JesÃºs Vigo-Aguiar

List of Publications by Year
in descending order

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119 papers	3,167 citations	94269 37 h-index	174990 52 g-index
136 all docs	136 docs citations	136 times ranked	697 citing authors

#	Article	IF	Citations
1	Symplectic conditions for exponential fitting Runge-Kutta-NystrÃ¶m methods. Mathematical and Computer Modelling, 2005, 42, 873-876.	2.0	115
2	A General Procedure For the Adaptation of Multistep Algorithms to the Integration of Oscillatory Problems. SIAM Journal on Numerical Analysis, 1998, 35, 1684-1708.	1.1	105
3	Title is missing!. Journal of Mathematical Chemistry, 2001, 30, 121-131.	0.7	101
4	Title is missing!. Journal of Mathematical Chemistry, 2002, 32, 257-270.	0.7	93
5	Dissipative Chebyshev exponential-fitted methods for numerical solution of second-order differential equations. Journal of Computational and Applied Mathematics, 2003, 158, 187-211.	1.1	93
6	Analysis of a Numerical Dynamic Programming Algorithm Applied to Economic Models. Econometrica, 1998, 66, 409.	2.6	92
7	A Parallel Boundary Value Technique for Singularly Perturbed Two-Point Boundary Value Problems. Journal of Supercomputing, 2004, 27, 195-206.	2.4	92
8	Title is missing!. Journal of Mathematical Chemistry, 2002, 31, 135-144.	0.7	87
9	Exponentially fitted symplectic integrator. Physical Review E, 2003, 67, 016701.	0.8	85
10	Review of multistep methods for the numerical solution of the radial SchrÃ¶dinger equation. International Journal of Quantum Chemistry, 2005, 103, 278-290.	1.0	80
11	Variable stepsize implementation of multistep methods for <mml:math altimg="si47.gif" overflow="scroll" xmlns:xocs="http://www.elsevier.com/xml/xocs/dtd" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://www.elsevier.com/xml/ja/dtd" xmlns:ja="http://www.elsevier.com/xml/ja/dtd" xmlns:mml="http://www.w3.org/1998/Math/MathML" xmlns:tb="http://www.elsevier.com/xml/common/table/dtd" xmlns:sb="http://www.elsevier.com/xml/co	1.1	73
12	On the frequency choice in trigonometrically fitted methods. Applied Mathematics Letters, 2010, 23, 1378-1381.	1.5	73
13	Exponential fitting BDFâ€“Rungeâ€“Kutta algorithms. Computer Physics Communications, 2008, 178, 15-34.	3.0	72
14	A dissipative exponentially-fitted method for the numerical solution of the SchrÃ¶dinger equation and related problems. Computer Physics Communications, 2003, 152, 274-294.	3.0	68
15	Parameter uniform optimal order numerical approximation of a class of singularly perturbed system of reaction diffusion problems involving a small perturbation parameter. Journal of Computational and Applied Mathematics, 2019, 354, 533-544.	1.1	68
16	High-performance computing: the essential tool and the essential challenge. Journal of Supercomputing, 2017, 73, 1-3.	2.4	66
17	Higher order accurate approximations on equidistributed meshes for boundary layer originated mixed type reaction diffusion systems with multiple scale nature. Applied Numerical Mathematics, 2020, 148, 79-97.	1.2	65
18	Parameter uniform numerical method for singularly perturbed turning point problems exhibiting boundary layers. Journal of Computational and Applied Mathematics, 2003, 158, 121-134.	1.1	60

