Jean-Luc Guermond

List of Publications by Year
in descending order

137 papers	5,156 citations	101384 36 h-index	98622 67 g-index
139 all docs	139 docs citations	139 times ranked	2559 citing authors

#	Article	IF	Citations
1	Theory and Practice of Finite Elements. Applied Mathematical Sciences (Switzerland), 2004, , .	0.4	1,021
2	Entropy viscosity method for nonlinear conservation laws. Journal of Computational Physics, 2011, 230, 4248-4267.	1.9	259
3	A Projection FEM for Variable Density Incompressible Flows. Journal of Computational Physics, 2000, 165, 167-188.	1.9	223
4	Nonlinear corrections to Darcy's law at low Reynolds numbers. Journal of Fluid Mechanics, 1997, 343, 331-350.	1.4	181
5	On stability and convergence of projection methods based on pressure Poisson equation. International Journal for Numerical Methods in Fluids, 1998, 26, 1039-1053.	0.9	154
6	On the approximation of the unsteady Navier-Stokes equations by finite element projection methods. Numerische Mathematik, 1998, 80, 207-238.	0.9	139
7	A splitting method for incompressible flows with variable density based on a pressure Poisson equation. Journal of Computational Physics, 2009, 228, 2834-2846.	1.9	133
8	Finite element quasi-interpolation and best approximation. ESAIM: Mathematical Modelling and Numerical Analysis, 2017, 51, 1367-1385.	0.8	111
9	Mathematical Perspectives on Large Eddy Simulation Models for Turbulent Flows. Journal of Mathematical Fluid Mechanics, 2004, 6, 194-248.	0.4	86
10	Calculation of Incompressible Viscous Flows by an Unconditionally Stable Projection FEM. Journal of Computational Physics, 1997, 132, 12-33.	1.9	83
11	Invariant Domains and First-Order Continuous Finite Element Approximation for Hyperbolic Systems. SIAM Journal on Numerical Analysis, 2016, 54, 2466-2489.	1.1	76
12	Viscous Regularization of the Euler Equations and Entropy Principles. SIAM Journal on Applied Mathematics, 2014, 74, 284-305.	0.8	75
13	Second-Order Invariant Domain Preserving Approximation of the Euler Equations Using Convex Limiting. SIAM Journal of Scientific Computing, 2018, 40, A3211-A3239.	1.3	67
14	Performance benchmarks for a next generation numerical dynamo model. Geochemistry, Geophysics, Geosystems, 2016, 17, 1586-1607.	1.0	66
15	Some implementations of projection methods for Navier-Stokes equations. ESAIM: Mathematical Modelling and Numerical Analysis, 1996, 30, 637-667.	0.8	63
16	Regularity of the Maxwell equations in heterogeneous media and Lipschitz domains. Journal of Mathematical Analysis and Applications, 2013, 408, 498-512.	0.5	61
17	A Second-Order Maximum Principle Preserving Lagrange Finite Element Technique for Nonlinear Scalar Conservation Equations. SIAM Journal on Numerical Analysis, 2014, 52, 2163-2182.	1.1	61
18	An interior penalty Galerkin method for the MHD equations in heterogeneous domains. Journal of Computational Physics, 2007, 221, 349-369.	1.9	58

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19	Discontinuous Galerkin Methods for Anisotropic Semidefinite Diffusion with Advection. SIAM Journal on Numerical Analysis, 2008, 46, 805-831.	1.1	58
20	Un rÃ©sultat de convergence d'ordre deux en temps pour l'approximation des Ã©quations de Navierâ€“Stokes par une technique de projection incrÃ©mentale. ESAIM: Mathematical Modelling and Numerical Analysis, 1999, 33, 169-189.	0.8	55
21	Start-up flows in a three-dimensional rectangular driven cavity of aspect ratio 1:1:2 at Re = 1000. Journal of Fluid Mechanics, 2002, 450, 169-199.	1.4	54
22	Nonlinear magnetohydrodynamics in axisymmetric heterogeneous domains using a Fourier/finite element technique and an interior penalty method. Journal of Computational Physics, 2009, 228, 2739-2757.	1.9	53
