Raphaele Herbin

List of Publications by Year
in descending order

127 papers	4,445 citations	147566 31 h-index	110170 64 g-index
134 all docs	134 docs citations	134 times ranked	1753 citing authors

#	Article	IF	Citations
1	Finite volume methods. Handbook of Numerical Analysis, 2000, 7, 713-1018.	0.9	1,023
2	Three-dimensional numerical simulation for various geometries of solid oxide fuel cells. Journal of Power Sources, 1996, 58, 109-122.	4.0	403
3	Discretization of heterogeneous and anisotropic diffusion problems on general nonconforming meshes SUSHI: a scheme using stabilization and hybrid interfaces. IMA Journal of Numerical Analysis, 2010, 30, 1009-1043.	1.5	258
4	A UNIFIED APPROACH TO MIMETIC FINITE DIFFERENCE, HYBRID FINITE VOLUME AND MIXED FINITE VOLUME METHODS. Mathematical Models and Methods in Applied Sciences, 2010, 20, 265-295.	1.7	173
5	Small-stencil 3D schemes for diffusive flows in porous media. ESAIM: Mathematical Modelling and Numerical Analysis, 2012, 46, 265-290.	0.8	139
6	Convergence of a finite volume scheme for nonlinear degenerate parabolic equations. Numerische Mathematik, 2002, 92, 41-82.	0.9	127
7	Error estimates for the approximate solutions of a nonlinear hyperbolic equation given by finite volume schemes. IMA Journal of Numerical Analysis, 1998, 18, 563-594.	1.5	97
8	GRADIENT SCHEMES: A GENERIC FRAMEWORK FOR THE DISCRETISATION OF LINEAR, NONLINEAR AND NONLOCAL ELLIPTIC AND PARABOLIC EQUATIONS. Mathematical Models and Methods in Applied Sciences, 2013, 23, 2395-2432.	1.7	96
9	An error estimate for a finite volume scheme for a diffusion-convection problem on a triangular mesh. Numerical Methods for Partial Differential Equations, 1995, 11, 165-173.	2.0	94
10	A cell-centred finite-volume approximation for anisotropic diffusion operators on unstructured meshes in any space dimension. IMA Journal of Numerical Analysis, 2006, 26, 326-353.	1.5	89
11	Finite volume approximation of elliptic problems and convergence of an approximate gradient. Applied Numerical Mathematics, 2001, 37, 31-53.	1.2	80
12	Mathematical study of a petroleum-engineering scheme. ESAIM: Mathematical Modelling and Numerical Analysis, 2003, 37, 937-972.	0.8	78
13	The Gradient Discretisation Method. MathÃ©matiques Et Applications, 2018, , .	0.6	78
14	Lateral Diffusion of CO2 in Leaves Is Not Sufficient to Support Photosynthesis. Plant Physiology, 2005, 139, 254-266.	2.3	75
15	Vertex-centred discretization of multiphase compositional Darcy flows on general meshes. Computational Geosciences, 2012, 16, 987-1005.	1.2	66
16	A nine-point finite volume scheme for the simulation of diffusion in heterogeneous media. Comptes Rendus Mathematique, 2009, 347, 673-676.	0.1	65
17	Convergence of finite volume schemes for semilinear convection diffusion equations. Numerische Mathematik, 1999, 82, 91-116.	0.9	64
18	Error Estimates on the Approximate Finite Volume Solution of Convection Diffusion Equations with General Boundary Conditions. SIAM Journal on Numerical Analysis, 2000, 37, 1935-1972.	1.1	64