#	Article	IF	Citations
19	Weak Second Order Conditions for Stochastic Runge--Kutta Methods. SIAM Journal of Scientific Computing, 2002, 24, 507-523.	1.3	58
20	Exponential fitted Gauss, Radau and Lobatto methods of low order. Numerical Algorithms, 2008, 48, 327-346.	1.1	57
21	Adapted BDF Algorithms: Higher-order Methods and Their Stability. Journal of Scientific Computing, 2007, 32, 287-313.	1.1	54
22	An efficient numerical method for singular perturbation problems. Journal of Computational and Applied Mathematics, 2006, 192, 132-141.	1.1	51
23	Controlling the error growth in longâ€"term numerical integration of perturbed oscillations in one or several frequencies. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2004, 460, 561-567.	1.0	50
24	On smoothing of the Crankâ€"Nicolson scheme and higher order schemes for pricing barrier options. Journal of Computational and Applied Mathematics, 2007, 204, 144-158.	1.1	50
25	AN ADAPTED SYMPLECTIC INTEGRATOR FOR HAMILTONIAN PROBLEMS. International Journal of Modern Physics C, 2001, 12, 225-234.	0.8	49
26	A Family of P-stable Eighth Algebraic Order Methods with Exponential Fitting Facilities. Journal of Mathematical Chemistry, 2001, 29, 177-189.	0.7	48
27	A family of A-stable Runge Kutta collocation methods of higher order for initial-value problems. IMA Journal of Numerical Analysis, 2007, 27, 798-817.	1.5	46
28	A Parallel ODE Solver Adapted to Oscillatory Problems. Journal of Supercomputing, 2001, 19, 163-171.	2.4	45
29	On the numerical solution of the heat conduction equations subject to nonlocal conditions. Applied Numerical Mathematics, 2009, 59, 2507-2514.	1.2	45
30	An embedded exponentially-fitted Runge-Kutta method for the numerical solution of the SchrÃ¶dinger equation and related periodic initial-value problems. Computer Physics Communications, 2000, 131, 52-67.	3.0	44
31	A modified Rungeâ€"Kutta method with phase-lag of order infinity for the numerical solution of the SchrÃ¶dinger equation and related problems. Computers & Chemistry, 2001, 25, 275-281.	1.2	43
32	A numerical algorithm for singular perturbation problems exhibiting weak boundary layers. Computers and Mathematics With Applications, 2003, 45, 469-479.	1.4	42
33	On the choice of the frequency in trigonometrically-fitted methods for periodic problems. Journal of Computational and Applied Mathematics, 2015, 277, 94-105.	1.1	42
34	A moving mesh refinement based optimal accurate uniformly convergent computational method for a parabolic system of boundary layer originated reactionâ€"diffusion problems with arbitrary small diffusion terms. Journal of Computational and Applied Mathematics, 2022, 404, 113167.	1.1	41
35	An exponentially-fitted high order method for long-term integration of periodic initial-value problems. Computer Physics Communications, 2001, 140, 358-365.	3.0	39
36	Exponential fitting BDF algorithms: Explicit and implicit 0-stable methods. Journal of Computational and Applied Mathematics, 2006, 192, 100-113.	1.1	39