23	Error Analysis of a Fractional Time-Stepping Technique for Incompressible Flows with Variable Density. SIAM Journal on Numerical Analysis, 2011, 49, 917-944.	1.1	52
24	Subgrid stabilized projection method for 2D unsteady flows at high Reynolds numbers. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 5857-5876.	3.4	51
25	Entropy-based nonlinear viscosity for Fourier approximations of conservation laws. Comptes Rendus Mathematique, 2008, 346, 801-806.	0.1	51
26	Invariant domain preserving discretization-independent schemes and convex limiting for hyperbolic systems. Computer Methods in Applied Mechanics and Engineering, 2019, 347, 143-175.	3.4	47
27	Subgrid stabilization of Galerkin approximations of linear monotone operators. IMA Journal of Numerical Analysis, 2001, 21, 165-197.	1.5	46
28	Implementation of the entropy viscosity method with the discontinuous Galerkin method. Computer Methods in Applied Mechanics and Engineering, 2013, 253, 479-490.	3.4	46
29	Approximation of the eigenvalue problem for the time harmonic Maxwell system by continuous Lagrange finite elements. Mathematics of Computation, 2011, 80, 1887-1910.	1.1	45
30	Asymptotic Analysis of Upwind Discontinuous Galerkin Approximation of the Radiative Transport Equation in the Diffusive Limit. SIAM Journal on Numerical Analysis, 2010, 48, 53-78.	1.1	41
31	Full sphere hydrodynamic and dynamo benchmarks. Geophysical Journal International, 2014, 197, 119-134.	1.0	41
32	Tayler instability in liquid metal columns and liquid metal batteries. Journal of Fluid Mechanics, 2015, 771, 79-114.	1.4	41
33	High-Order Time Stepping for the Incompressible Navier--Stokes Equations. SIAM Journal of Scientific Computing, 2015, 37, A2656-A2681.	1.3	41
34	Impact of Impellers on the Axisymmetric Magnetic Mode in the VKS2 Dynamo Experiment. Physical Review Letters, 2008, 101, 104501.	2.9	40
35	A maximum-principle preserving finite element method for scalar conservation equations. Computer Methods in Applied Mechanics and Engineering, 2014, 272, 198-213.	3.4	39
36	A new class of massively parallel direction splitting for the incompressible Navierâ€“Stokes equations. Computer Methods in Applied Mechanics and Engineering, 2011, 200, 2083-2093.	3.4	37

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37	Fast estimation from above of the maximum wave speed in the Riemann problem for the Euler equations. Journal of Computational Physics, 2016, 321, 908-926.	1.9	37
38	A correction technique for the dispersive effects of mass lumping for transport problems. Computer Methods in Applied Mechanics and Engineering, 2013, 253, 186-198.	3.4	36
39	A unified unsteady lifting-line theory. Journal of Fluid Mechanics, 1991, 229, 427.	1.4	34
40	An Intrinsic Criterion for the Bijectivity of Hilbert Operators Related to Friedrich' Systems. Communications in Partial Differential Equations, 2007, 32, 317-341.	1.0	34
41	Faedoâ€“Galerkin weak solutions of the Navierâ€“Stokes equations with Dirichlet boundary conditions are suitable. Journal Des Mathematiques Pures Et Appliquees, 2007, 88, 87-106.	0.8	34
42	Influence of high-permeability discs in an axisymmetric model of the Cadarache dynamo experiment. New Journal of Physics, 2012, 14, 053005.	1.2	34
43	Mollification in Strongly Lipschitz Domains with Application to Continuous and Discrete De Rham Complexes. Computational Methods in Applied Mathematics, 2016, 16, 51-75.	0.4	33
44	Invariant Domains and Second-Order Continuous Finite Element Approximation for Scalar Conservation Equations. SIAM Journal on Numerical Analysis, 2017, 55, 3120-3146.	1.1	31