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19	An unconditionally stable pressure correction scheme for the compressible barotropic Navier-Stokes equations. ESAIM: Mathematical Modelling and Numerical Analysis, 2008, 42, 303-331.	0.8	56
20	Gradient schemes for twoâ€phase flow in heterogeneous porous media and Richards equation. ZAMM Zeitschrift Fur Angewandte Mathematik Und Mechanik, 2014, 94, 560-585.	0.9	49
21	Existence of a solution to a coupled elliptic system. Applied Mathematics Letters, 1994, 7, 49-55.	1.5	48
22	A convergent finite element-finite volume scheme for the compressible Stokes problem. Part I: The isothermal case. Mathematics of Computation, 2009, 78, 1333-1352.	1.1	48
23	Gradient schemes: Generic tools for the numerical analysis of diffusion equations. ESAIM: Mathematical Modelling and Numerical Analysis, 2016, 50, 749-781.	0.8	47
24	A new finite volume scheme for anisotropic diffusion problems on general grids: convergence analysis. Comptes Rendus Mathematique, 2007, 344, 403-406.	0.1	46
25	On some implicit and semi-implicit staggered schemes for the shallow water and Euler equations. ESAIM: Mathematical Modelling and Numerical Analysis, 2014, 48, 1807-1857.	0.8	46
26	3D Benchmark on Discretization Schemes for Anisotropic Diffusion Problems on General Grids. Springer Proceedings in Mathematics, 2011, , 895-930.	0.5	44
27	Error estimates for a numerical approximation to the compressible barotropic Navierâ€“Stokes equations. IMA Journal of Numerical Analysis, 2016, 36, 543-592.	1.5	44
28	Convergence of an upstream finite volume scheme for a nonlinear hyperbolic equation on a triangular mesh. Numerische Mathematik, 1993, 66, 139-157.	0.9	41
29	Discrete Sobolev inequalities andLperror estimates for finite volume solutions of convection diffusion equations. ESAIM: Mathematical Modelling and Numerical Analysis, 2001, 35, 767-778.	0.8	39
30	TP or not TP, that is the question. Computational Geosciences, 2014, 18, 285-296.	1.2	38
31	Convergence Analysis of a Colocated Finite Volume Scheme for the Incompressible Navierâ€“Stokes Equations on General 2D or 3D Meshes. SIAM Journal on Numerical Analysis, 2007, 45, 1-36.	1.1	37
32	A Finite Volume Scheme for a Noncoercive Elliptic Equation with Measure Data. SIAM Journal on Numerical Analysis, 2003, 41, 1997-2031.	1.1	33
33	Convergence of the MAC Scheme for the Compressible Stokes Equations. SIAM Journal on Numerical Analysis, 2010, 48, 2218-2246.	1.1	33
34	A convergent finite element-finite volume scheme for the compressible Stokes problem. Part II: the isentropic case. Mathematics of Computation, 2009, 79, 649-675.	1.1	31
35	Comparison between finite volume and finite element methods for an elliptic system arising in electrochemical engineering. Computer Methods in Applied Mechanics and Engineering, 1994, 115, 315-338.	3.4	30
36	An unconditionally stable staggered pressure correction scheme for the compressible Navier-Stokes equations. SMAI Journal of Computational Mathematics, 0, 2, 51-97.	0.0	30

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37	On a stabilized colocated Finite Volume scheme for the Stokes problem. ESAIM: Mathematical Modelling and Numerical Analysis, 2006, 40, 501-527.	0.8	26
38	Explicit staggered schemes for the compressible euler equations. ESAIM: Proceedings and Surveys, 2013, 40, 83-102.	0.4	26
39	Finite volume schemes for the biharmonic problem on general meshes. Mathematics of Computation, 2012, 81, 2019-2048.	1.1	25
40	Convergence of the Marker-and-Cell Scheme for the Incompressible Navierâ€“Stokes Equations on Non-uniform Grids. Foundations of Computational Mathematics, 2018, 18, 249-289.	1.5	21
41	Consistent segregated staggered schemes with explicit steps for the isentropic and full Euler equations. ESAIM: Mathematical Modelling and Numerical Analysis, 2018, 52, 893-944.	0.8	20
42	APPROXIMATION BY THE FINITE VOLUME METHOD OF AN ELLIPTIC-PARABOLIC EQUATION ARISING IN ENVIRONMENTAL STUDIES. Mathematical Models and Methods in Applied Sciences, 2001, 11, 1505-1528.	1.7	18
43	Diffusion with dissolution and precipitation in a porous medium: Mathematical analysis and numerical approximation of a simplified model. ESAIM: Mathematical Modelling and Numerical Analysis, 2007, 41, 975-1000.	0.8	18
44	A discretization of the phase mass balance in fractional step algorithms for the drift-flux model. IMA Journal of Numerical Analysis, 2011, 31, 116-146.	1.5	18
45	W1,q stability of the Fortin operator for the MAC scheme. Calcolo, 2012, 49, 63-71.	0.6	18
46	Discretization of coupled heat and electrical diffusion problems by finite-element and finite-volume methods. IMA Journal of Numerical Analysis, 2007, 28, 469-495.	1.5	17
47	An error estimate for finite volume methods for the Stokes equations on equilateral triangular meshes. Numerical Methods for Partial Differential Equations, 2004, 20, 907-918.	2.0	16
48	A finite volume scheme for anisotropic diffusion problems. Comptes Rendus Mathematique, 2004, 339, 299-302.	0.1	16
49	A formally secondâ€order cell centred scheme for convectionâ€“diffusion equations on general grids. International Journal for Numerical Methods in Fluids, 2013, 71, 873-890.	0.9	16
50	Finite volume approximation of a class of variational inequalities. IMA Journal of Numerical Analysis, 2001, 21, 553-585.	1.5	15
51	A new colocated finite volume scheme for the incompressible Navierâ€“Stokes equations on general non matching grids. Comptes Rendus Mathematique, 2007, 344, 659-662.	0.1	15
52	Cell centred discretisation of non linear elliptic problems on general multidimensional polyhedral grids. Journal of Numerical Mathematics, 2009, 17, .	1.8	15
53	An extension of the MAC scheme to locally refined meshes: convergence analysis for the full tensor time-dependent Navierâ€“Stokes equations. Calcolo, 2015, 52, 69-107.	0.6	14
54	Staggered discretizations, pressure correction schemes and all speed barotropic flows. Springer Proceedings in Mathematics, 2011, , 839-855.	0.5	14

