

# George Biros

## List of Publications by Year in descending order

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72  
papers

3,729  
citations

147566

31  
h-index

133063

59  
g-index

73  
all docs

73  
docs citations

73  
times ranked

3204  
citing authors

#	ARTICLE	IF	CITATIONS
1	A kernel-independent adaptive fast multipole algorithm in two and three dimensions. <i>Journal of Computational Physics</i> , 2004, 196, 591-626.	1.9	366
2	Imaging patterns predict patient survival and molecular subtype in glioblastoma via machine learning techniques. <i>Neuro-Oncology</i> , 2016, 18, 417-425.	0.6	243
3	An image-driven parameter estimation problem for a reaction-diffusion glioma growth model with mass effects. <i>Journal of Mathematical Biology</i> , 2008, 56, 793-825.	0.8	209
4	Parallel Lagrange-Newton-Krylov-Schur Methods for PDE-Constrained Optimization. Part I: The Krylov-Schur Solver. <i>SIAM Journal of Scientific Computing</i> , 2005, 27, 687-713.	1.3	195
5	GLISTR: Glioma Image Segmentation and Registration. <i>IEEE Transactions on Medical Imaging</i> , 2012, 31, 1941-1954.	5.4	181
6	Why Do Red Blood Cells Have Asymmetric Shapes Even in a Symmetric Flow?. <i>Physical Review Letters</i> , 2009, 103, 188101.	2.9	175
7	The 2019 mathematical oncology roadmap. <i>Physical Biology</i> , 2019, 16, 041005.	0.8	147
8	Bottom-Up Construction and 2:1 Balance Refinement of Linear Octrees in Parallel. <i>SIAM Journal of Scientific Computing</i> , 2008, 30, 2675-2708.	1.3	144
9	A boundary integral method for simulating the dynamics of inextensible vesicles suspended in a viscous fluid in 2D. <i>Journal of Computational Physics</i> , 2009, 228, 2334-2353.	1.9	136
10	A high-order 3D boundary integral equation solver for elliptic PDEs in smooth domains. <i>Journal of Computational Physics</i> , 2006, 219, 247-275.	1.9	123
11	Imaging Surrogates of Infiltration Obtained Via Multiparametric Imaging Pattern Analysis Predict Subsequent Location of Recurrence of Glioblastoma. <i>Neurosurgery</i> , 2016, 78, 572-580.	0.6	116
12	A fast algorithm for simulating vesicle flows in three dimensions. <i>Journal of Computational Physics</i> , 2011, 230, 5610-5634.	1.9	115
13	Parallel Lagrange-Newton-Krylov-Schur Methods for PDE-Constrained Optimization. Part II: The Lagrange-Newton Solver and Its Application to Optimal Control of Steady Viscous Flows. <i>SIAM Journal of Scientific Computing</i> , 2005, 27, 714-739.	1.3	109
14	Non-diffeomorphic registration of brain tumor images by simulating tissue loss and tumor growth. <i>NeuroImage</i> , 2009, 46, 762-774.	2.1	77
15	PVFM: A Parallel Kernel Independent FMM for Particle and Volume Potentials. <i>Communications in Computational Physics</i> , 2015, 18, 808-830.	0.7	68
16	A Parallel Geometric Multigrid Method for Finite Elements on Octree Meshes. <i>SIAM Journal of Scientific Computing</i> , 2010, 32, 1361-1392.	1.3	61
17	A numerical method for simulating the dynamics of 3D axisymmetric vesicles suspended in viscous flows. <i>Journal of Computational Physics</i> , 2009, 228, 7233-7249.	1.9	60
18	Dynamic simulation of locally inextensible vesicles suspended in an arbitrary two-dimensional domain, a boundary integral method. <i>Journal of Computational Physics</i> , 2010, 229, 6466-6484.	1.9	60