45	A generalized lifting-line theory for curved and swept wings. Journal of Fluid Mechanics, 1990, 211, 497-513.	1.4	30
46	Discontinuous Galerkin Methods for Friedrichs' Systems. Part III. Multifield Theories with Partial Coercivity. SIAM Journal on Numerical Analysis, 2008, 46, 776-804.	1.1	30
47	On the use of the notion of suitable weak solutions in CFD. International Journal for Numerical Methods in Fluids, 2008, 57, 1153-1170.	0.9	29
48	Finite-element-based Faedoâ€“Galerkin weak solutions to the Navierâ€“Stokes equations in the three-dimensional torus are suitable. Journal Des Mathematiques Pures Et Appliquees, 2006, 85, 451-464.	0.8	27
49	A new class of fractional step techniques for the incompressible Navierâ€“Stokes equations using direction splitting. Comptes Rendus Mathematique, 2010, 348, 581-585.	0.1	27
50	From Suitable Weak Solutions to Entropy Viscosity. Journal of Scientific Computing, 2011, 49, 35-50.	1.1	27
51	High-order time stepping for the Navierâ€“Stokes equations with minimal computational complexity. Journal of Computational and Applied Mathematics, 2017, 310, 92-103.	1.1	27
52	Solutal buoyancy and electrovortex flow in liquid metal batteries. Physical Review Fluids, 2020, 5, .	1.0	27
53	Entropyâ€“viscosity method for the single material Euler equations in Lagrangian frame. Computer Methods in Applied Mechanics and Engineering, 2016, 300, 402-426.	3.4	26
54	Electromagnetic induction in non-uniform domains. Geophysical and Astrophysical Fluid Dynamics, 2010, 104, 505-529.	0.4	25

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55	A spherical shell numerical dynamo benchmark with pseudo-vacuum magnetic boundary conditions. Geophysical Journal International, 2014, 196, 712-723.	1.0	25
56	Influence of thermomagnetic convection and ferrofluid thermophysical properties on heat transfers in a cylindrical container heated by a solenoid. Journal of Magnetism and Magnetic Materials, 2019, 469, 52-63.	1.0	25
57	Analysis of the edge finite element approximation of the Maxwell equations with low regularity solutions. Computers and Mathematics With Applications, 2018, 75, 918-932.	1.4	24
58	Mathematical analysis of a spectral hyperviscosity LES model for the simulation of turbulent flows. ESAIM: Mathematical Modelling and Numerical Analysis, 2003, 37, 893-908.	0.8	23
59	Numerical simulation of electrovortex flows in cylindrical fluid layers and liquid metal batteries. Physical Review Fluids, 2019, 4, .	1.0	23
60	Weighting the Edge Stabilization. SIAM Journal on Numerical Analysis, 2013, 51, 1655-1677.	1.1	21
61	Simulation of 2D External Viscous Flows by Means of a Domain Decomposition Method. Journal of Computational Physics, 1993, 108, 343-352.	1.9	20
62	Numerical simulations of bouncing jets. International Journal for Numerical Methods in Fluids, 2016, 80, 53-75.	0.9	20
63	Perturbation theory for metal pad roll instability in cylindrical reduction cells. Journal of Fluid Mechanics, 2019, 878, 598-646.	1.4	20
64	Approximation of variable density incompressible flows by means of finite elements and finite volumes. Communications in Numerical Methods in Engineering, 2001, 17, 893-902.	1.3	19
65	A robust S-DG-approximation for radiation transport in optically thick and diffusive regimes. Journal of Computational Physics, 2012, 231, 1947-1962.	1.9	19
66	High-Order Adaptive Time Stepping for the Incompressible Navier–Stokes Equations. SIAM Journal of Scientific Computing, 2019, 41, A770-A788.	1.3	19
67	Second-order invariant domain preserving approximation of the compressible Navierâ€“Stokes equations. Computer Methods in Applied Mechanics and Engineering, 2021, 375, 113608.	3.4	19
