

Eric Darve

List of Publications by Year in descending order

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98
papers

4,959
citations

165694

29
h-index

92649

69
g-index

103
all docs

103
docs citations

103
times ranked

4359
citing authors

#	ARTICLE	IF	CITATIONS
1	Calculating free energies using average force. <i>Journal of Chemical Physics</i> , 2001, 115, 9169-9183.	3.1	961
2	Adaptive biasing force method for scalar and vector free energy calculations. <i>Journal of Chemical Physics</i> , 2008, 128, 144120.	3.1	711
3	The Fast Multipole Method: Numerical Implementation. <i>Journal of Computational Physics</i> , 2000, 160, 195-240.	3.9	289
4	Assessing the efficiency of free energy calculation methods. <i>Journal of Chemical Physics</i> , 2004, 120, 3563-3578.	3.1	203
5	Large calculation of the flow over a hypersonic vehicle using a GPU. <i>Journal of Computational Physics</i> , 2008, 227, 10148-10161.	3.9	201
6	The black-box fast multipole method. <i>Journal of Computational Physics</i> , 2009, 228, 8712-8725.	3.9	178
7	An $\mathcal{O}(N \log N)$ Fast Direct Solver for Partial Hierarchically Semi-Separable Matrices. <i>Journal of Scientific Computing</i> , 2013, 57, 477-501.	2.4	160
8	Calculating Free Energies Using a Scaled-Force Molecular Dynamics Algorithm. <i>Molecular Simulation</i> , 2002, 28, 113-144.	2.0	135
9	The Fast Multipole Method I: Error Analysis and Asymptotic Complexity. <i>SIAM Journal on Numerical Analysis</i> , 2000, 38, 98-128.	2.3	124
10	Computing generalized Langevin equations and generalized Fokker-Planck equations. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009, 106, 10884-10889.	7.6	109
11	Hydrodynamic interactions in the induced-charge electrophoresis of colloidal rod dispersions. <i>Journal of Fluid Mechanics</i> , 2006, 563, 223.	3.5	107
12	Learning constitutive relations from indirect observations using deep neural networks. <i>Journal of Computational Physics</i> , 2020, 416, 109491.	3.9	98
13	Efficient fast multipole method for low-frequency scattering. <i>Journal of Computational Physics</i> , 2004, 197, 341-363.	3.9	93
14	Computing the non-Markovian coarse-grained interactions derived from the Mori-Zwanzig formalism in molecular systems: Application to polymer melts. <i>Journal of Chemical Physics</i> , 2017, 146, 014104.	3.1	81
15	Learning constitutive relations using symmetric positive definite neural networks. <i>Journal of Computational Physics</i> , 2021, 428, 110072.	3.9	78
16	A fast multipole method for Maxwell equations stable at all frequencies. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2004, 362, 603-628.	3.5	73
17	A fast block low-rank dense solver with applications to finite-element matrices. <i>Journal of Computational Physics</i> , 2016, 304, 170-188.	3.9	69
18	Effect of flexibility on the shear-induced migration of short-chain polymers in parabolic channel flow. <i>Journal of Fluid Mechanics</i> , 2006, 557, 297.	3.5	49

