

Robert M Kirby Or Rm Kirby

List of Publications by Year in descending order

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121
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124
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124
docs citations

124
times ranked

2541
citing authors

#	ARTICLE	IF	CITATIONS
1	Analysis and reduction of quadrature errors in the material point method (MPM). International Journal for Numerical Methods in Engineering, 2008, 76, 922-948.	2.8	192
2	Contour Boxplots: A Method for Characterizing Uncertainty in Feature Sets from Simulation Ensembles. IEEE Transactions on Visualization and Computer Graphics, 2013, 19, 2713-2722.	4.4	145
3	De-aliasing on non-uniform grids: algorithms and applications. Journal of Computational Physics, 2003, 191, 249-264.	3.8	137
4	From h to p efficiently: Implementing finite and spectral/hp element methods to achieve optimal performance for low- and high-order discretisations. Journal of Computational Physics, 2010, 229, 5161-5181.	3.8	134
5	To CG or to HDC: A Comparative Study. Journal of Scientific Computing, 2012, 51, 183-212.	2.3	132
6	Curve Boxplot: Generalization of Boxplot for Ensembles of Curves. IEEE Transactions on Visualization and Computer Graphics, 2014, 20, 2654-2663.	4.4	125
7	A Radial Basis Function (RBF)-Finite Difference (FD) Method for Diffusion and Reactionâ€“Diffusion Equations on Surfaces. Journal of Scientific Computing, 2015, 63, 745-768.	2.3	114
8	Comparing 2D Vector Field Visualization Methods: A User Study. IEEE Transactions on Visualization and Computer Graphics, 2005, 11, 59-70.	4.4	110
9	Unconditionally stable discretizations of the immersed boundary equations. Journal of Computational Physics, 2007, 222, 702-719.	3.8	89
10	Nektar++: Enhancing the capability and application of high-fidelity spectral/ h - p element methods. Computer Physics Communications, 2020, 249, 107110.	7.5	82
11	Visualization in Meteorologyâ€“A Survey of Techniques and Tools for Data Analysis Tasks. IEEE Transactions on Visualization and Computer Graphics, 2018, 24, 3268-3296.	4.4	77
12	Inverse electrocardiographic source localization of ischemia: An optimization framework and finite element solution. Journal of Computational Physics, 2013, 250, 403-424.	3.8	72
13	Stabilisation of spectral/hp element methods through spectral vanishing viscosity: Application to fluid mechanics modelling. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 3128-3144.	6.6	69
14	Filtering in Legendre spectral methods. Mathematics of Computation, 2008, 77, 1425-1452.	2.1	62
15	Formal analysis of MPI-based parallel programs. Communications of the ACM, 2011, 54, 82-91.	4.5	56
16	Efficient Stateful Dynamic Partial Order Reduction. Lecture Notes in Computer Science, 2008, , 288-305.	1.3	52
17	Application of Stochastic Finite Element Methods to Study the Sensitivity of ECG Forward Modeling to Organ Conductivity. IEEE Transactions on Biomedical Engineering, 2008, 55, 31-40.	4.2	51
18	Particle-based Sampling and Meshing of Surfaces in Multimaterial Volumes. IEEE Transactions on Visualization and Computer Graphics, 2008, 14, 1539-1546.	4.4	51

