Michael B Giles

List of Publications by Year
in descending order

166 papers	9,074 citations	116194 36 h-index	53065 89 g-index
171 all docs	171 docs citations	171 times ranked	4406 citing authors

#	Article	IF	Citations
1	Multilevel and Quasi Monte Carlo Methods for the Calculation of the Expected Value of Partial Perfect Information. Medical Decision Making, 2022, 42, 168-181.	1.2	5
2	Analysis of Nested Multilevel Monte Carlo Using Approximate Normal Random Variables. SIAM-ASA Journal on Uncertainty Quantification, 2022, 10, 200-226.	1.1	4
3	Multilevel Quasi Monte Carlo Methods for Elliptic PDEs with Random Field Coefficients via Fast White Noise Sampling. SIAM Journal of Scientific Computing, 2021, 43, A2840-A2868.	1.3	1
4	Importance Sampling for Pathwise Sensitivity of Stochastic Chaotic Systems. SIAM-ASA Journal on Uncertainty Quantification, 2021, 9, 1217-1241.	1.1	1
5	Multi-level Monte Carlo methods for the approximation of invariant measures of stochastic differential equations. Statistics and Computing, 2020, 30, 507-524.	0.8	6
6	Multilevel Monte Carlo Estimation of the Expected Value of Sample Information. SIAM-ASA Journal on Uncertainty Quantification, 2020, 8, 1236-1259.	1.1	8
7	Random Bit Quadrature and Approximation of Distributions on Hilbert Spaces. Foundations of Computational Mathematics, 2019, 19, 205-238.	1.5	12
8	Multilevel Monte Carlo method for ergodic SDEs without contractivity. Journal of Mathematical Analysis and Applications, 2019, 476, 149-176.	0.5	11
9	Large-scale performance of a DSL-based multi-block structured-mesh application for Direct Numerical Simulation. Journal of Parallel and Distributed Computing, 2019, 131, 130-146.	2.7	16
10	Multilevel Nested Simulation for Efficient Risk Estimation. SIAM-ASA Journal on Uncertainty Quantification, 2019, 7, 497-525.	1.1	18
11	Improving resilience of scientific software through a domain-specific approach. Journal of Parallel and Distributed Computing, 2019, 128, 99-114.	2.7	1
12	Random bit multilevel algorithms for stochastic differential equations. Journal of Complexity, 2019, 54, 101395.	0.7	6
13	Using GPUs to accelerate computational diffusion MRI: From microstructure estimation to tractography and connectomes. NeuroImage, 2019, 188, 598-615.	2.1	107
14	Decision-making under uncertainty: using MLMC for efficient estimation of EVPPI. Statistics and Computing, 2019, 29, 739-751.	0.8	20
15	Analysis of multilevel Monte Carlo path simulation using the Milstein discretisation. Discrete and Continuous Dynamical Systems - Series B, 2019, 24, 3881-3903.	0.5	3
16	Multilevel Monte Carlo and improved timestepping methods in atmospheric dispersion modelling. Journal of Computational Physics, 2018, 354, 320-343.	1.9	7
17	Loop Tiling in Large-Scale Stencil Codes at Run-Time with OPS. IEEE Transactions on Parallel and Distributed Systems, 2018, 29, 873-886.	4.0	24
18	Efficient White Noise Sampling and Coupling for Multilevel Monte Carlo with Nonnested Meshes. SIAM-ASA Journal on Uncertainty Quantification, 2018, 6, 1630-1655.	1.1	20