68	Effects of discontinuous magnetic permeability on magnetodynamic problems. Journal of Computational Physics, 2011, 230, 6299-6319.	1.9	18
69	On the construction of suitable solutions to the Navierâ€“Stokes equations and questions regarding the definition of large eddy simulation. Physica D: Nonlinear Phenomena, 2005, 207, 64-78.	1.3	17
70	Effects of conductivity jumps in the envelope of a kinematic dynamo flow. Comptes Rendus - Mecanique, 2006, 334, 593-598.	2.1	17
71	Startâ€up flow in a threeâ€dimensional lidâ€driven cavity by means of a massively parallel direction splitting algorithm. International Journal for Numerical Methods in Fluids, 2012, 68, 856-871.	0.9	17
72	An conservative anti-diffusion technique for the level set method. Journal of Computational and Applied Mathematics, 2017, 321, 448-468.	1.1	17

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73	Well-Balanced Second-Order Finite Element Approximation of the Shallow Water Equations with Friction. SIAM Journal of Scientific Computing, 2018, 40, A3873-A3901.	1.3	17
74	Numerical Quadratures for Layer Potentials over Curved Domains in $mathbb{R}^3 $. SIAM Journal on Numerical Analysis, 1992, 29, 1347-1369.	1.1	16
75	Numerical simulation of the von KÃ¡rmÃ¡n sodium dynamo experiment. Journal of Fluid Mechanics, 2018, 854, 164-195.	1.4	16
76	A fast algorithm for solving first-order PDEs by L1-minimization. Communications in Mathematical Sciences, 2008, 6, 199-216.	0.5	16
77	Role of the LBB Condition in Weak Spectral Projection Methods. Journal of Computational Physics, 2001, 174, 405-420.	1.9	15
78	Stability analysis of explicit entropy viscosity methods for non-linear scalar conservation equations. Mathematics of Computation, 2013, 83, 1039-1062.	1.1	15
79	Direct numerical simulation of the axial dipolar dynamo in the Von KÃ¡rmÃ¡n Sodium experiment. Europhysics Letters, 2016, 114, 65002.	0.7	15
80	An Interior Penalty Method with C⁰Finite Elements for the Approximation of the Maxwell Equations in Heterogeneous Media: Convergence Analysis with Minimal Regularity. ESAIM: Mathematical Modelling and Numerical Analysis, 2016, 50, 1457-1489.	0.8	15
81	Well-Balanced Second-Order Approximation of the Shallow Water Equation with Continuous Finite Elements. SIAM Journal on Numerical Analysis, 2017, 55, 3203-3224.	1.1	15
82	Some remarks on the acoustic parameters of sharp-edged porous media. International Journal of Engineering Science, 1998, 36, 1035-1046.	2.7	14
83	Vorticity-velocity formulations of the Stokes problem in 3D. Mathematical Methods in the Applied Sciences, 1999, 22, 531-546.	1.2	14
84	Canonical Models of Geophysical and Astrophysical Flows: Turbulent Convection Experiments in Liquid Metals. Metals, 2015, 5, 289-335.	1.0	14
85	The LBB condition in fractional Sobolev spaces and applications. IMA Journal of Numerical Analysis, 2009, 29, 790-805.	1.5	13
86	Generation of axisymmetric modes in cylindrical kinematic mean-field dynamos of VKS type. Geophysical and Astrophysical Fluid Dynamics, 2010, 104, 249-271.	0.4	13
87	Efficient mixing by swirling electrovortex flows in liquid metal batteries. Journal of Fluid Mechanics, 2021, 915, .	1.4	13
88	A locally DIV-free projection scheme for incompressible flows based on non-conforming finite elements. International Journal for Numerical Methods in Fluids, 2005, 49, 549-568.	0.9	12
89	A fractional step method based on a pressure Poisson equation for incompressible flows with variable density. Comptes Rendus Mathematique, 2008, 346, 913-918.	0.1	12
90	Momentumâ€based approximation of incompressible multiphase fluid flows. International Journal for Numerical Methods in Fluids, 2018, 86, 541-563.	0.9	11

