# Eric F Darve

List of Publications by Year
in descending order

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|---|---|---|---|
| 95 papers | 4,786 citations | 201575 27 h-index | 95218 68 g-index |
| 97 all docs | 97 docs citations | 97 times ranked | 3751 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Calculating free energies using average force. Journal of Chemical Physics, 2001, 115, 9169-9183. | 1.2 | 940 |
| 2 | Adaptive biasing force method for scalar and vector free energy calculations. Journal of Chemical Physics, 2008, 128, 144120. | 1.2 | 683 |
| 3 | The Fast Multipole Method: Numerical Implementation. Journal of Computational Physics, 2000, 160, 195-240. | 1.9 | 284 |
| 4 | Assessing the efficiency of free energy calculation methods. Journal of Chemical Physics, 2004, 120, 3563-3578. | 1.2 | 202 |
| 5 | Large calculation of the flow over a hypersonic vehicle using a GPU. Journal of Computational Physics, 2008, 227, 10148-10161. | 1.9 | 199 |
| 6 | The black-box fast multipole method. Journal of Computational Physics, 2009, 228, 8712-8725. | 1.9 | 174 |
| 7 | An $$mathcal O (N log N)$$ O ( N log N ) Â Fast Direct Solver for Partial Hierarchically Semi-Separable Matrices. Journal of Scientific Computing, 2013, 57, 477-501. | 1.1 | 154 |
| 8 | Calculating Free Energies Using a Scaled-Force Molecular Dynamics Algorithm. Molecular Simulation, 2002, 28, 113-144. | 0.9 | 134 |
| 9 | The Fast Multipole Method I: Error Analysis and Asymptotic Complexity. SIAM Journal on Numerical Analysis, 2000, 38, 98-128. | 1.1 | 123 |
| 10 | Hydrodynamic interactions in the induced-charge electrophoresis of colloidal rod dispersions. Journal of Fluid Mechanics, 2006, 563, 223. | 1.4 | 106 |
| 11 | Computing generalized Langevin equations and generalized Fokkerâ€“Planck equations. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 10884-10889. | 3.3 | 104 |
| 12 | Efficient fast multipole method for low-frequency scattering. Journal of Computational Physics, 2004, 197, 341-363. | 1.9 | 93 |
| 13 | Learning constitutive relations from indirect observations using deep neural networks. Journal of Computational Physics, 2020, 416, 109491. | 1.9 | 86 |
| 14 | A fast multipole method for Maxwell equations stable at all frequencies. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2004, 362, 603-628. | 1.6 | 73 |
| 15 | Computing the non-Markovian coarse-grained interactions derived from the Moriâ€“Zwanzig formalism in molecular systems: Application to polymer melts. Journal of Chemical Physics, 2017, 146, 014104. | 1.2 | 73 |
| 16 | A fast block low-rank dense solver with applications to finite-element matrices. Journal of Computational Physics, 2016, 304, 170-188. | 1.9 | 67 |
| 17 | Learning constitutive relations using symmetric positive definite neural networks. Journal of Computational Physics, 2021, 428, 110072. | 1.9 | 65 |
| 18 | Computing entries of the inverse of a sparse matrix using the FIND algorithm. Journal of Computational Physics, 2008, 227, 9408-9427. | 1.9 | 50 |