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19	The VOLNA-OP2 tsunami code (version 1.5). Geoscientific Model Development, 2018, 11, 4621-4635.	1.3	15
20	Multilevel Estimation of Expected Exit Times and Other Functionals of Stopped Diffusions. SIAM-ASA Journal on Uncertainty Quantification, 2018, 6, 1454-1474.	1.1	7
21	MLMC for Nested Expectations. , 2018, , 425-442.		2
22	Adaptive Euler–Maruyama Method for SDEs with Non-globally Lipschitz Drift. Springer Proceedings in Mathematics and Statistics, 2018, , 217-234.	0.1	9
23	Combining Sparse Grids, Multilevel MC and QMC for Elliptic PDEs with Random Coefficients. Springer Proceedings in Mathematics and Statistics, 2018, , 265-281.	0.1	1
24	Multilevel Monte Carlo for exponential Lévy models. Finance and Stochastics, 2017, 21, 995-1026.	0.7	12
25	Beyond 16GB. , 2017, , .		6
26	Vectorizing unstructured mesh computations for many‐core architectures. Concurrency Computation Practice and Experience, 2016, 28, 557-577.	1.4	14
27	Manycore Algorithms for Batch Scalar and Block Tridiagonal Solvers. ACM Transactions on Mathematical Software, 2016, 42, 1-36.	1.6	16
28	Extending the Multi-level Method for the Simulation of Stochastic Biological Systems. Bulletin of Mathematical Biology, 2016, 78, 1640-1677.	0.9	12
29	An Empirical Interpolation and Model-Variance Reduction Method for Computing Statistical Outputs of Parametrized Stochastic Partial Differential Equations. SIAM-ASA Journal on Uncertainty Quantification, 2016, 4, 244-265.	1.1	5
30	Auto-vectorizing a large-scale production unstructured-mesh CFD application. , 2016, , .		6
31	Block-structured compressible Navier–Stokes solution using the OPS high-level abstraction. International Journal of Computational Fluid Dynamics, 2016, 30, 450-454.	0.5	9
32	Non-nested Adaptive Timesteps in Multilevel Monte Carlo Computations. Springer Proceedings in Mathematics and Statistics, 2016, , 303-314.	0.1	4
33	Algorithm 955. ACM Transactions on Mathematical Software, 2016, 42, 1-22.	1.6	6
34	Acceleration of a Full-Scale Industrial CFD Application with OP2. IEEE Transactions on Parallel and Distributed Systems, 2016, 27, 1265-1278.	4.0	37
35	High Performance Computing on the IBM Power8 Platform. Lecture Notes in Computer Science, 2016, , 235-254.	1.0	3
36	ARTEMIS: A real-time data processing pipeline for the detection of fast transients. , 2015, , .		1

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37	A model and variance reduction method for computing statistical outputs of stochastic elliptic partial differential equations. Journal of Computational Physics, 2015, 297, 700-720.	1.9	20
38	Design and Development of Domain Specific Active Libraries with Proxy Applications. , 2015, , .		7
39	Multilevel Monte Carlo Approximation of Distribution Functions and Densities. SIAM-ASA Journal on Uncertainty Quantification, 2015, 3, 267-295.	1.1	41
40	Multilevel Monte Carlo methods. Acta Numerica, 2015, 24, 259-328.	6.3	450
41	Analysis of parallel processor architectures for the solution of the Black-Scholes PDE. , 2015, , .		1
42	An adaptive multi-level simulation algorithm for stochastic biological systems. Journal of Chemical Physics, 2015, 142, 024113.	1.2	21
43	Finite Element Algorithms and Data Structures on Graphical Processing Units. International Journal of Parallel Programming, 2015, 43, 203-239.	1.1	24
44	Performance Analysis of a High-Level Abstractions-Based Hydrocode on Future Computing Systems. Lecture Notes in Computer Science, 2015, , 85-104.	1.0	8
45	The OPS Domain Specific Abstraction for Multi-block Structured Grid Computations. , 2014, , .		32
46	GPU Implementation of Finite Difference Solvers. , 2014, , .		12
47	Methods to utilize SIMT and SIMD instruction level parallelism in tridiagonal solvers. , 2014, , .		1
48	Antithetic multilevel Monte Carlo estimation for multi-dimensional SDEs without LÃ©vy area simulation. Annals of Applied Probability, 2014, 24, .	0.6	68
49	Trends in high-performance computing for engineering calculations. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2014, 372, 20130319.	1.6	29
50	Further analysis of multilevel Monte Carlo methods for elliptic PDEs with random coefficients. Numerische Mathematik, 2013, 125, 569-600.	0.9	128
51	Designing OP2 for GPU architectures. Journal of Parallel and Distributed Computing, 2013, 73, 1451-1460.	2.7	25
52	Design and initial performance of a high-level unstructured mesh framework on heterogeneous parallel systems. Parallel Computing, 2013, 39, 669-692.	1.3	25
53	Multilevel Monte Carlo methods for applications in finance. Interdisciplinary Mathematical Sciences, 2013, , 3-47.	0.4	9
54	Compiler Optimizations for Industrial Unstructured Mesh CFD Applications on GPUs. Lecture Notes in Computer Science, 2013, , 112-126.	1.0	5

