

Martin Vohralik

List of Publications by Year in descending order

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#	ARTICLE	IF	CITATIONS
1	Polynomial-Degree-Robust A Posteriori Estimates in a Unified Setting for Conforming, Nonconforming, Discontinuous Galerkin, and Mixed Discretizations. <i>SIAM Journal on Numerical Analysis</i> , 2015, 53, 1058-1081.	2.3	117
2	A Posteriori Error Estimates for Lowest-Order Mixed Finite Element Discretizations of Convection-Diffusion-Reaction Equations. <i>SIAM Journal on Numerical Analysis</i> , 2007, 45, 1570-1599.	2.3	106
3	Adaptive Inexact Newton Methods with A Posteriori Stopping Criteria for Nonlinear Diffusion PDEs. <i>SIAM Journal of Scientific Computing</i> , 2013, 35, A1761-A1791.	2.8	103
4	Guaranteed and robust discontinuous Galerkin a posteriori error estimates for convection-diffusion-reaction problems. <i>Journal of Computational and Applied Mathematics</i> , 2010, 234, 114-130.	2.0	98
5	A combined finite volume-nonconforming/mixed-hybrid finite element scheme for degenerate parabolic problems. <i>Numerische Mathematik</i> , 2006, 105, 73-131.	1.9	85
6	A Posteriori Error Estimates Including Algebraic Error and Stopping Criteria for Iterative Solvers. <i>SIAM Journal of Scientific Computing</i> , 2010, 32, 1567-1590.	2.8	75
7	Numerical simulation of fracture flow with a mixed-hybrid FEM stochastic discrete fracture network model. <i>Computational Geosciences</i> , 2005, 8, 217-234.	2.4	71
8	An accurate flux reconstruction for discontinuous Galerkin approximations of elliptic problems. <i>Comptes Rendus Mathematique</i> , 2007, 345, 709-712.	0.3	70
9	Guaranteed and robust a posteriori error estimates and balancing discretization and linearization errors for monotone nonlinear problems. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2011, 200, 2782-2795.	6.6	69
10	A Posteriori Error Estimation Based on Potential and Flux Reconstruction for the Heat Equation. <i>SIAM Journal on Numerical Analysis</i> , 2010, 48, 198-223.	2.3	61
11	Residual flux-based a posteriori error estimates for finite volume and related locally conservative methods. <i>Numerische Mathematik</i> , 2008, 111, 121-158.	1.9	55
12	A unified framework for a posteriori error estimation for the Stokes problem. <i>Numerische Mathematik</i> , 2012, 122, 725-769.	1.9	54
13	Guaranteed and Fully Robust a posteriori Error Estimates for Conforming Discretizations of Diffusion Problems with Discontinuous Coefficients. <i>Journal of Scientific Computing</i> , 2011, 46, 397-438.	2.3	52
14	MIXED FINITE ELEMENT METHODS: IMPLEMENTATION WITH ONE UNKNOWN PER ELEMENT, LOCAL FLUX EXPRESSIONS, POSITIVITY, POLYGONAL MESHES, AND RELATIONS TO OTHER METHODS. <i>Mathematical Models and Methods in Applied Sciences</i> , 2013, 23, 803-838.	3.3	48
15	Unified primal formulation-based a priori and a posteriori error analysis of mixed finite element methods. <i>Mathematics of Computation</i> , 2010, 79, 2001-2032.	2.1	47
16	On the Discrete Poincaré-Friedrichs Inequalities for Nonconforming Approximations of the Sobolev Space $H^{1,1}$. <i>Numerical Functional Analysis and Optimization</i> , 2005, 26, 925-952.	1.4	43
17	A posteriori error estimates, stopping criteria, and adaptivity for two-phase flows. <i>Computational Geosciences</i> , 2013, 17, 789-812.	2.4	42
18	Equivalence between lowest-order mixed finite element and multi-point finite volume methods on simplicial meshes. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2006, 40, 367-391.	1.9	37