#	ARTICLE	IF	CITATIONS
19	Prediction of the low-velocity distribution from the pore structure in simple porous media. <i>Physical Review Fluids</i> , 2017, 2, .	1.0	59
20	A fast solver for the Stokes equations with distributed forces in complex geometries. <i>Journal of Computational Physics</i> , 2004, 193, 317-348.	1.9	58
21	FFT, FMM, or Multigrid? A comparative Study of State-Of-the-Art Poisson Solvers for Uniform and Nonuniform Grids in the Unit Cube. <i>SIAM Journal of Scientific Computing</i> , 2016, 38, C280-C306.	1.3	58
22	A variational finite element method for source inversion for convective–diffusive transport. <i>Finite Elements in Analysis and Design</i> , 2003, 39, 683-705.	1.7	57
23	An inverse problem formulation for parameter estimation of a reaction–diffusion model of low grade gliomas. <i>Journal of Mathematical Biology</i> , 2016, 72, 409-433.	0.8	55
24	Brain–Tumor Interaction Biophysical Models for Medical Image Registration. <i>SIAM Journal of Scientific Computing</i> , 2008, 30, 3050-3072.	1.3	40
25	An Inexact Newton–Krylov Algorithm for Constrained Diffeomorphic Image Registration. <i>SIAM Journal on Imaging Sciences</i> , 2015, 8, 1030-1069.	1.3	40
26	Optimal Control Theory for Personalized Therapeutic Regimens in Oncology: Background, History, Challenges, and Opportunities. <i>Journal of Clinical Medicine</i> , 2020, 9, 1314.	1.0	40
27	Integrated Biophysical Modeling and Image Analysis: Application to Neuro-Oncology. <i>Annual Review of Biomedical Engineering</i> , 2020, 22, 309-341.	5.7	39
28	A Comparative Study of Biomechanical Simulators in Deformable Registration of Brain Tumor Images. <i>IEEE Transactions on Biomedical Engineering</i> , 2008, 55, 1233-1236.	2.5	35
29	Constrained $H^1$ -Regularization Schemes for Diffeomorphic Image Registration. <i>SIAM Journal on Imaging Sciences</i> , 2016, 9, 1154-1194.	1.3	35
30	Simulation of glioblastoma growth using a 3D multispecies tumor model with mass effect. <i>Journal of Mathematical Biology</i> , 2019, 79, 941-967.	0.8	34
31	Parallel geometric-algebraic multigrid on unstructured forests of octrees. , 2012, , .		33
32	Comparison of multigrid algorithms for high-order continuous finite element discretizations. <i>Numerical Linear Algebra With Applications</i> , 2015, 22, 664-680.	0.9	33
33	High-volume fraction simulations of two-dimensional vesicle suspensions. <i>Journal of Computational Physics</i> , 2014, 274, 245-267.	1.9	32
34	PDE-constrained optimization in medical image analysis. <i>Optimization and Engineering</i> , 2018, 19, 765-812.	1.3	31
35	Boundary integral method for the flow of vesicles with viscosity contrast in three dimensions. <i>Journal of Computational Physics</i> , 2015, 298, 766-786.	1.9	30
36	Coupling brain-tumor biophysical models and diffeomorphic image registration. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2019, 347, 533-567.	3.4	28