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55	Antithetic Multilevel Monte Carlo Estimation for Multidimensional SDEs. Springer Proceedings in Mathematics and Statistics, 2013, , 367-384.	0.1	9
56	Multilevel Monte Carlo Methods. Springer Proceedings in Mathematics and Statistics, 2013, , 83-103.	0.1	16
57	Approximating the erfinv Function. , 2012, , 109-116.		8
58	Predictive modeling and analysis of OP2 on distributed memory GPU clusters. Performance Evaluation Review, 2012, 40, 61-67.	0.4	4
59	Mesh independent loop fusion for unstructured mesh applications. , 2012, , .		3
60	Efficient sparse matrix-vector multiplication on cache-based GPUs. , 2012, , .		15
61	Performance Analysis and Optimization of the OP2 Framework on Many-Core Architectures. Computer Journal, 2012, 55, 168-180.	1.5	33
62	Observations of transients and pulsars with LOFAR international stations and the ARTEMIS backend. Proceedings of the International Astronomical Union, 2012, 8, 492-494.	0.0	8
63	Fat versus Thin Threading Approach on GPUs: Application to Stochastic Simulation of Chemical Reactions. IEEE Transactions on Parallel and Distributed Systems, 2012, 23, 280-287.	4.0	18
64	Stochastic Finite Differences and Multilevel Monte Carlo for a Class of SPDEs in Finance. SIAM Journal on Financial Mathematics, 2012, 3, 572-592.	0.7	37
65	OP2: An active library framework for solving unstructured mesh-based applications on multi-core and many-core architectures. , 2012, , .		48
66	An Analytical Study of Loop Tiling for a Large-Scale Unstructured Mesh Application. , 2012, , .		6
67	Computing Greeks Using Multilevel Path Simulation. Springer Proceedings in Mathematics and Statistics, 2012, , 281-296.	0.1	8
68	Multilevel Path Simulation for Jump-Diffusion SDEs. Springer Proceedings in Mathematics and Statistics, 2012, , 695-708.	0.1	14
69	Design and Performance of the OP2 Library for Unstructured Mesh Applications. Lecture Notes in Computer Science, 2012, , 191-200.	1.0	12
70	Parallelization Techniques for Random Number Generators. , 2011, , 231-246.		18
71	Multilevel Monte Carlo methods and applications to elliptic PDEs with random coefficients. Computing and Visualization in Science, 2011, 14, 3-15.	1.2	339
72	Predictive modeling and analysis of OP2 on distributed memory GPU clusters. , 2011, , .		1