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19	Guaranteed and robust a posteriori error estimates for singularly perturbed reaction-diffusion problems. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2009, 43, 867-888.	1.9	36
20	Flux reconstruction and a posteriori error estimation for discontinuous Galerkin methods on general nonmatching grids. <i>Comptes Rendus Mathematique</i> , 2009, 347, 441-444.	0.3	35
21	An a posteriori error estimate for vertex-centered finite volume discretizations of immiscible incompressible two-phase flow. <i>Mathematics of Computation</i> , 2013, 83, 153-188.	2.1	35
22	Adaptation Driven by Polynomial-Degree-Robust A Posteriori Error Estimates for Elliptic Problems. <i>SIAM Journal of Scientific Computing</i> , 2016, 38, A3220-A3246.	2.8	35
23	A Framework for Robust A Posteriori Error Control in Unsteady Nonlinear Advection-Diffusion Problems. <i>SIAM Journal on Numerical Analysis</i> , 2013, 51, 773-793.	2.3	33
24	Mixed and nonconforming finite element methods on a system of polygons. <i>Applied Numerical Mathematics</i> , 2007, 57, 176-193.	2.1	29
25	Guaranteed, Locally Space-Time Efficient, and Polynomial-Degree Robust a Posteriori Error Estimates for High-Order Discretizations of Parabolic Problems. <i>SIAM Journal on Numerical Analysis</i> , 2017, 55, 2811-2834.	2.3	29
26	Stable broken H^1 and $H(\mathrm{div})$ polynomial extensions for polynomial-degree-robust potential and flux reconstruction in three space dimensions. <i>Mathematics of Computation</i> , 2019, 89, 551-594.	2.1	25
27	Robust a Posteriori Error Control and Adaptivity for Multiscale, Multinumerics, and Mortar Coupling. <i>SIAM Journal on Numerical Analysis</i> , 2013, 51, 526-554.	2.3	24
28	A posteriori error estimates, stopping criteria, and adaptivity for multiphase compositional Darcy flows in porous media. <i>Journal of Computational Physics</i> , 2014, 276, 163-187.	3.8	24
29	Guaranteed and Robust a Posteriori Bounds for Laplace Eigenvalues and Eigenvectors: Conforming Approximations. <i>SIAM Journal on Numerical Analysis</i> , 2017, 55, 2228-2254.	2.3	24
30	A posteriori error estimation in the conforming finite element method based on its local conservativity and using local minimization. <i>Comptes Rendus Mathematique</i> , 2008, 346, 687-690.	0.3	22
31	Adaptive regularization, linearization, and discretization and a posteriori error control for the two-phase Stefan problem. <i>Mathematics of Computation</i> , 2015, 84, 153-186.	2.1	22
32	Estimating and localizing the algebraic and total numerical errors using flux reconstructions. <i>Numerische Mathematik</i> , 2018, 138, 681-721.	1.9	21
33	Goal-oriented a posteriori error estimation for conforming and nonconforming approximations with inexact solvers. <i>Journal of Computational and Applied Mathematics</i> , 2020, 366, 112367.	2.0	21
34	Guaranteed and robust a posteriori bounds for Laplace eigenvalues and eigenvectors: a unified framework. <i>Numerische Mathematik</i> , 2018, 140, 1033-1079.	1.9	19
35	A perturbation-method-based a posteriori estimator for the planewave discretization of nonlinear Schrödinger equations. <i>Comptes Rendus Mathematique</i> , 2014, 352, 941-946.	0.3	16
36	Discrete p-robust $H(\mathrm{div})$ $H(\mathrm{div})$ -liftings and a posteriori estimates for elliptic problems with H^{-1} H^{-1} source terms. <i>Calcolo</i> , 2017, 54, 1009-1025.	1.1	15