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37	ASKIT: Approximate Skeletonization Kernel-Independent Treecode in High Dimensions. SIAM Journal of Scientific Computing, 2015, 37, A1089-A1110.	1.3	25
38	Analytical and numerical solutions for shapes of quiescent two-dimensional vesicles. International Journal of Non-Linear Mechanics, 2009, 44, 257-262.	1.4	24
39	Where did the tumor start? An inverse solver with sparse localization for tumor growth models. Inverse Problems, 2020, 36, 045006.	1.0	21
40	CLAIRE: A Distributed-Memory Solver for Constrained Large Deformation Diffeomorphic Image Registration. SIAM Journal of Scientific Computing, 2019, 41, C548-C584.	1.3	20
41	Sorting same-size red blood cells in deep deterministic lateral displacement devices. Journal of Fluid Mechanics, 2019, 859, 433-475.	1.4	20
42	Multigrid Algorithms for Inverse Problems with Linear Parabolic PDE Constraints. SIAM Journal of Scientific Computing, 2008, 31, 369-397.	1.3	19
43	Algorithm 967. ACM Transactions on Mathematical Software, 2017, 43, 1-27.	1.6	19
44	Adaptive time stepping for vesicle suspensions. Journal of Computational Physics, 2016, 306, 478-499.	1.9	19
45	FaIMS: A fast algorithm for the inverse medium problem with multiple frequencies and multiple sources for the scalar Helmholtz equation. Journal of Computational Physics, 2012, 231, 4403-4421.	1.9	18
46	A Semi-Lagrangian Two-Level Preconditioned Newton-Krylov Solver for Constrained Diffeomorphic Image Registration. SIAM Journal of Scientific Computing, 2017, 39, B1064-B1101.	1.3	18
47	Parallel Algorithms for Nearest Neighbor Search Problems in High Dimensions. SIAM Journal of Scientific Computing, 2016, 38, S667-S699.	1.3	16
48	Fast GPU 3D diffeomorphic image registration. Journal of Parallel and Distributed Computing, 2021, 149, 149-162.	2.7	14
49	Fully Automatic Calibration of Tumor-Growth Models Using a Single mpMRI Scan. IEEE Transactions on Medical Imaging, 2021, 40, 193-204.	5.4	14
50	Modeling of Glioma Growth With Mass Effect by Longitudinal Magnetic Resonance Imaging. IEEE Transactions on Biomedical Engineering, 2021, 68, 3713-3724.	2.5	14
51	Far-field compression for fast kernel summation methods in high dimensions. Applied and Computational Harmonic Analysis, 2017, 43, 39-75.	1.1	13
52	Fast Algorithms for Source Identification Problems with Elliptic PDE Constraints. SIAM Journal on Imaging Sciences, 2010, 3, 791-808.	1.3	12
53	A geodesic-active-contour-based variational model for short-axis cardiac MR image segmentation. International Journal of Computer Mathematics, 2013, 90, 124-139.	1.0	11
54	Low-resolution simulations of vesicle suspensions in 2D. Journal of Computational Physics, 2018, 357, 43-77.	1.9	11

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55	A High-Order Solver for the Heat Equation in 1D domains with Moving Boundaries. SIAM Journal of Scientific Computing, 2007, 29, 2581-2606.	1.3	10
56	An Algebraic Parallel Treecode in Arbitrary Dimensions. , 2015, , .		10
57	Distributed-Memory Large Deformation Diffeomorphic 3D Image Registration. , 2016, , .		10
58	INV-ASKIT: A Parallel Fast Direct Solver for Kernel Matrices. , 2016, , .		8
59	ASKIT: An Efficient, Parallel Library for High-Dimensional Kernel Summations. SIAM Journal of Scientific Computing, 2016, 38, S720-S749.	1.3	8
60	Image-Driven Biophysical Tumor Growth Model Calibration. SIAM Journal of Scientific Computing, 2020, 42, B549-B580.	1.3	8
61	The Chebyshev fast Gauss and nonuniform fast Fourier transforms and their application to the evaluation of distributed heat potentials. Journal of Computational Physics, 2008, 227, 7768-7790.	1.9	7
62	On preconditioners for the Laplace double-layer in 2D. Numerical Linear Algebra With Applications, 2015, 22, 101-122.	0.9	7
63	Distributed-Memory Hierarchical Compression of Dense SPD Matrices. , 2018, , .		7
64	High-order Adaptive Time Stepping for Vesicle Suspensions with Viscosity Contrast. Procedia IUTAM, 2015, 16, 89-98.	1.2	6
65	Dendrite-resolved, full-melt-pool phase-field simulations to reveal non-steady-state effects and to test an approximate model. Computational Materials Science, 2022, 207, 111262.	1.4	5
66	An N log N Parallel Fast Direct Solver for Kernel Matrices. , 2017, , .		4
67	CLAIRE: Constrained Large Deformation Diffeomorphic Image Registration on Parallel Computing Architectures. Journal of Open Source Software, 2021, 6, 3038.	2.0	4
68	Hardware Accelerator Integration Tradeoffs for High-Performance Computing: A Case Study of GEMM Acceleration in N-Body Methods. IEEE Transactions on Parallel and Distributed Systems, 2021, 32, 2035-2048.	4.0	2
69	Optimizing GPGPU Kernel Summation for Performance and Energy Efficiency. , 2016, , .		1
70	Estimating Glioblastoma Biophysical Growth Parameters Using Deep Learning Regression. Lecture Notes in Computer Science, 2021, 12658, 157-167.	1.0	1
71	RCHOL: Randomized Cholesky Factorization for Solving SDD Linear Systems. SIAM Journal of Scientific Computing, 2021, 43, C411-C438.	1.3	1
72	Performance analysis of HPC applications with irregular tree data structures. , 2014, , .		0