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73	STOCHSIMGPU: parallel stochastic simulation for the Systems Biology Toolbox 2 for MATLAB. Bioinformatics, 2011, 27, 1170-1171.	1.8	31
74	Performance analysis of the OP2 framework on many-core architectures. Performance Evaluation Review, 2011, 38, 9-15.	0.4	33
75	On the Utility of Graphics Cards to Perform Massively Parallel Simulation of Advanced Monte Carlo Methods. Journal of Computational and Graphical Statistics, 2010, 19, 769-789.	0.9	204
76	Convergence of Linearized and Adjoint Approximations for Discontinuous Solutions of Conservation Laws. Part 2: Adjoint Approximations and Extensions. SIAM Journal on Numerical Analysis, 2010, 48, 905-921.	1.1	39
77	Convergence of Linearized and Adjoint Approximations for Discontinuous Solutions of Conservation Laws. Part 1: Linearized Approximations and Linearized Output Functionals. SIAM Journal on Numerical Analysis, 2010, 48, 882-904.	1.1	40
78	Multilevel Monte Carlo for basket options. , 2009, , .		9
79	Analysing multi-level Monte Carlo for options withÂnon-globally Lipschitz payoff. Finance and Stochastics, 2009, 13, 403-413.	0.7	58
80	Vibrato Monte Carlo Sensitivities. , 2009, , 369-382.		10
81	Improved Multilevel Monte Carlo Convergence using the Milstein Scheme. , 2008, , 343-358.		88
82	Multilevel Monte Carlo Path Simulation. Operations Research, 2008, 56, 607-617.	1.2	992
83	Three-Dimensional Nonreflecting Boundary Conditions for Swirling Flow in Turbomachinery. Journal of Propulsion and Power, 2007, 23, 981-986.	1.3	23
84	Sharp error estimates for discretizations of the 1D convection–diffusion equation with Dirac initial data. IMA Journal of Numerical Analysis, 2007, 27, 406-425.	1.5	10
85	Turbomachinery Design Optimization Using Automatic Differentiated Adjoint Code. , 2007, , 1435.		16
86	Efficient Hessian Calculation Using Automatic Differentiation. , 2007, , .		26
87	A three-dimensional hybrid finite element/spectral analysis of noise radiation from turbofan inlets. Journal of Sound and Vibration, 2006, 296, 623-642.	2.1	9
88	Adjoint Harmonic Sensitivities for Forced Response Minimization. Journal of Engineering for Gas Turbines and Power, 2006, 128, 183-189.	0.5	7
89	Preconditioning Harmonic Unsteady Potential Flow Calculations. AIAA Journal, 2006, 44, 2654-2662.	1.5	5
90	Stabilizing Linear Harmonic Flow Solvers for Turbomachinery Aeroelasicity with Complex Interative Algorithms. AIAA Journal, 2006, 44, 1048-1059.	1.5	5

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91	Convergence analysis of Crankâ€"Nicolson and Rannacher time-marching. Journal of Computational Finance, 2006, 9, 89-112.	0.3	84
92	Eigenmode Analysis for Turbomachinery Applications. Journal of Propulsion and Power, 2005, 21, 973-978.	1.3	36
93	A Hybrid Spectral Analysis of Noise Radiated from Non-Axisymmetric Turbofan Inlets. , 2005, , .		0
94	Computing Linear Harmonic Unsteady Flows in Turbomachines with Complex Iterative Solvers. , 2005, , .		2
95	Stabilization of a Linear Flow Solver for Turbomachinery Aeroelasticity Using Recursive Projection Method. AIAA Journal, 2004, 42, 1765-1774.	1.5	46
96	Adjoint and defect error bounding and correction for functional estimates. Journal of Computational Physics, 2004, 200, 769-794.	1.9	98
97	Progress in adjoint error correction for integral functionals. Computing and Visualization in Science, 2004, 6, 113-121.	1.2	38
98	Adjoint Sensitivity Analysis for Aeroacoustic Applications. , 2003, , .		0
99	Adjoint and Defect Error Bounding and Correction for Functional Estimates. , 2003, , .		12
100	Adjoint Calculation of Sensitivities of Turbomachinery Objective Functions. Journal of Propulsion and Power, 2003, 19, 693-703.	1.3	36
101	Effects of Flow Instabilities on the Linear Analysis of Turbomachinery Aeroelasticity. Journal of Propulsion and Power, 2003, 19, 250-259.	1.3	65
102	Algorithm Developments for Discrete Adjoint Methods. AIAA Journal, 2003, 41, 198-205.	1.5	269
103	Adjoint Harmonic Sensitivities for Forced Response Minimization. , 2003, , 429.		2
104	Adjoint Error Correction for Integral Outputs. Lecture Notes in Computational Science and Engineering, 2003, , 47-95.	0.1	20
105	Edge-Based Multigrid and Preconditioning for Hybrid Grids. AIAA Journal, 2002, 40, 1954-1960.	1.5	85
106	Adjoint methods for PDEs: a posteriori error analysis and postprocessing by duality. Acta Numerica, 2002, 11, 145-236.	6.3	381
107	Effects of Flow Instabilities on the Linear Analysis of Turbomachinery Aeroelasticity. , 2002, , .		1
108	Adjoint methods for PDEs: <i>a posteriori</i> error analysis and postprocessing by duality. , 2002, , 145-236.		36