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37	An adaptive $\langle \text{mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" id="mml77" display="inline" overflow="scroll" altimg="si5.gif" \rangle \langle \text{mml:mi} \rangle \text{h} \langle \text{mml:mi} \rangle \langle \text{mml:mi} \rangle \text{p} \langle \text{mml:mi} \rangle \langle \text{mml:math} \rangle$ -refinement strategy with computable guaranteed bound on the error reduction factor. <i>Computers and Mathematics With Applications</i> , 2018, 76, 967-983.	2.7	14
38	On the unilateral contact between membranes. Part 2: a posteriori analysis and numerical experiments. <i>IMA Journal of Numerical Analysis</i> , 2012, 32, 1147-1172.	2.9	13
39	Four closely related equilibrated flux reconstructions for nonconforming finite elements. <i>Comptes Rendus Mathematique</i> , 2013, 351, 77-80.	0.3	13
40	A Review of Recent Advances in Discretization Methods, $\langle \text{i} \rangle$ a Posteriori $\langle \text{i} \rangle$ Error Analysis, and Adaptive Algorithms for Numerical Modeling in Geosciences. <i>Oil and Gas Science and Technology</i> , 2014, 69, 701-729.	1.4	13
41	Equivalence of local- and global-best approximations, a simple stable local commuting projector, and optimal $\langle \text{i} \rangle \text{hp} \langle \text{i} \rangle$ approximation estimates in $\langle \text{i} \rangle \langle \text{b} \rangle \text{H} \langle \text{b} \rangle \langle \text{i} \rangle (\text{div})$. <i>IMA Journal of Numerical Analysis</i> , 2022, 42, 1023-1049.	2.9	13
42	Equivalence of local-best and global-best approximations in $\text{H}(\text{curl})$. <i>Calcolo</i> , 2021, 58, 1.	1.1	13
43	A posteriori error estimates for combined finite volume–finite element discretizations of reactive transport equations on nonmatching grids. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2011, 200, 597-613.	6.6	12
44	A posteriori error estimates and stopping criteria for space-time domain decomposition for two-phase flow between different rock types. <i>SMAI Journal of Computational Mathematics</i> , 0, 5, 195-227.	0.0	12
45	An a posteriori-based, fully adaptive algorithm with adaptive stopping criteria and mesh refinement for thermal multiphase compositional flows in porous media. <i>Computers and Mathematics With Applications</i> , 2014, 68, 2331-2347.	2.7	11
46	A perturbation-method-based post-processing for the planewave discretization of Kohn–Sham models. <i>Journal of Computational Physics</i> , 2016, 307, 446-459.	3.8	11
47	A simple a posteriori estimate on general polytopal meshes with applications to complex porous media flows. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2018, 331, 728-760.	6.6	10
48	Equilibrated flux a posteriori error estimates in $L^2(H^1)$ -norms for high-order discretizations of parabolic problems. <i>IMA Journal of Numerical Analysis</i> , 2019, 39, 1158-1179.	2.9	10
49	Localization of the $W^{-1,q}$ norm for local a posteriori efficiency. <i>IMA Journal of Numerical Analysis</i> , 2020, 40, 914-950.	2.9	10
50	A posteriori estimates distinguishing the error components and adaptive stopping criteria for numerical approximations of parabolic variational inequalities. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2020, 367, 113105.	6.6	10
51	Guaranteed a posteriori bounds for eigenvalues and eigenvectors: Multiplicities and clusters. <i>Mathematics of Computation</i> , 2020, 89, 2563-2611.	2.1	10
52	Convergence and quasi-optimal cost of adaptive algorithms for nonlinear operators including iterative linearization and algebraic solver. <i>Numerische Mathematik</i> , 2021, 147, 679-725.	1.9	10
53	Localization of global norms and robust a posteriori error control for transmission problems with sign-changing coefficients. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2018, 52, 2037-2064.	1.9	9
54	A Multilevel Algebraic Error Estimator and the Corresponding Iterative Solver with p -Robust Behavior. <i>SIAM Journal on Numerical Analysis</i> , 2020, 58, 2856-2884.	2.3	9