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55	Approximation of Obstacle Problems by Continuation Methods. SIAM Journal on Numerical Analysis, 1988, 25, 1409-1431.	1.1	13
56	Gradient Scheme Approximations for Diffusion Problems. Springer Proceedings in Mathematics, 2011, , 439-447.	0.5	13
57	Pressure correction staggered schemes for barotropic one-phase and two-phase flows. Computers and Fluids, 2013, 88, 524-542.	1.3	13
58	Staggered schemes for all speed flows. ESAIM: Proceedings and Surveys, 2012, 35, 122-150.	0.4	12
59	Vertex centred Discretization of Two-Phase Darcy flows on General Meshes. ESAIM: Proceedings and Surveys, 2012, 35, 59-78.	0.4	12
60	A MUSCL-type segregated â€“ explicit staggered scheme for the Euler equations. Computers and Fluids, 2018, 175, 91-110.	1.3	11
61	On the weak consistency of finite volumes schemes for conservation laws on general meshes. SeMA Journal, 2019, 76, 581-594.	1.0	11
62	Discontinuous Galerkin Discretization and hp-Refinement for the Resolution of the Neutron Transport Equation. SIAM Journal of Scientific Computing, 2013, 35, A936-A956.	1.3	10
63	Convergence of linear finite elements for diffusion equations with measure data. Comptes Rendus Mathematique, 2004, 338, 81-84.	0.1	9
64	A collocated finite volume scheme to solve free convection for general non-conforming grids. Journal of Computational Physics, 2009, 228, 2296-2311.	1.9	9
65	Benchmark 3D: the VAG scheme. Springer Proceedings in Mathematics, 2011, , 1013-1022.	0.5	9
66	Combined triangular FVâ€triangular FE method for nonlinear convectionâ€diffusion problems. ZAMM Zeitschrift Fur Angewandte Mathematik Und Mechanik, 2007, 87, 499-517.	0.9	8
67	Convergence analysis of a locally stabilized collocated finite volume scheme for incompressible flows. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 889-927.	0.8	7
68	An unconditionally stable finite element-finite volume pressure correction scheme for the drift-flux model. ESAIM: Mathematical Modelling and Numerical Analysis, 2010, 44, 251-287.	0.8	7
69	Convergence of the MAC scheme for the compressible stationary Navier-Stokes equations. Mathematics of Computation, 2017, 87, 1127-1163.	1.1	7
70	Gradient Schemes for Image Processing. Springer Proceedings in Mathematics, 2011, , 429-437.	0.5	7
71	Parallel implementation of a multigrid method on the experimental 1CAP supercomputer. Applied Mathematics and Computation, 1988, 27, 281-312.	1.4	6
72	A Monotonic Method for the Numerical Solution of Some Free Boundary Value Problems. SIAM Journal on Numerical Analysis, 2002, 40, 2292-2310.	1.1	6