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37	A NEW MODIFIED RUNGEâ€“KUTTAâ€“NYSTRÃ–M METHOD WITH PHASE-LAG OF ORDER INFINITY FOR THE NUMERICAL SOLUTION OF THE SCHRÃ–DINGER EQUATION AND RELATED PROBLEMS. International Journal of Modern Physics C, 2000, 11, 1195-1208.	0.8	37
38	A SYMMETRIC HIGH ORDER METHOD WITH MINIMAL PHASE-LAG FOR THE NUMERICAL SOLUTION OF THE SCHRÃ–DINGER EQUATION. International Journal of Modern Physics C, 2001, 12, 1035-1042.	0.8	37
39	ON THE CONSTRUCTION OF EFFICIENT METHODS FOR SECOND ORDER IVPS WITH OSCILLATING SOLUTION. International Journal of Modern Physics C, 2001, 12, 1453-1476.	0.8	37
40	Numerical solution of nonlinear singularly perturbed problems on nonuniform meshes by using a non-standard algorithm. Journal of Mathematical Chemistry, 2010, 48, 38-54.	0.7	35
41	A unified approach for the development of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si36.gif" display="inline" overflow="scroll"><mml:mi>k</mml:mi></mml:math>-step block Falkner-type methods for solving general second-order initial-value problems in ODEs. Journal of Computational and Applied Mathematics, 2017, 318, 550-564.	1.1	33
42	A fourth-order Rungeâ€“Kutta method based on BDF-type Chebyshev approximations. Journal of Computational and Applied Mathematics, 2007, 204, 124-136.	1.1	32
43	A new algorithm appropriate for solving singular and singularly perturbed autonomous initial-value problems. International Journal of Computer Mathematics, 2008, 85, 603-611.	1.0	30
44	A variable-step Numerov method for the numerical solution of the Schrï¿½dinger equation. Journal of Mathematical Chemistry, 2005, 37, 255-262.	0.7	24
45	On the stability of exponential fitting BDF algorithms. Journal of Computational and Applied Mathematics, 2005, 175, 183-194.	1.1	23
46	A note on efficient techniques for the second-order parabolic equation subject to non-local conditions. Applied Numerical Mathematics, 2009, 59, 1258-1264.	1.2	23
47	Variable stepsize stÃ¶rmer-cowell methods. Mathematical and Computer Modelling, 2005, 42, 837-846.	2.0	22
48	High order smoothing schemes for inhomogeneous parabolic problems with applications in option pricing. Numerical Methods for Partial Differential Equations, 2007, 23, 1249-1276.	2.0	21
49	Higher-order variable-step algorithms adapted to the accurate numerical integration of perturbed oscillators. Computers in Physics, 1998, 12, 467.	0.6	19
50	Variable-stepsize Chebyshev-type methods for the integration of second-order I.V.P.'s. Journal of Computational and Applied Mathematics, 2007, 204, 102-113.	1.1	18
51	The application of Newtonâ€™s method in vector form for solving nonlinear scalar equations where the classical Newton method fails. Journal of Computational and Applied Mathematics, 2015, 275, 228-237.	1.1	17
52	VSVO multistep formulae adapted to perturbed second-order differential equations. Applied Mathematics Letters, 1998, 11, 83-87.	1.5	16
53	An Exponentially Fitted and Trigonometrically Fitted Method for the Numerical Solution of Orbital Problems. Astronomical Journal, 2001, 122, 1656-1660.	1.9	16
54	A New Eighth-order A-stable Method for Solving Differential Systems Arising in Chemical Reactions. Journal of Mathematical Chemistry, 2006, 40, 71-83.	0.7	16

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55	A numerical ODE solver that preserves the fixed points and their stability. Journal of Computational and Applied Mathematics, 2011, 235, 1856-1867.	1.1	14
56	A trigonometrically-fitted method with two frequencies, one for the solution and another one for the derivative. Computer Physics Communications, 2014, 185, 1230-1236.	3.0	14
57	Numeric multistep variable methods for perturbed linear system integration. Applied Mathematics and Computation, 2007, 190, 63-79.	1.4	13
58	Exponential fitting BDF algorithms and their properties. Applied Mathematics and Computation, 2007, 190, 80-110.	1.4	12
59	A first approach in solving initial-value problems in ODEs by elliptic fitting methods. Journal of Computational and Applied Mathematics, 2017, 318, 599-603.	1.1	12
60	A parameter-uniform grid equidistribution method for singularly perturbed degenerate parabolic convectionâ€"diffusion problems. Journal of Computational and Applied Mathematics, 2022, 404, 113273.	1.1	12
61	Numerical solution of timeâ€fractional singularly perturbed convectionâ€"diffusion problems with a delay in time. Mathematical Methods in the Applied Sciences, 2021, 44, 3080-3097.	1.2	12
62	An almost L-stable BDF-type method for the numerical solution of stiff ODEs arising from the method of lines. Numerical Methods for Partial Differential Equations, 2007, 23, 1110-1121.	2.0	10
63	A new implicit six-step P-stable method for the numerical solution of SchrÃ¶dinger equation. International Journal of Computer Mathematics, 2020, 97, 802-817.	1.0	10
64	Accurate Numerical Integration of Perturbed Oscillatory Systems in Two Frequencies. ACM Transactions on Mathematical Software, 2009, 36, 1-34.	1.6	9
65	A new four-step P-stable Obrechkoff method with vanished phase-lag and some of its derivatives for the numerical solution of radial SchrÃ¶dinger equation. Journal of Computational and Applied Mathematics, 2019, 354, 569-586.	1.1	9
66	High order Bessel fitting methods for the numerical integration of the SchrÃ¶dinger equation. Computers & Chemistry, 2001, 25, 97-100.	1.2	8
67	A Note on the Step Size Selection in Adams Multistep Methods. Numerical Algorithms, 2001, 27, 359-366.	1.1	8
68	New ItÃ´â€"Taylor expansions. Journal of Computational and Applied Mathematics, 2003, 158, 169-185.	1.1	8
69	Adapted BDF algorithms applied to parabolic problems. Numerical Methods for Partial Differential Equations, 2007, 23, 350-365.	2.0	8
70	Advances in Computational and Mathematical Methods in Science and Engineering. Journal of Computational and Applied Mathematics, 2011, 235, 1745.	1.1	8
71	Preface Recent advances in computational and applied mathematics in science and engineering. International Journal of Computer Mathematics, 2008, 85, 307-307.	1.0	7
72	Multistep numerical methods for the integration of oscillatory problems in several frequencies. Advances in Engineering Software, 2009, 40, 543-553.	1.8	7