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55	Computable a posteriori error estimates in the finite element method based on its local conservativity: improvements using local minimization. <i>ESAIM: Proceedings and Surveys</i> , 2008, 24, 77-96.	0.4	8
56	On the Unilateral Contact Between Membranes. Part 1: Finite Element Discretization and Mixed Reformulation. <i>Mathematical Modelling of Natural Phenomena</i> , 2009, 4, 21-43.	2.4	8
57	A combined finite volume–finite element scheme for the discretization of strongly nonlinear convection–diffusion–reaction problems on nonmatching grids. <i>Numerical Methods for Partial Differential Equations</i> , 2010, 26, 612-646.	3.6	8
58	A finite element discretization of the contact between two membranes. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2009, 43, 33-52.	1.9	8
59	Algebraic and Discretization Error Estimation by Equilibrated Fluxes for Discontinuous Galerkin Methods on Nonmatching Grids. <i>Journal of Scientific Computing</i> , 2015, 64, 1-34.	2.3	8
60	Sharp algebraic and total a posteriori error bounds for h and p finite elements via a multilevel approach. Recovering mass balance in any situation. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2020, 371, 113243.	6.6	8
61	A posteriori stopping criteria for space-time domain decomposition for the heat equation in mixed formulations. <i>Electronic Transactions on Numerical Analysis</i> , 0, 49, 151-181.	0.0	8
62	A Posteriori Stopping Criteria for Optimized Schwarz Domain Decomposition Algorithms in Mixed Formulations. <i>Computational Methods in Applied Mathematics</i> , 2018, 18, 495-519.	0.8	7
63	Equivalence between mixed finite element and multi-point finite volume methods. <i>Comptes Rendus Mathematique</i> , 2004, 339, 525-528.	0.3	6
64	From face to element unknowns by local static condensation with application to nonconforming finite elements. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2013, 253, 517-529.	6.6	6
65	Simple and robust equilibrated flux <i>a posteriori</i> estimates for singularly perturbed reaction–diffusion problems. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2020, 54, 1951-1973.	1.9	6
66	A Unified Framework for a posteriori Error Estimation in Elliptic and Parabolic Problems with Application to Finite Volumes. <i>Springer Proceedings in Mathematics</i> , 2011, , 821-837.	0.5	5
67	Adaptive Inexact Semismooth Newton Methods for the Contact Problem Between Two Membranes. <i>Journal of Scientific Computing</i> , 2020, 84, 1.	2.3	5
68	Adaptive inexact iterative algorithms based on polynomial-degree-robust a posteriori estimates for the Stokes problem. <i>Numerische Mathematik</i> , 2018, 138, 1027-1065.	1.9	4
69	An adaptive hp-refinement strategy with inexact solvers and computable guaranteed bound on the error reduction factor. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2020, 359, 112607.	6.6	4
70	A posteriori error estimates for finite volume and mixed finite element discretizations of convection–diffusion–reaction equations. <i>ESAIM: Proceedings and Surveys</i> , 2007, 18, 57-69.	0.4	3
71	A posteriori error estimates for a compositional two-phase flow with nonlinear complementarity constraints. <i>Computational Geosciences</i> , 2020, 24, 1031-1055.	2.4	3
72	Post-processing of the planewave approximation of Schrödinger equations. Part I: linear operators. <i>IMA Journal of Numerical Analysis</i> , 2021, 41, 2423-2455.	2.9	3

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73	A-Posteriori-Steered p -Robust Multigrid with Optimal Step-Sizes and Adaptive Number of Smoothing Steps. SIAM Journal of Scientific Computing, 2021, 43, S117-S145.	2.8	3
74	Polynomial-degree-robust H^1 discrete minimization in a tetrahedron. Comptes Rendus Mathematique, 2020, 358, 1101-1110.	0.3	3
75	Guaranteed and robust L2-norm a posteriori error estimates for 1D linear advection problems. ESAIM: Mathematical Modelling and Numerical Analysis, 2021, 55, S447-S474.	1.9	2
76	Contractive Local Adaptive Smoothing Based on Dörfler's Marking in A-Posteriori-Steered p -Robust Multigrid Solvers. Computational Methods in Applied Mathematics, 2021, 21, 445-468.	0.8	1
77	Inexpensive guaranteed and efficient upper bounds on the algebraic error in finite element discretizations. Numerical Algorithms, 2022, 89, 371-407.	1.9	1
78	Numerical modelling of radionuclide transport through a water saturated rock massif. European Physical Journal D, 2006, 56, D87-D94.	0.4	0
79	A Posteriori Error Estimates for Unsteady Convection-Diffusion-Reaction Problems and the Finite Volume Method. Springer Proceedings in Mathematics, 2011, , 215-223.	0.5	0