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73	A cell-centered finite volume scheme on general meshes for the Stokes equations in two space dimensions. Comptes Rendus Mathematique, 2003, 337, 125-128.	0.1	6
74	Collocated finite volume schemes for the simulation of natural convective flows on unstructured meshes. International Journal for Numerical Methods in Fluids, 2008, 56, 2045-2068.	0.9	6
75	A fast precipitation and dissolution reaction for a reactionâ€“diffusion system arising in a porous medium. Nonlinear Analysis: Real World Applications, 2009, 10, 629-638.	0.9	6
76	Approximation of the biharmonic problem using P1 finite elements. Journal of Numerical Mathematics, 2011, 19, 1-26.	1.8	6
77	A cell-centred pressure-correction scheme for the compressible Euler equations. IMA Journal of Numerical Analysis, 2020, 40, 1792-1837.	1.5	6
78	Low Mach number limit of some staggered schemes for compressible barotropic flows. Mathematics of Computation, 2021, 90, 1039-1087.	1.1	6
79	Laxâ€“Wendroff consistency of finite volume schemes for systems of non linear conservation laws: extension to staggered schemes. SeMA Journal, 2022, 79, 333-354.	1.0	6
80	Convergence of the MAC Scheme for the Steady-State Incompressible Navier-Stokes Equations on Non-uniform Grids. Springer Proceedings in Mathematics and Statistics, 2014, , 343-351.	0.1	6
81	On the stability of colocated clustered finite volume simplicial discretizations for the 2D Stokes problem. Calcolo, 2007, 44, 219-234.	0.6	5
82	Convergence of the marker-and-cell scheme for the semi-stationary compressible Stokes problem. Mathematics and Computers in Simulation, 2017, 137, 325-349.	2.4	5
83	Conservativity and weak consistency of a class of staggered finite volume methods for the Euler equations. Mathematics of Computation, 2020, 90, 1155-1177.	1.1	5
84	Vertex-centred Discretization of Multiphase Compositional Darcy Flows on General Meshes. , 2012, , .		5
85	Applications of approximate gradient schemes for nonlinear parabolic equations. Applications of Mathematics, 2015, 60, 135-156.	0.9	4
86	<mml:math altimg="si133.gif" display="inline" 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/common/struct-bib/dtd" xmlns:ce="http://www.elsevier.com/x	2.4	4
87	A consistent quasiâ€“second-order staggered scheme for the two-dimensional shallow water equations. IMA Journal of Numerical Analysis, 2023, 43, 99-143.	1.5	4
88	â€œA Note on the Entropy Solutions of the Hydrodynamic Model of Traffic Flowâ€•Revisited. Transportation Science, 2011, 45, 138-142.	2.6	3
89	Analysis of a fractional-step scheme for the P $$_1$$ 1 radiative diffusion model. Computational and Applied Mathematics, 2016, 35, 135-151.	1.3	3
90	Multiphase Flow in Porous Media Using the VAG Scheme. Springer Proceedings in Mathematics, 2011, , 409-417.	0.5	3