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73	A stable finite difference scheme and error estimates for parabolic singularly perturbed PDEs with shift parameters. Journal of Computational and Applied Mathematics, 2022, 405, 113050.	1.1	7
74	Analysis of a nonlinear singularly perturbed Volterra integro-differential equation. Journal of Computational and Applied Mathematics, 2022, 404, 113410.	1.1	7
75	Quadratic Bâ€spline collocation method for time dependentÂsingularly perturbed differentialâ€difference equation arising in the modeling of neuronalactivity. Numerical Methods for Partial Differential Equations, 0, , .	2.0	7
76	Mathematical and computational tools in theoretical chemistry. Journal of Mathematical Chemistry, 2010, 48, 1-2.	0.7	6
77	Periodics orbits and C1-integrability in the planar Starkâ€"Zeeman problem. Journal of Mathematical Physics, 2012, 53, 082701.	0.5	6
78	Preface to high performance computing applied to computational problems in science and engineering. Journal of Supercomputing, 2013, 64, 1-3.	2.4	6
79	A strategy for selecting the frequency in trigonometrically-fitted methods based on the minimization of the local truncation errors and the total energy error. Journal of Mathematical Chemistry, 2014, 52, 1050-1058.	0.7	6
80	ENCKE METHODS ADAPTED TO REGULARIZING VARIABLES. International Journal of Modern Physics A, 2000, 15, 3993-4010.	0.5	5
81	Backward differentiation formulae adapted to scalar linear equations. Applied Mathematics Letters, 2001, 14, 639-643.	1.5	5
82	Topics of contemporary computational mathematics. International Journal of Computer Mathematics, 2012, 89, 265-267.	1.0	5
83	New numerical method improving the integration of time in KS regularization. Journal of Guidance, Control, and Dynamics, 1996, 19, 742-744.	1.6	4
84	Modification of the Richardson-Panovsky methods for precise integration of satellite orbits. Computers and Mathematics With Applications, 2003, 45, 25-36.	1.4	4
85	High performance computing tools in science andÂengineering. Journal of Supercomputing, 2011, 58, 143-144.	2.4	4
86	Applications of computational mathematics in science and engineering. International Journal of Computer Mathematics, 2011, 88, 1805-1807.	1.0	4
87	Decomposition of pseudo-radioactive chemical products with a mathematical approach. Journal of Mathematical Chemistry, 2014, 52, 1059-1065.	0.7	4
88	Current computational tools for science engineering and economics at CMMSE. Journal of Computational and Applied Mathematics, 2017, 318, 1-2.	1.1	4
89	Numerical approximation of 2D time dependent singularly perturbed convectionâ€"diffusion problems with attractive or repulsive turning points. Applied Mathematics and Computation, 2018, 317, 223-233.	1.4	4
90	An Infinite Family of Second Order Weak Explicit Runge-Kutta Methods. Journal of Computational Methods in Sciences and Engineering, 2001, 1, 125-134.	0.1	3