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19	Fast directional multilevel summation for oscillatory kernels based on Chebyshev interpolation. <i>Journal of Computational Physics</i> , 2012, 231, 1175-1196.	3.9	49
20	Gas Phase Reaction of Alkenes with Ozone: Formation Yields of Primary Carbonyls and Biradicals. <i>Environmental Science & Technology</i> , 1997, 31, 2421-2427.	10.5	47
21	Task-Based FMM for Multicore Architectures. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, C66-C93.	2.8	46
22	The growth of concentration fluctuations in dilute dispersions of orientable and deformable particles under sedimentation. <i>Journal of Fluid Mechanics</i> , 2006, 553, 347.	3.5	44
23	The Inverse Fast Multipole Method: Using a Fast Approximate Direct Solver as a Preconditioner for Dense Linear Systems. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, A761-A796.	2.8	38
24	Coupled Time-Lapse Full-Waveform Inversion for Subsurface Flow Problems Using Intrusive Automatic Differentiation. <i>Water Resources Research</i> , 2020, 56, e2019WR027032.	4.2	37
25	Recent developments in fast and scalable inverse modeling and data assimilation methods in hydrology. <i>Journal of Hydrology</i> , 2020, 591, 125266.	5.6	36
26	A general approach to seismic inversion with automatic differentiation. <i>Computers and Geosciences</i> , 2021, 151, 104751.	4.3	36
27	Large-scale stochastic linear inversion using hierarchical matrices. <i>Computational Geosciences</i> , 2013, 17, 913-927.	2.4	35
28	Learning viscoelasticity models from indirect data using deep neural networks. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2021, 387, 114124.	6.7	32
29	A hybrid method for the parallel computation of Green's functions. <i>Journal of Computational Physics</i> , 2009, 228, 5020-5039.	3.9	30
30	AWE-WQ: Fast-Forwarding Molecular Dynamics Using the Accelerated Weighted Ensemble. <i>Journal of Chemical Information and Modeling</i> , 2014, 54, 3033-3043.	5.7	29
31	A Kalman filter powered by H2-matrices for quasi-continuous data assimilation problems. <i>Water Resources Research</i> , 2014, 50, 3734-3749.	4.2	28
32	Task-based FMM for heterogeneous architectures. <i>Concurrency Computation Practice and Experience</i> , 2016, 28, 2608-2629.	2.2	28
33	Stabilization of a suspension of sedimenting rods by induced-charge electrophoresis. <i>Physics of Fluids</i> , 2006, 18, 121701.	3.9	27
34	The multi-dimensional generalized Langevin equation for conformational motion of proteins. <i>Journal of Chemical Physics</i> , 2019, 150, 174113.	3.1	27
35	Stability of asynchronous variational integrators. <i>Journal of Computational Physics</i> , 2008, 227, 8367-8394.	3.9	26
36	The compressed state Kalman filter for nonlinear state estimation: Application to large-scale reservoir monitoring. <i>Water Resources Research</i> , 2015, 51, 9942-9963.	4.2	26

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37	Fast Hierarchical Solvers For Sparse Matrices Using Extended Sparsification and Low-Rank Approximation. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, A797-A830.	2.8	25
38	Physics constrained learning for data-driven inverse modeling from sparse observations. <i>Journal of Computational Physics</i> , 2022, 453, 110938.	3.9	25
39	Real-time data assimilation for large-scale systems: The spectral Kalman filter. <i>Advances in Water Resources</i> , 2015, 86, 260-272.	3.8	24
40	Fourier-Based Fast Multipole Method for the Helmholtz Equation. <i>SIAM Journal of Scientific Computing</i> , 2013, 35, A79-A103.	2.8	23
41	Efficient mesh deformation based on radial basis function interpolation by means of the inverse fast multipole method. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016, 308, 286-309.	6.7	22
42	The fast multipole method on parallel clusters, multicore processors, and graphics processing units. <i>Comptes Rendus - Mecanique</i> , 2011, 339, 185-193.	0.8	21
43	Optimizing the multipole-to-local operator in the fast multipole method for graphical processing units. <i>International Journal for Numerical Methods in Engineering</i> , 2012, 89, 105-133.	2.9	21
44	Sparse supernodal solver using block low-rank compression: Design, performance and analysis. <i>Journal of Computational Science</i> , 2018, 27, 255-270.	3.0	21
45	High-ionic-strength electroosmotic flows in uncharged hydrophobic nanochannels. <i>Journal of Colloid and Interface Science</i> , 2009, 330, 194-200.	9.6	20
46	The effect of stratification on the wave number selection in the instability of sedimenting spheroids. <i>Physics of Fluids</i> , 2006, 18, 121503.	3.9	19
47	Solving inverse problems in stochastic models using deep neural networks and adversarial training. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2021, 384, 113976.	6.7	19
48	An Algebraic Sparsified Nested Dissection Algorithm Using Low-Rank Approximations. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2020, 41, 715-746.	1.5	18
49	A fast, memory efficient and robust sparse preconditioner based on a multifrontal approach with applications to finite element matrices. <i>International Journal for Numerical Methods in Engineering</i> , 2016, 107, 520-540.	2.9	16
50	A distributed-memory hierarchical solver for general sparse linear systems. <i>Parallel Computing</i> , 2018, 74, 49-64.	2.2	16
51	Application of deep learning to large scale riverine flow velocity estimation. <i>Stochastic Environmental Research and Risk Assessment</i> , 2021, 35, 1069-1088.	4.1	16
52	Application of the inverse fast multipole method as a preconditioner in a 3D Helmholtz boundary element method. <i>Journal of Computational Physics</i> , 2017, 341, 406-428.	3.9	15
53	Riverine Bathymetry Imaging With Indirect Observations. <i>Water Resources Research</i> , 2018, 54, 3704-3727.	4.2	15
54	Linear solvers for power grid optimization problems: A review of GPU-accelerated linear solvers. <i>Parallel Computing</i> , 2022, 111, 102870.	2.2	15