#	ARTICLE	IF	CITATIONS
19	Dynamic Verification of MPI Programs with Reductions in Presence of Split Operations and Relaxed Orderings. Lecture Notes in Computer Science, 2008, , 66-79.	1.3	51
20	To CG or to HDG: A Comparative Study in 3D. Journal of Scientific Computing, 2016, 67, 192-220.	2.3	49
21	Advanced Reaction-Diffusion Models for Texture Synthesis. Journal of Graphics Tools, 2006, 11, 47-71.	0.5	48
22	Architecting the finite element method pipeline for the GPU. Journal of Computational and Applied Mathematics, 2014, 257, 195-211.	2.0	46
23	A Fast Iterative Method for Solving the Eikonal Equation on Triangulated Surfaces. SIAM Journal of Scientific Computing, 2011, 33, 2468-2488.	2.8	42
24	Topology, Accuracy, and Quality of Isosurface Meshes Using Dynamic Particles. IEEE Transactions on Visualization and Computer Graphics, 2007, 13, 1704-1711.	4.4	40
25	Numerical Integration in Multiple Dimensions with Designed Quadrature. SIAM Journal of Scientific Computing, 2018, 40, A2033-A2061.	2.8	40
26	Decoupling and balancing of space and time errors in the material point method (MPM). International Journal for Numerical Methods in Engineering, 2010, 82, 1207-1243.	2.8	39
27	Cardiac Position Sensitivity Study in the Electrocardiographic Forward Problem Using Stochastic Collocation and Boundary Element Methods. Annals of Biomedical Engineering, 2011, 39, 2900-2910.	2.5	39
28	A Fast Iterative Method for Solving the Eikonal Equation on Tetrahedral Domains. SIAM Journal of Scientific Computing, 2013, 35, C473-C494.	2.8	39
29	Selecting the Numerical Flux in Discontinuous Galerkin Methods for Diffusion Problems. Journal of Scientific Computing, 2005, 22-23, 385-411.	2.3	37
30	A generic framework for time-stepping partial differential equations (PDEs): general linear methods, object-oriented implementation and application to fluid problems. International Journal of Computational Fluid Dynamics, 2011, 25, 107-125.	1.2	37
31	High-order spectral/hp element discretisation for reaction-diffusion problems on surfaces: Application to cardiac electrophysiology. Journal of Computational Physics, 2014, 257, 813-829.	3.8	36
32	Postprocessing for the Discontinuous Galerkin Method over Nonuniform Meshes. SIAM Journal of Scientific Computing, 2008, 30, 272-289.	2.8	34
33	Smoothness-Increasing Accuracy-Conserving (SIAC) Postprocessing for Discontinuous Galerkin Solutions over Structured Triangular Meshes. SIAM Journal on Numerical Analysis, 2011, 49, 1899-1920.	2.3	34
34	Investigation of Smoothness-Increasing Accuracy-Conserving Filters for Improving Streamline Integration through Discontinuous Fields. IEEE Transactions on Visualization and Computer Graphics, 2008, 14, 680-692.	4.4	33
35	Inverse Design of Metal Nanoparticles' Morphology. ACS Photonics, 2016, 3, 68-78.	6.6	33
36	Ray-tracing polymorphic multidomain spectral/hp elements for isosurface rendering. IEEE Transactions on Visualization and Computer Graphics, 2006, 12, 114-125.	4.4	32

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37	Formal verification of practical MPI programs. , 2009, , .		31
38	Formal verification of practical MPI programs. ACM SIGPLAN Notices, 2009, 44, 261-270.	0.2	31
39	Efficient Implementation of Smoothness-Increasing Accuracy-Conserving (SIAC) Filters for Discontinuous Galerkin Solutions. Journal of Scientific Computing, 2012, 52, 85-112.	2.3	31
40	Topology Verification for Isosurface Extraction. IEEE Transactions on Visualization and Computer Graphics, 2012, 18, 952-965.	4.4	31
41	Robust Node Generation for Mesh-free Discretizations on Irregular Domains and Surfaces. SIAM Journal of Scientific Computing, 2018, 40, A2584-A2608.	2.8	31
42	A framework for exploring numerical solutions of advectionâ€“reactionâ€“diffusion equations using a GPU-based approach. Computing and Visualization in Science, 2009, 12, 155-170.	1.2	30
43	Finite-Element-Based Discretization and Regularization Strategies for 3-D Inverse Electrocardiography. IEEE Transactions on Biomedical Engineering, 2011, 58, 1827-1838.	4.2	30
44	A radial basis function (RBF) finite difference method for the simulation of reactionâ€“diffusion equations on stationary platelets within the augmented forcing method. International Journal for Numerical Methods in Fluids, 2014, 75, 1-22.	1.6	30
45	RBF-LOI: Augmenting Radial Basis Functions (RBFs) with Least Orthogonal Interpolation (LOI) for solving PDEs on surfaces. Journal of Computational Physics, 2018, 373, 722-735.	3.8	28
46	A comparison of implicit solvers for the immersed boundary equations. Computer Methods in Applied Mechanics and Engineering, 2008, 197, 2290-2304.	6.6	27
47	One-Sided Smoothness-Increasing Accuracy-Conserving Filtering for Enhanced Streamline Integration through Discontinuous Fields. Journal of Scientific Computing, 2009, 38, 164-184.	2.3	27
48	ElVis: A System for the Accurate and Interactive Visualization of High-Order Finite Element Solutions. IEEE Transactions on Visualization and Computer Graphics, 2012, 18, 2325-2334.	4.4	27
49	Coarse Resolution Turbulence Simulations With Spectral Vanishing Viscosityâ€“Large-Eddy Simulations (SVV-LES). Journal of Fluids Engineering, Transactions of the ASME, 2002, 124, 886-891.	1.5	26
50	Aliasing errors due to quadratic nonlinearities on triangular spectral /hp element discretisations. Journal of Engineering Mathematics, 2007, 56, 273-288.	1.2	25
51	Resolution Strategies for the Finite-Element-Based Solution of the ECG Inverse Problem. IEEE Transactions on Biomedical Engineering, 2010, 57, 220-237.	4.2	25
52	INTERACTIVE VISUALIZATION OF PROBABILITY AND CUMULATIVE DENSITY FUNCTIONS. , 2012, 2, 397-412.		24
53	Smoothness-Increasing Accuracy-Conserving Filters for Discontinuous Galerkin Solutions over Unstructured Triangular Meshes. SIAM Journal of Scientific Computing, 2013, 35, A212-A230.	2.8	24
54	Mixed aleatory and epistemic uncertainty quantification using fuzzy set theory. International Journal of Approximate Reasoning, 2015, 66, 1-15.	3.3	23

