for Near-Integrable Hamiltonian Systems. <i>Celestial Mechanics and Dynamical Astronomy</i> , <b>2000</b> , 77, 17-36	1.4	17
13	Improved High Order Integrators Based on the Magnus Expansion. <i>BIT Numerical Mathematics</i> , <b>2000</b> , 40, 434-450	1.7	59
12	Extrapolation of symplectic Integrators. <i>Celestial Mechanics and Dynamical Astronomy</i> , <b>1999</b> , 75, 149-161	1.4	14
11	Symplectic Integration with Processing: A General Study. <i>SIAM Journal of Scientific Computing</i> , <b>1999</b> , 21, 711-727	2.6	37
10	Magnus and Fer expansions for matrix differential equations: the convergence problem. <i>Journal of Physics A</i> , <b>1998</b> , 31, 259-268		87
9	Control of Chaotic Impacts. <i>International Journal of Bifurcation and Chaos in Applied Sciences and Engineering</i> , <b>1997</b> , 07, 951-955	2	15
8	Control of Chaos: Impact Oscillators and Targeting. <i>Solid Mechanics and Its Applications</i> , <b>1997</b> , 17-26	0.4	
7	Solution of linear partial differential equations by Lie algebraic methods. <i>Journal of Computational and Applied Mathematics</i> , <b>1996</b> , 76, 159-170	2.4	14
6	Universal grazing bifurcations in impact oscillators. <i>Physical Review E</i> , <b>1996</b> , 53, 134-139	2.4	20
5	Linear time-dependent Hamiltonian systems beyond the adiabatic limit. <i>Journal of Physics A</i> , <b>1994</b> , 27, 4325-4339		1
4	Variation of the action in the classical time-dependent harmonic oscillator: an exact result. <i>Journal of Physics A</i> , <b>1993</b> , 26, L315-L318		
3	Geometric factors in the adiabatic evolution of classical systems. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , <b>1992</b> , 163, 359-363	2.3	1
2	Lie algebraic approach to Fer expansion for classical Hamiltonian systems. <i>Journal of Physics A</i> , <b>1991</b> , 24, 4037-4046		14
1	A Concise Introduction to Geometric Numerical Integration		38