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55	Method and advantages of genetic algorithms in parameterization of interatomic potentials: Metal oxides. Computational Materials Science, 2014, 81, 453-465.	3.1	14
56	Isogeometric collocation method for the fractional Laplacian in the 2D bounded domain. Computer Methods in Applied Mechanics and Engineering, 2020, 364, 112936.	6.7	13
57	Deep learning technique for fast inference of large-scale riverine bathymetry. Advances in Water Resources, 2021, 147, 103715.	3.8	13
58	Folding proteins at 500 ns/hour with Work Queue. , 2012, 2012, 1-8.		12
59	A comparison of weighted ensemble and Markov state model methodologies. Journal of Chemical Physics, 2015, 142, 214113.	3.1	12
60	Fast electrostatic force calculation on parallel computer clusters. Journal of Computational Physics, 2008, 227, 8551-8567.	3.9	11
61	Smoothing ϵ -based compressed state K filter for joint state ϵ parameter estimation: Applications in reservoir characterization and CO_2 storage monitoring. Water Resources Research, 2017, 53, 7190-7207.	4.2	11
62	A robust hierarchical solver for ill-conditioned systems with applications to ice sheet modeling. Journal of Computational Physics, 2019, 396, 819-836.	3.9	10
63	Investigating the role of non-covalent interactions in conformation and assembly of triazine-based sequence-defined polymers. Journal of Chemical Physics, 2018, 149, 072330.	3.1	9
64	Introduction to assembly of finite element methods on graphics processors. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012009.	0.6	8
65	Application of Assembly of Finite Element Methods on Graphics Processors for Real-Time Elastodynamics. , 2012, , 187-205.		8
66	Efficiently sampling conformations and pathways using the concurrent adaptive sampling (CAS) algorithm. Journal of Chemical Physics, 2017, 147, 074115.	3.1	8
67	Optimal estimation and scheduling in aquifer management using the rapid feedback control method. Advances in Water Resources, 2017, 110, 310-318.	3.8	8
68	Fast Low-Rank Kernel Matrix Factorization Using Skeletonized Interpolation. SIAM Journal of Scientific Computing, 2019, 41, A1652-A1680.	2.8	8
69	PBBFMM3D: A parallel black-box algorithm for kernel matrix-vector multiplication. Journal of Parallel and Distributed Computing, 2021, 154, 64-73.	4.5	8
70	Soft Masking for Cost-Constrained Channel Pruning. Lecture Notes in Computer Science, 2022, , 641-657.	1.0	8
71	Sparse Supernodal Solver Using Block Low-Rank Compression. , 2017, , .		7
72	Sparse hierarchical solvers with guaranteed convergence. International Journal for Numerical Methods in Engineering, 2019, 120, 964-986.	2.9	7