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55	Smoothness-Increasing Accuracy-Conserving (SIAC) Filtering for Discontinuous Galerkin Solutions: Improved Errors Versus Higher-Order Accuracy. <i>Journal of Scientific Computing</i> , 2012, 53, 129-149.	2.3	22
56	Formal Verification of Programs That Use MPI One-Sided Communication. <i>Lecture Notes in Computer Science</i> , 2006, , 30-39.	1.3	21
57	The Need for Verifiable Visualization. <i>IEEE Computer Graphics and Applications</i> , 2008, 28, 78-83.	1.2	20
58	Verifiable Visualization for Isosurface Extraction. <i>IEEE Transactions on Visualization and Computer Graphics</i> , 2009, 15, 1227-1234.	4.4	20
59	Smoothness-Increasing Accuracy-Conserving (SIAC) Filters for Discontinuous Galerkin Solutions: Application to Structured Tetrahedral Meshes. <i>Journal of Scientific Computing</i> , 2014, 58, 690-704.	2.3	20
60	Distributed Dynamic Partial Order Reduction Based Verification of Threaded Software. , 2007, , 58-75.		20
61	Semantics driven dynamic partial-order reduction of MPI-based parallel programs. , 2007, , .		19
62	A study of different modeling choices for simulating platelets within the immersed boundary method. <i>Applied Numerical Mathematics</i> , 2013, 63, 58-77.	2.1	19
63	One-Sided Position-Dependent Smoothness-Increasing Accuracy-Conserving (SIAC) Filtering Over Uniform and Non-uniform Meshes. <i>Journal of Scientific Computing</i> , 2015, 64, 773-817.	2.3	19
64	Parametric topology optimization with multiresolution finite element models. <i>International Journal for Numerical Methods in Engineering</i> , 2019, 119, 567-589.	2.8	18
65	GPU-Based Interactive Cut-Surface Extraction From High-Order Finite Element Fields. <i>IEEE Transactions on Visualization and Computer Graphics</i> , 2011, 17, 1803-1811.	4.4	17
66	Building Blocks for Computer Vision with Stochastic Partial Differential Equations. <i>International Journal of Computer Vision</i> , 2008, 80, 375-405.	15.6	15
67	Smoothness-Increasing Accuracy-Conserving (SIAC) Filtering and Quasi-Interpolation: A Unified View. <i>Journal of Scientific Computing</i> , 2016, 67, 237-261.	2.3	14
68	Stress-based topology optimization under uncertainty via simulation-based Gaussian process. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2020, 365, 112992.	6.6	14
69	Multifidelity modeling for Physics-Informed Neural Networks (PINNs). <i>Journal of Computational Physics</i> , 2022, 451, 110844.	3.8	14
70	GPU-Based Volume Visualization from High-Order Finite Element Fields. <i>IEEE Transactions on Visualization and Computer Graphics</i> , 2014, 20, 70-83.	4.4	13
71	Using the material point method to model chemical/mechanical coupling in the deformation of a silicon anode. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2017, 25, 045005.	2.0	13
72	Multi-Dimensional Filtering: Reducing the Dimension Through Rotation. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, A2179-A2200.	2.8	13