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109	Stability Analysis of Preconditioned Approximations of the Euler Equations on Unstructured Meshes. Journal of Computational Physics, 2002, 178, 498-519.	1.9	17
110	The harmonic adjoint approach to unsteady turbomachinery design. International Journal for Numerical Methods in Fluids, 2002, 40, 323-332.	0.9	76
111	On the Iterative Solution of Adjoint Equations. , 2002, , 145-151.		15
112	Solution adaptive mesh refinement using adjoint error analysis. , 2001, , .		27
113	Adjoint code developments using the exact discrete approach. , 2001, , .		26
114	Analytic adjoint solutions for the quasi-one-dimensional Euler equations. Journal of Fluid Mechanics, 2001, 426, 327-345.	1.4	109
115	Defect and Adjoint Error Correction. , 2001, , 28-36.		2
116	Eigenmode Analysis of Boundary Conditions for the One-Dimensional Preconditioned Euler Equations. Journal of Computational Physics, 2000, 160, 369-384.	1.9	26
117	An Introduction to the Adjoint Approach to Design. Flow, Turbulence and Combustion, 2000, 65, 393-415.	1.4	685
118	Adjoint Recovery of Superconvergent Functionals from PDE Approximations. SIAM Review, 2000, 42, 247-264.	4.2	280
119	Wake Integration for Three-Dimensional Flowfield Computations: Applications. Journal of Aircraft, 1999, 36, 366-373.	1.7	37
120	Wake Integration for Three-Dimensional Flowfield Computations: Theoretical Development. Journal of Aircraft, 1999, 36, 357-365.	1.7	94
121	Improved lift and drag estimates using adjoint Euler equations. , 1999, , .		47
122	A Numerical Study of Flutter in a Transonic Fan. Journal of Turbomachinery, 1998, 120, 500-507.	0.9	24
123	A Numerical Study of Flutter in a Transonic Fan. , 1997, , .		8
124	On the stability and convergence of discretizations of initial value p.d.e.s. IMA Journal of Numerical Analysis, 1997, 17, 563-576.	1.5	6
125	STABILITY AND ACCURACY OF NUMERICAL BOUNDARY CONDITIONS IN AEROELASTIC ANALYSIS. International Journal for Numerical Methods in Fluids, 1997, 24, 739-757.	0.9	10
126	Implicit time-accurate solutions on unstructured dynamic grids. International Journal for Numerical Methods in Fluids, 1997, 25, 1285-1300.	0.9	25