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91	The Gradient Discretisation Method for Linear Advection Problems. Computational Methods in Applied Mathematics, 2020, 20, 437-458.	0.4	3
92	An Error Estimate for the Approximation of Linear Parabolic Equations by the Gradient Discretization Method. Springer Proceedings in Mathematics and Statistics, 2017, , 371-379.	0.1	3
93	Numerical approximation of an elliptic-parabolic equation arising in environment. Computing and Visualization in Science, 2000, 3, 33-38.	1.2	2
94	Approximation of the biharmonic problem using piecewise linear finite elements. Comptes Rendus Mathematique, 2010, 348, 1283-1286.	0.1	2
95	On the Discretization of the Coupled Heat and Electrical Diffusion Problems. , 2006, , 1-15.		2
96	Benchmark 3D: the SUSHI Scheme. Springer Proceedings in Mathematics, 2011, , 1005-1012.	0.5	2
97	Analysis Tools for Gradient Discretisations. MathÃ©matiques Et Applications, 2018, , 205-262.	0.6	2
98	A Second Order Consistent MAC Scheme for the Shallow Water Equations on Non Uniform Grids. Springer Proceedings in Mathematics and Statistics, 2020, , 123-131.	0.1	2
99	SchÃ©ma De Volumes Finis en Interaction Fluide/Structure: FaisabilitÃ© et Application L'Ã©coulement Vasculaire. Archives of Physiology and Biochemistry, 1995, 103, C76-C76.	1.0	1
100	A unified analysis of elliptic problems with various boundary conditions and their approximation. , 2020, 70, 339-368.		1
101	Non-conforming Finite Elements on Polytopal Meshes. SEMA SIMAI Springer Series, 2021, , 1-35.	0.4	1
102	Consistent Internal Energy Based Schemes for the Compressible Euler Equations. SEMA SIMAI Springer Series, 2021, , 119-154.	0.4	1
103	Low Mach Number Limit of a Pressure Correction MAC Scheme for Compressible Barotropic Flows. Springer Proceedings in Mathematics and Statistics, 2017, , 255-263.	0.1	1
104	Convergence of a Finite Volume Scheme for a Nonlinear Hyperbolic Equation. , 1995, , 61-70.		1
105	Playing with Burgersâ€™s Equation. Springer Proceedings in Mathematics, 2011, , 523-531.	0.5	1
106	Convergence of the MAC Scheme for Variable Density Flows. Springer Proceedings in Mathematics and Statistics, 2017, , 265-273.	0.1	1
107	Non-conforming Finite Element Methods. MathÃ©matiques Et Applications, 2018, , 285-305.	0.6	1
108	Dirichlet Boundary Conditions. MathÃ©matiques Et Applications, 2018, , 17-65.	0.6	1

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109	The Multi-point Flux Approximation MPFA-O Scheme. MathÃ©matiques Et Applications, 2018, , 343-351.	0.6	1
110	A Class of Staggered Schemes for the Compressible Euler Equations. Lecture Notes in Computer Science, 2019, , 15-26.	1.0	1
111	Non Degenerate Parabolic Problems. MathÃ©matiques Et Applications, 2018, , 123-166.	0.6	0
112	An Introduction to the Gradient Discretisation Method. Lecture Notes in Computational Science and Engineering, 2019, , 451-459.	0.1	0
113	A Staggered Pressure Correction Numerical Scheme to Compute a Travelling Reactive Interface in a Partially Premixed Mixture. SEMA SIMAI Springer Series, 2021, , 97-129.	0.4	0
114	Modelling of a spherical deflagration at constant speed. Computational and Applied Mathematics, 2021, 40, 1.	1.0	0
115	The simulation of the transport of contaminants in groundwater flow: error estimates for a finite volume scheme. Theory and Applications of Transport in Porous Media, 2000, , 3-27.	0.4	0
116	Existence of a solution to a coupled elliptic system arising in the mathematical modelling of fuel cells. , 1995, , 133-142.		0
117	A Four Point Finite Volume Scheme for a Diffusion Convection Problem on a Triangular Mesh. , 1995, , 97-106.		0
118	Results with a Locally Refined MAC-Like Schemeâ€"Benchmark Session. Springer Proceedings in Mathematics and Statistics, 2017, , 125-139.	0.1	0
119	Two Models for the Computation of Laminar Flames in Dust Clouds. Springer Proceedings in Mathematics and Statistics, 2017, , 285-293.	0.1	0
120	Nodal Mimetic Finite Difference Methods. MathÃ©matiques Et Applications, 2018, , 377-393.	0.6	0
121	Time-Dependent GDM. MathÃ©matiques Et Applications, 2018, , 101-121.	0.6	0
122	Motivation and Basic Ideas. MathÃ©matiques Et Applications, 2018, , 3-16.	0.6	0
123	Neumann, Fourier and Mixed Boundary Conditions. MathÃ©matiques Et Applications, 2018, , 67-97.	0.6	0
124	Discontinuous Galerkin Methods. MathÃ©matiques Et Applications, 2018, , 325-341.	0.6	0
125	Degenerate Parabolic Problems. MathÃ©matiques Et Applications, 2018, , 167-202.	0.6	0
126	MUSCL Discretization for the Fluid Flow Convection Operator on Staggered Meshes. Springer Proceedings in Mathematics and Statistics, 2020, , 497-505.	0.1	0

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127	Antiâ€diffusive alternateâ€directions schemes for the transport of step functions. International Journal for Numerical Methods in Fluids, 0, , .	0.9	0