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73	Image-Based Multiresolution Topology Optimization Using Deep Disjunctive Normal Shape Model. CAD Computer Aided Design, 2021, 130, 102947.	2.7	13
74	Quantification of Errors Introduced in the Numerical Approximation and Implementation of Smoothness-Increasing Accuracy Conserving (SIAC) Filtering of Discontinuous Galerkin (DG) Fields. Journal of Scientific Computing, 2010, 45, 447-470.	2.3	12
75	Formal specification of MPI 2.0: Case study in specifying a practical concurrent programming API. Science of Computer Programming, 2011, 76, 65-81.	1.9	12
76	Mixed-element volume completion from NURBS surfaces. Computers and Graphics, 2012, 36, 548-554.	2.5	12
77	Interpolation Error Bounds for Curvilinear Finite Elements and Their Implications on Adaptive Mesh Refinement. Journal of Scientific Computing, 2019, 78, 1045-1062.	2.3	12
78	Stochastic Markovian modeling of electrophysiology of ion channels: Reconstruction of standard deviations in macroscopic currents. Journal of Theoretical Biology, 2007, 245, 627-637.	1.7	11
79	Towards stable coupling methods for high-order discretization of fluid-structure interaction: Algorithms and observations. Journal of Computational Physics, 2007, 223, 489-518.	3.8	11
80	Large Scale Verification of MPI Programs Using Lamport Clocks with Lazy Update. , 2011, , .		11
81	Augmenting the immersed boundary method with Radial Basis Functions (RBFs) for the modeling of platelets in hemodynamic flows. International Journal for Numerical Methods in Fluids, 2015, 79, 536-557.	1.6	11
82	Formal specification of the MPI-2.0 standard in TLA+. , 2008, , .		10
83	Using the Stochastic Collocation Method for the Uncertainty Quantification of Drug Concentration Due to Depot Shape Variability. IEEE Transactions on Biomedical Engineering, 2009, 56, 609-620.	4.2	10
84	On the Treatment of Field Quantities and Elemental Continuity in FEM Solutions. IEEE Transactions on Visualization and Computer Graphics, 2018, 24, 903-912.	4.4	10
85	Optimization of Large-Scale Vogel Spiral Arrays of Plasmonic Nanoparticles. Plasmonics, 2019, 14, 253-261.	3.4	10
86	Reduced Execution Semantics of MPI: From Theory to Practice. Lecture Notes in Computer Science, 2009, , 724-740.	1.3	10
87	Ambrosio-Tortorelli Segmentation of Stochastic Images: Model Extensions, Theoretical Investigations and Numerical Methods. International Journal of Computer Vision, 2013, 103, 190-212.	15.6	9
88	Evaluating Shape Alignment via Ensemble Visualization. IEEE Computer Graphics and Applications, 2016, 36, 60-71.	1.2	9
89	Fast predictive multi-fidelity prediction with models of quantized fidelity levels. Journal of Computational Physics, 2019, 376, 992-1008.	3.8	9
90	Smoothness-Increasing Accuracy-Conserving (SIAC) Filtering for Discontinuous Galerkin Solutions over Nonuniform Meshes: Superconvergence and Optimal Accuracy. Journal of Scientific Computing, 2019, 81, 1150-1180.	2.3	8