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127	Stability Analysis of a Galerkin/Runge–Kutta Navier–Stokes Discretisation on Unstructured Tetrahedral Grids. Journal of Computational Physics, 1997, 132, 201-214.	1.9	11
128	Preconditioned Multigrid Methods for Compressible Flow Calculations on Stretched Meshes. Journal of Computational Physics, 1997, 136, 425-445.	1.9	91
129	Preconditioning compressible flow calculations on stretched meshes. , 1996, , .		24
130	Multigrid aircraft computations using the OPlus parallel library*. , 1996, , 339-346.		10
131	A Navier Stokes Analysis of Airfoils in Oscillating Transonic Cascades for the Prediction of Aerodynamic Damping. , 1995, , .		5
132	Simultaneous Viscous-Inviscid Coupling via Transpiration. Journal of Computational Physics, 1995, 120, 157-170.	1.9	3
133	OGV Tailoring to Alleviate Pylon-OGV-Fan Interaction. , 1995, , .		5
134	An Asymptotic Analysis of Mixing Loss. Journal of Turbomachinery, 1995, 117, 367-374.	0.9	25
135	Validity of linearized unsteady Euler equations with shock capturing. AIAA Journal, 1994, 32, 46-53.	1.5	47
136	Quasi-three-dimensional nonreflecting boundary conditions for Euler equations calculations. Journal of Propulsion and Power, 1993, 9, 263-271.	1.3	81
137	Blade row interaction effects on compressor measurements. Journal of Propulsion and Power, 1993, 9, 569-578.	1.3	11
138	Validation of a Numerical Method for Unsteady Flow Calculations. Journal of Turbomachinery, 1993, 115, 110-117.	0.9	43
139	An Asymptotic Analysis of Mixing Loss. , 1993, , .		5
140	A Framework for Multi-Stage Unsteady Flow Calculations. , 1993, , 57-72.		2
141	Comparison of Time-Resolved Turbine Rotor Blade Heat Transfer Measurements and Numerical Calculations. Journal of Turbomachinery, 1992, 114, 818-827.	0.9	43
142	An Approach for Multi-Stage Calculations Incorporating Unsteadiness. , 1992, , .		25
143	Second-Order Effects of Unsteadiness on the Performance of Turbomachines. , 1992, , .		8
144	On the validity of linearized unsteady Euler equations with shock capturing. , 1991, , .		14

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145	Quasi-3-D non-reflecting boundary conditions for Euler equations calculations. , 1991, , .		4
146	Validation of a Numerical Method for Unsteady Flow Calculations. , 1991, , .		11
147	Advanced interactive visualization for CFD. Computing Systems in Engineering: an International Journal, 1990, 1, 51-62.	0.5	77
148	Nozzle Guide Vane Shock Wave Propagation and Bifurcation in a Transonic Turbine Rotor. , 1990, , .		8
149	Stator/rotor interaction in a transonic turbine. Journal of Propulsion and Power, 1990, 6, 621-627.	1.3	121
150	Numerical investigation of hot streaks in turbines. Journal of Propulsion and Power, 1990, 6, 769-776.	1.3	21
151	Nonreflecting boundary conditions for Euler equation calculations. AIAA Journal, 1990, 28, 2050-2058.	1.5	695
152	Accelerated convergence of Euler solutions using time inclining. AIAA Journal, 1990, 28, 1457-1463.	1.5	5
153	Inlet radial temperature redistribution in a transonic turbine stage. , 1990, , .		11
154	Fully Scaled Transonic Turbine Rotor Heat Transfer Measurements. Journal of Turbomachinery, 1989, 111, 1-7.	0.9	61
155	Non-reflecting boundary conditions for Euler equation calculations. , 1989, , .		43
156	Calculation of unsteady wake/rotor interaction. Journal of Propulsion and Power, 1988, 4, 356-362.	1.3	163
157	Stator/rotor interaction in a transonic turbine. , 1988, , .		25
158	Vortex shedding in high-speed compressor blade wakes. Journal of Propulsion and Power, 1988, 4, 236-244.	1.3	28
159	Viscous-inviscid analysis of transonic and low Reynolds number airfoils. AIAA Journal, 1987, 25, 1347-1355.	1.5	849
160	Two-dimensional transonic aerodynamic design method. AIAA Journal, 1987, 25, 1199-1206.	1.5	152
161	Generalized conservation cells for finite volume calculations. , 1987, , .		2
162	Propagation and stability of wavelike solutions of finite difference equations with variable coefficients. Journal of Computational Physics, 1985, 58, 349-360.	1.9	28

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163	A numerical study of the steady scalar convective diffusion equation for small viscosity. Journal of Computational Physics, 1984, 56, 513-529.	1.9	2
164	Grid services in action: grid enabled optimisation and design search. , 0, , .		1
165	Advances in Computing, and Their Impact on Scientific Computing. Novartis Foundation Symposium, 0, , 26-41.	1.2	0
166	Quasi-Monte Carlo for finance applications. ANZIAM Journal, 0, 50, 308.	0.0	33