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|---|---|---|---|
| 19 | Effect of flexibility on the shear-induced migration of short-chain polymers in parabolic channel flow. Journal of Fluid Mechanics, 2006, 557, 297. | 1.4 | 49 |
| 20 | Fast directional multilevel summation for oscillatory kernels based on Chebyshev interpolation. Journal of Computational Physics, 2012, 231, 1175-1196. | 1.9 | 48 |
| 21 | The growth of concentration fluctuations in dilute dispersions of orientable and deformable particles under sedimentation. Journal of Fluid Mechanics, 2006, 553, 347. | 1.4 | 44 |
| 22 | Task-Based FMM for Multicore Architectures. SIAM Journal of Scientific Computing, 2014, 36, C66-C93. | 1.3 | 43 |
| 23 | The Inverse Fast Multipole Method: Using a Fast Approximate Direct Solver as a Preconditioner for Dense Linear Systems. SIAM Journal of Scientific Computing, 2017, 39, A761-A796. | 1.3 | 37 |
| 24 | Large-scale stochastic linear inversion using hierarchical matrices. Computational Geosciences, 2013, 17, 913-927. | 1.2 | 34 |
| 25 | Recent developments in fast and scalable inverse modeling and data assimilation methods in hydrology. Journal of Hydrology, 2020, 591, 125266. | 2.3 | 32 |
| 26 | A hybrid method for the parallel computation of Greenâ€™s functions. Journal of Computational Physics, 2009, 228, 5020-5039. | 1.9 | 30 |
| 27 | A general approach to seismic inversion with automatic differentiation. Computers and Geosciences, 2021, 151, 104751. | 2.0 | 30 |
| 28 | AWE-WQ: Fast-Forwarding Molecular Dynamics Using the Accelerated Weighted Ensemble. Journal of Chemical Information and Modeling, 2014, 54, 3033-3043. | 2.5 | 29 |
| 29 | Coupled Timeâ€Lapse Fullâ€Waveform Inversion for Subsurface Flow Problems Using Intrusive Automatic Differentiation. Water Resources Research, 2020, 56, e2019WR027032. | 1.7 | 28 |
| 30 | Learning viscoelasticity models from indirect data using deep neural networks. Computer Methods in Applied Mechanics and Engineering, 2021, 387, 114124. | 3.4 | 28 |
| 31 | Taskâ€based FMM for heterogeneous architectures. Concurrency Computation Practice and Experience, 2016, 28, 2608-2629. | 1.4 | 27 |
| 32 | Stabilization of a suspension of sedimenting rods by induced-charge electrophoresis. Physics of Fluids, 2006, 18, 121701. | 1.6 | 26 |
| 33 | Stability of asynchronous variational integrators. Journal of Computational Physics, 2008, 227, 8367-8394. | 1.9 | 26 |
| 34 | A Kalman filter powered by H2-matrices for quasi-continuous data assimilation problems. Water Resources Research, 2014, 50, 3734-3749. | 1.7 | 26 |
| 35 | The compressed state <scp>K</scp>alman filter for nonlinear state estimation: Application to largeâ€scale reservoir monitoring. Water Resources Research, 2015, 51, 9942-9963. | 1.7 | 24 |
| 36 | Real-time data assimilation for large-scale systems: The spectral Kalman filter. Advances in Water Resources, 2015, 86, 260-272. | 1.7 | 24 |

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|---|---|---|---|
| 37 | Fast Hierarchical Solvers For Sparse Matrices Using Extended Sparsification and Low-Rank Approximation. SIAM Journal of Scientific Computing, 2017, 39, A797-A830. | 1.3 | 24 |
| 38 | The multi-dimensional generalized Langevin equation for conformational motion of proteins. Journal of Chemical Physics, 2019, 150, 174113. | 1.2 | 24 |
| 39 | Fourier-Based Fast Multipole Method for the Helmholtz Equation. SIAM Journal of Scientific Computing, 2013, 35, A79-A103. | 1.3 | 23 |
| 40 | The fast multipole method on parallel clusters, multicore processors, and graphics processing units. Comptes Rendus - Mecanique, 2011, 339, 185-193. | 2.1 | 21 |
| 41 | Efficient mesh deformation based on radial basis function interpolation by means of the inverse fast multipole method. Computer Methods in Applied Mechanics and Engineering, 2016, 308, 286-309. | 3.4 | 21 |
| 42 | Sparse supernodal solver using block low-rank compression: Design, performance and analysis. Journal of Computational Science, 2018, 27, 255-270. | 1.5 | 21 |
| 43 | Optimizing the multipoleâ€toâ€local operator in the fast multipole method for graphical processing units. International Journal for Numerical Methods in Engineering, 2012, 89, 105-133. | 1.5 | 20 |
| 44 | A new sparse matrix vector multiplication graphics processing unit algorithm designed for finite element problems. International Journal for Numerical Methods in Engineering, 2015, 102, 1784-1814. | 1.5 | 20 |
| 45 | High-ionic-strength electroosmotic flows in uncharged hydrophobic nanochannels. Journal of Colloid and Interface Science, 2009, 330, 194-200. | 5.0 | 19 |
| 46 | Physics constrained learning for data-driven inverse modeling from sparse observations. Journal of Computational Physics, 2022, 453, 110938. | 1.9 | 19 |
| 47 | The effect of stratification on the wave number selection in the instability of sedimenting spheroids. Physics of Fluids, 2006, 18, 121503. | 1.6 | 18 |
| 48 | An Algebraic Sparsified Nested Dissection Algorithm Using Low-Rank Approximations. SIAM Journal on Matrix Analysis and Applications, 2020, 41, 715-746. | 0.7 | 18 |
| 49 | Extension and optimization of the FIND algorithm: Computing Greenâ€™s and less-than Greenâ€™s functions. Journal of Computational Physics, 2012, 231, 1121-1139. | 1.9 | 16 |
| 50 | A distributed-memory hierarchical solver for general sparse linear systems. Parallel Computing, 2018, 74, 49-64. | 1.3 | 16 |
| 51 | Application of deep learning to large scale riverine flow velocity estimation. Stochastic Environmental Research and Risk Assessment, 2021, 35, 1069-1088. | 1.9 | 16 |
| 52 | A fast, memory efficient and robust sparse preconditioner based on a multifrontal approach with applications to finiteâ€element matrices. International Journal for Numerical Methods in Engineering, 2016, 107, 520-540. | 1.5 | 15 |
| 53 | Application of the inverse fast multipole method as a preconditioner in a 3D Helmholtz boundary element method. Journal of Computational Physics, 2017, 341, 406-428. | 1.9 | 15 |
| 54 | Riverine Bathymetry Imaging With Indirect Observations. Water Resources Research, 2018, 54, 3704-3727. | 1.7 | 14 |