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91	Allocation Strategies for High Fidelity Models in the Multifidelity Regime. SIAM-ASA Journal on Uncertainty Quantification, 2019, 7, 203-231.	2.0	8
92	Fast parallel solver for the levelset equations on unstructured meshes. Concurrency Computation Practice and Experience, 2015, 27, 1639-1657.	2.2	7
93	Path Boxplots: A Method for Characterizing Uncertainty in Path Ensembles on a Graph. Journal of Computational and Graphical Statistics, 2017, 26, 243-252.	1.7	7
94	An Approach to Formalization and Analysis of Message Passing Libraries. , 2007, , 164-181.		7
95	Thin-plate-Spline Curvilinear Meshing on a Calculus-of-Variations Framework. Procedia Engineering, 2015, 124, 135-147.	1.2	6
96	Hexagonal Smoothness-Increasing Accuracy-Conserving Filtering. Journal of Scientific Computing, 2017, 73, 1072-1093.	2.3	6
97	Gauss: A Framework for Verifying Scientific Computing Software. Electronic Notes in Theoretical Computer Science, 2006, 144, 95-106.	0.9	5
98	Exploiting Batch Processing on Streaming Architectures to Solve 2D Elliptic Finite Element Problems: A Hybridized Discontinuous Galerkin (HDG) Case Study. Journal of Scientific Computing, 2014, 60, 457-482.	2.3	5
99	Optimization Strategies for WRF Single-Moment 6-Class Microphysics Scheme (WSM6) on Intel Microarchitectures. , 2017, , .		5
100	Adaptive Characteristic Length for L-SIAC Filtering of FEM Data. Journal of Scientific Computing, 2019, 79, 542-563.	2.3	4
101	Convergence Acceleration for Time-Dependent Parametric Multifidelity Models. SIAM Journal on Numerical Analysis, 2019, 57, 1344-1368.	2.3	4
102	Robust topology optimization with low rank approximation using artificial neural networks. Computational Mechanics, 2021, 68, 1297-1323.	4.0	4
103	Sound and Efficient Dynamic Verification of MPI Programs with Probe Non-determinism. Lecture Notes in Computer Science, 2009, , 271-281.	1.3	4
104	An optimization framework for inversely estimating myocardial transmembrane potentials and localizing ischemia. , 2011, 2011, 1680-3.		3
105	Generation of nested quadrature rules for generic weight functions via numerical optimization: Application to sparse grids. Journal of Computational Physics, 2020, 400, 108979.	3.8	3
106	Curvilinear Mesh Adaptation Using Radial Basis Function Interpolation and Smoothing. Journal of Scientific Computing, 2018, 77, 397-418.	2.3	2
107	Efficient Algorithms for the Line-SIAC Filter. Journal of Scientific Computing, 2019, 80, 743-761.	2.3	2
108	An open-source parallel code for computing the spectral fractional Laplacian on 3D complex geometry domains. Computer Physics Communications, 2021, 261, 107695.	7.5	2

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109	Static-Analysis Assisted Dynamic Verification of MPI Waitany Programs (Poster Abstract). Lecture Notes in Computer Science, 2009, , 329-330.	1.3	2
110	Formal methods applied to high-performance computing software design: a case study of MPI one-sided communication-based locking. Software - Practice and Experience, 2010, 40, 23-43.	3.6	1
111	A scalable, efficient scheme for evaluation of stencil computations over unstructured meshes. , 2013, , .		1
112	Stochastic Partial Differential Equations for Computer Vision with Uncertain Data. Synthesis Lectures on Visual Computing, 2017, 9, 1-160.	1.0	1
113	On weak Dirichlet boundary conditions for elliptic problems in the continuous Galerkin method. Journal of Computational Physics, 2019, 394, 732-744.	3.8	1
114	The Effect of Data Transformations on Scalar Field Topological Analysis of High-Order FEM Solutions. IEEE Transactions on Visualization and Computer Graphics, 2020, 26, 162-172.	4.4	1
115	Multilevel Designed Quadrature for Partial Differential Equations with Random Inputs. SIAM Journal of Scientific Computing, 2021, 43, A1412-A1440.	2.8	1
116	How Formal Dynamic Verification Tools Facilitate Novel Concurrency Visualizations. Lecture Notes in Computer Science, 2009, , 261-270.	1.3	1
117	Fast Barycentric-Based Evaluation Over Spectral/hp Elements. Journal of Scientific Computing, 2022, 90, 1.	2.3	1
118	Formal Methods for MPI Programs. Electronic Notes in Theoretical Computer Science, 2007, 193, 19-27.	0.9	0
119	Segmentation of Stochastic Images using Stochastic Extensions of the Ambrosio-Tortorelli and the Random Walker Model. Proceedings in Applied Mathematics and Mechanics, 2011, 11, 859-860.	0.2	0
120	A GPU-Based MIS Aggregation Strategy: Algorithms, Comparisons, and Applications within AMG. , 2015, , .		0
121	Performance Optimization Strategies for WRF Physics Schemes Used in Weather Modeling. International Journal of Networking and Computing, 2018, 8, 301-327.	0.4	0