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73	On the fractional Laplacian of variable order. <i>Fractional Calculus and Applied Analysis</i> , 2022, 25, 15-28.	2.4	7
74	Effect of Dietary Palm Kernel Oil on the Quality, Fatty Acid Profile, and Sensorial Attributes of Young Bull Meat. <i>Foods</i> , 2022, 11, 609.	4.3	7
75	Optimizing the Adaptive Fast Multipole Method for Fractal Sets. <i>SIAM Journal of Scientific Computing</i> , 2015, 37, A1040-A1066.	2.8	6
76	Classical and additional antiphospholipid antibodies in blood samples of ischemic stroke patients and healthy controls. <i>Immunologic Research</i> , 2017, 65, 470-476.	2.7	6
77	Parallelization of the inverse fast multipole method with an application to boundary element method. <i>Computer Physics Communications</i> , 2020, 247, 106975.	7.8	6
78	Fast Algorithms for Bayesian Inversion. <i>The IMA Volumes in Mathematics and Its Applications</i> , 2013, , 101-142.	0.0	6
79	The accuracy of the CHARMM22/CMAP and AMBER ff99SB force fields for modelling the antimicrobial peptide cecropin P1. <i>Molecular Simulation</i> , 2013, 39, 922-936.	2.0	5
80	Building a Coarse-Grained Model Based on the Mori-Zwanzig Formalism. <i>Materials Research Society Symposia Proceedings</i> , 2015, 1753, 90.	0.1	5
81	An efficient preconditioner for the fast simulation of a 2D stokes flow in porous media. <i>International Journal for Numerical Methods in Engineering</i> , 2018, 113, 561-580.	2.9	5
82	Hierarchical Orthogonal Factorization: Sparse Least Squares Problems. <i>Journal of Scientific Computing</i> , 2022, 91, 1.	2.4	5
83	Generalized fast multipole method. <i>IOP Conference Series: Materials Science and Engineering</i> , 2010, 10, 012230.	0.6	4
84	Optimization of the parallel black-box fast multipole method on CUDA. , 2012, , .		4
85	Low-Rank Factorizations in Data Sparse Hierarchical Algorithms for Preconditioning Symmetric Positive Definite Matrices. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2018, 39, 1701-1725.	1.5	4
86	Cauchy Fast Multipole Method for General Analytic Kernels. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, A396-A426.	2.8	3
87	A task-based distributed parallel sparsified nested dissection algorithm. , 2021, , .		3
88	Sparse Hierarchical Preconditioners Using Piecewise Smooth Approximations of Eigenvectors. <i>SIAM Journal of Scientific Computing</i> , 2020, 42, A3907-A3931.	2.8	3
89	Hierarchical Orthogonal Factorization: Sparse Square Matrices. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2022, 43, 94-123.	1.5	3
90	Time integrators based on approximate discontinuous Hamiltonians. <i>International Journal for Numerical Methods in Engineering</i> , 2012, 89, 71-104.	2.9	1

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91	Fast Multipole Method Using the Cauchy Integral Formula. Lecture Notes in Computational Science and Engineering, 2012, , 127-144.	0.0	1
92	Learning generative neural networks with physics knowledge. Research in Mathematical Sciences, 2022, 9, .	1.0	1
93	An Introductory Message From the SfAA President. Practicing Anthropology, 2012, 34, 2-2.	0.1	0
94	Scalable low-rank factorization using a task-based runtime system with distributed memory. , 2022, , .		0
95	Second-order accurate hierarchical approximate factorizations for solving sparse linear systems. International Journal for Numerical Methods in Engineering, 0, , .	2.9	0
96	Probabilistic partition of unity networks for high-dimensional regression problems. International Journal for Numerical Methods in Engineering, 0, , .	2.9	0
97	Temperature field optimization for laser powder bed fusion as a traveling salesperson problem with history. International Journal for Numerical Methods in Engineering, 2024, 125, .	2.9	0
98	Coincident Learning for Unsupervised Anomaly Detection of Scientific Instruments. Machine Learning: Science and Technology, 0, , .	5.2	0