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91	Equivalence of u-p and Î¶-Ï formulations of the time-dependent Navier-Stokes equations. International Journal for Numerical Methods in Fluids, 1994, 18, 471-487.	0.9	10
92	Mean-field model of the von KÃ¡rmÃ¡n sodium dynamo experiment using soft iron impellers. Physical Review E, 2015, 91, 013008.	0.8	10
93	Two spinning ways for precession dynamo. Physical Review E, 2016, 93, 043113.	0.8	10
94	The Effect of the Consistent Mass Matrix on the Maximum-Principle for Scalar Conservation Equations. Journal of Scientific Computing, 2017, 70, 1358-1366.	1.1	10
95	Remarques sur les m'ethodes de projection pour l'approximation des 'equations de Navier--Stokes. Numerische Mathematik, 1994, 67, 465-473.	0.9	9
96	A domain decomposition method for simulating advection dominated, external incompressible viscous flows. Computers and Fluids, 2000, 29, 525-546.	1.3	9
97	L 1-minimization methods for Hamiltonâ€“Jacobi equations: the one-dimensional case. Numerische Mathematik, 2008, 109, 269-284.	0.9	9
98	L^1-Approximation of Stationary Hamiltonâ€“Jacobi Equations. SIAM Journal on Numerical Analysis, 2009, 47, 339-362.	1.1	9
99	A converse to Fortin's Lemma in Banach spaces. Comptes Rendus Mathematique, 2016, 354, 1092-1095.	0.1	9
100	Robust explicit relaxation technique for solving the Green-Naghdi equations. Journal of Computational Physics, 2019, 399, 108917.	1.9	9
101	Stability of Discrete Stokes Operators in Fractional Sobolev Spaces. Journal of Mathematical Fluid Mechanics, 2008, 10, 588-610.	0.4	8
102	Surface Reconstruction and Image Enhancement via L^1-Minimization. SIAM Journal of Scientific Computing, 2010, 32, 1591-1616.	1.3	8
103	Convergence analysis of a class of massively parallel direction splitting algorithms for the Navier-Stokes equations in simple domains. Mathematics of Computation, 2012, 81, 1951-1977.	1.1	8
104	Remarks on the stability of the Navierâ€“Stokes equations supplemented with stress boundary conditions. European Journal of Mechanics, B/Fluids, 2013, 39, 1-10.	1.2	8
105	A fully discrete nonlinear Galerkin method for the 3D Navierâ€“Stokes equations. Numerical Methods for Partial Differential Equations, 2008, 24, 759-775.	2.0	7
106	Approximation of the time-dependent induction equation with advection using Whitney elements. COMPEL - the International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 2016, 35, 326-338.	0.5	7
107	Study of Magnetoconvection Impact on a Coil Cooling by Ferrofluid with a Spectral/Finite-Element Method. IEEE Transactions on Magnetics, 2018, 54, 1-4.	1.2	7
108	Abstract Nonconforming Error Estimates and Application to Boundary Penalty Methods for Diffusion Equations and Time-Harmonic Maxwellâ€™s Equations. Computational Methods in Applied Mathematics, 2018, 18, 451-475.	0.4	7

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109	A note on the Stokes operator and its powers. Journal of Applied Mathematics and Computing, 2011, 36, 241-250.	1.2	6
110	Nonlinear dynamo in a short Taylorâ€“Couette setup. Physics of Fluids, 2012, 24, .	1.6	6
111	Invariant Domains Preserving Arbitrary Lagrangian Eulerian Approximation of Hyperbolic Systems with Continuous Finite Elements. SIAM Journal of Scientific Computing, 2017, 39, A385-A414.	1.3	6
112	WEAK APPROXIMATION OF THE Ï^â€“Ï‰ EQUATIONS WITH EXPLICIT VISCOUS DIFFUSION. Mathematical Models and Methods in Applied Sciences, 2000, 10, 85-98.	1.7	5
113	Second-order invariant domain preserving ALE approximation of hyperbolic systems. Journal of Computational Physics, 2020, 401, 108927.	1.9	5