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91	A note on step-size selection in the StÃ¶rmerâ€“Cowell methods. Journal of Computational and Applied Mathematics, 2005, 175, 149-159.	1.1	3
92	Stochastic methods for Dirichlet problems. Mathematical Modelling and Algorithms, 2005, 4, 317-330.	0.5	3
93	Recent advances in computational and applied mathematics in science and engineering. International Journal of Computer Mathematics, 2009, 86, 199-199.	1.0	3
94	Mathematical and computational methods with applications in chemistry and physics. Journal of Mathematical Chemistry, 2010, 48, 95-97.	0.7	3
95	Advances in computational and mathematical chemistry. Journal of Mathematical Chemistry, 2012, 50, 311-312.	0.7	3
96	Computer science and mathematics for chemistry-related applications. Journal of Mathematical Chemistry, 2012, 50, 379-380.	0.7	3
97	Applied differential equations and related computational mathematics in chemistry. Journal of Mathematical Chemistry, 2014, 52, 1021-1022.	0.7	3
98	On the Use of Running Trends as Summary Statistics for Univariate Time Series and Time Series Association. Journal of Climate, 2015, 28, 7489-7502.	1.2	3
99	High performance computing: an essential tool for science and engineering breakthroughs. Journal of Supercomputing, 2014, 70, 511-513.	2.4	2
100	A new class of two-step P-stable TFPL methods for the numerical solution of second-order IVPs with oscillating solutions. Journal of Computational and Applied Mathematics, 2019, 354, 551-561.	1.1	2
101	An Efficient Parallel Algorithm for the Numerical Solution of SchrÃ¶dinger Equation. Lecture Notes in Computer Science, 2001, , 262-270.	1.0	1
102	Explicit finite difference schemes adapted to advectionâ€“reaction equations. International Journal of Computer Mathematics, 2008, 85, 547-558.	1.0	1
103	Mathematical modeling for chemistry-related applications. Journal of Mathematical Chemistry, 2013, 51, 1135-1138.	0.7	1
104	New Optimization Techniques in Engineering. Mathematical Modelling and Algorithms, 2013, 12, 213-215.	0.5	1
105	Mathematical and computational tools in chemistry: CMMSEâ€"2014. Journal of Mathematical Chemistry, 2015, 53, 791-793.	0.7	1
106	Recent mathematicalâ€“computational techniques and models in chemistry. Journal of Mathematical Chemistry, 2017, 55, 1367-1369.	0.7	1
107	VARIABLE STEP-SIZE STÃ–RMER METHODS. , 2003, , .		1
108	On the Stability of Exponential Fitting BDF Algorithms: Higher-Order Methods. , 2019, , 351-353.		1

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109	A numerical scheme for a weakly coupled system of singularly perturbed delay differential equations on an adaptive mesh. Computational and Mathematical Methods, 2021, 3, e1104.	0.3	1
110	Three-dimensional Haar wavelet method for singularly perturbed elliptic boundary value problems on non-uniform meshes. Journal of Mathematical Chemistry, 2022, 60, 1314-1336.	0.7	1
111	New algorithms and trends in modelling. Mathematical Modelling and Algorithms, 2005, 4, 235-235.	0.5	0
112	High performance computing tools in science and engineering II. Journal of Supercomputing, 2011, 58, 281-282.	2.4	0
113	Computational and mathematical methods in science and engineering. International Journal of Computer Mathematics, 2012, 89, 1725-1727.	1.0	0
114	High performance computing tools in science and engineering. Journal of Supercomputing, 2013, 65, 997-998.	2.4	0
115	Foreword for the Special issue on CMMSE 2017. Journal of Mathematical Chemistry, 2018, 56, 1811-1812.	0.7	0
116	International Conference on Computational and Mathematical Methods in Science and Engineering, held in Costa Ballena, CÃ¡diz, Spain, July 9â€“13, 2018. Journal of Mathematical Chemistry, 2019, 57, 1241-1242.	0.7	0
117	Computational and mathematical models meet heterogeneous computing. Journal of Supercomputing, 2019, 75, 999-1000.	2.4	0
118	CMMSE: Computational and Mathematical Methods in Science and Engineering. International Journal of Computer Mathematics, 2020, 97, 1-1.	1.0	0
119	Guest Editor Foreword for CMMSE special issue of Journal of Mathematical Chemistry. Journal of Mathematical Chemistry, 2020, 58, 543-543.	0.7	0