114	Accurate numerical simulation of radiative heat transfer with application to crystal growth. International Journal for Numerical Methods in Engineering, 2004, 61, 559-583.	1.5	4
115	Positive and Asymptotic Preserving Approximation of the Radiation Transport Equation. SIAM Journal on Numerical Analysis, 2020, 58, 519-540.	1.1	4
116	Quasi-optimal Nonconforming Approximation of Elliptic PDEs with Contrasted Coefficients and $$H^{1+{r}}$$, $${r}>0$$, Regularity. Foundations of Computational Mathematics, 2022, 22, 1273-1308.	1.5	4
117	Discontinuous Galerkin for the Radiative Transport Equation. The IMA Volumes in Mathematics and Its Applications, 2014, , 181-193.	0.5	4
118	From suitable weak solutions to entropy viscosity. ERCOFTAC Series, 2011, , 373-390.	0.1	4
119	Error Estimates of a First-order Lagrange Finite Element Technique for Nonlinear Scalar Conservation Equations. SIAM Journal on Numerical Analysis, 2016, 54, 57-85.	1.1	3
120	An optimal L1-minimization algorithm for stationary Hamilton-Jacobi equations. Communications in Mathematical Sciences, 2009, 7, 211-238.	0.5	3
121	On the implementation of a robust and efficient finite element-based parallel solver for the compressible Navierâ€“Stokes equations. Computer Methods in Applied Mechanics and Engineering, 2021, , 114250.	3.4	3
122	Subgrid stabilization of Galerkin approximations of linear contraction semi-groups of class C0. Computing and Visualization in Science, 1999, 2, 131-138.	1.2	2
123	3D VECTOR POISSON-LIKE PROBLEM WITH A TRIPLET OF INTRINSIC SCALAR BOUNDARY CONDITIONS. Mathematical Models and Methods in Applied Sciences, 2003, 13, 1725-1743.	1.7	2
124	Modified Pressure-Correction Projection Methods: Open Boundary and Variable Time Stepping. Lecture Notes in Computational Science and Engineering, 2015, , 623-631.	0.1	2
125	The Suliciu approximate Riemann solver is not invariant domain preserving. Journal of Hyperbolic Differential Equations, 2019, 16, 59-72.	0.3	2
126	Turbulence in realistic geometries with moving boundaries: When simulations meet experiments. Computers and Fluids, 2021, 214, 104750.	1.3	2

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127	Feasibility of Metal Pad Roll Instability Experiments at Room Temperature. Physical Review Letters, 2021, 126, 184501.	2.9	2
128	Efficient Parallel Algorithms for Unsteady Incompressible Flows. Springer Proceedings in Mathematics and Statistics, 2013, , 185-201.	0.1	2
129	Hyperbolic relaxation technique for solving the dispersive Serreâ€“Greenâ€“Naghdi equations with topography. Journal of Computational Physics, 2021, 450, 110809.	1.9	2
130	Invariant Domain-Preserving Approximations for the Euler Equations with Tabulated Equation of State. SIAM Journal of Scientific Computing, 2022, 44, A444-A470.	1.3	2
131	High order numerical quadratures for layer potentials over curved domains in â„3. Computer Methods in Applied Mechanics and Engineering, 1994, 116, 257-263.	3.4	1
132	Numerical dynamo action in cylindrical containers. EPJ Applied Physics, 2015, 70, 31101.	0.3	1
133	Surface Reconstruction via L 1-Minimization. Lecture Notes in Computer Science, 2009, , 32-43.	1.0	1
134	Second-Order Invariant Domain Preserving ALE Approximation of Euler Equations. Communications on Applied Mathematics and Computation, 0, , .	0.7	1
135	Well-Balanced Second-Order Convex Limiting Technique for Solving the Serreâ€“Greenâ€“Naghdi Equations. Water Waves, 0, , .	0.3	1
136	Linear Stabilization for First-Order PDEs. Handbook of Numerical Analysis, 2016, 17, 265-288.	0.9	0
137	A Massively Parallel, Direction-Splitting Solver for DNS in Complex Geometries. ERCOFTAC Series, 2019, , 23-29.	0.1	0