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|---|---|---|---|
| 55 | Solving inverse problems in stochastic models using deep neural networks and adversarial training. Computer Methods in Applied Mechanics and Engineering, 2021, 384, 113976. | 3.4 | 14 |
| 56 | Method and advantages of genetic algorithms in parameterization of interatomic potentials: Metal oxides. Computational Materials Science, 2014, 81, 453-465. | 1.4 | 13 |
| 57 | Isogeometric collocation method for the fractional Laplacian in the 2D bounded domain. Computer Methods in Applied Mechanics and Engineering, 2020, 364, 112936. | 3.4 | 13 |
| 58 | A comparison of weighted ensemble and Markov state model methodologies. Journal of Chemical Physics, 2015, 142, 214113. | 1.2 | 12 |
| 59 | Deep learning technique for fast inference of large-scale riverine bathymetry. Advances in Water Resources, 2021, 147, 103715. | 1.7 | 12 |
| 60 | Fast electrostatic force calculation on parallel computer clusters. Journal of Computational Physics, 2008, 227, 8551-8567. | 1.9 | 11 |
| 61 | Folding proteins at 500 ns/hour with Work Queue. , 2012, 2012, 1-8. | | 11 |
| 62 | Smoothingâ€based compressed state K alman filter for joint stateâ€parameter estimation: Applications in reservoir characterization and CO 2 storage monitoring. Water Resources Research, 2017, 53, 7190-7207. | 1.7 | 10 |
| 63 | A robust hierarchical solver for ill-conditioned systems with applications to ice sheet modeling. Journal of Computational Physics, 2019, 396, 819-836. | 1.9 | 10 |
| 64 | Optimal estimation and scheduling in aquifer management using the rapid feedback control method. Advances in Water Resources, 2017, 110, 310-318. | 1.7 | 8 |
| 65 | Linear solvers for power grid optimization problems: A review of GPU-accelerated linear solvers. Parallel Computing, 2022, 111, 102870. | 1.3 | 8 |
| 66 | Introduction to assembly of finite element methods on graphics processors. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012009. | 0.3 | 7 |
| 67 | Application of Assembly of Finite Element Methods on Graphics Processors for Real-Time Elastodynamics. , 2012, , 187-205. | | 7 |
| 68 | Efficiently sampling conformations and pathways using the concurrent adaptive sampling (CAS) algorithm. Journal of Chemical Physics, 2017, 147, 074115. | 1.2 | 7 |
| 69 | Investigating the role of non-covalent interactions in conformation and assembly of triazine-based sequence-defined polymers. Journal of Chemical Physics, 2018, 149, 072330. | 1.2 | 7 |
| 70 | Fast Low-Rank Kernel Matrix Factorization Using Skeletonized Interpolation. SIAM Journal of Scientific Computing, 2019, 41, A1652-A1680. | 1.3 | 7 |
| 71 | Novel Data Assimilation Algorithm for Nearshore Bathymetry. Journal of Atmospheric and Oceanic Technology, 2019, 36, 699-715. | 0.5 | 7 |
| 72 | PBBFMM3D: A parallel black-box algorithm for kernel matrix-vector multiplication. Journal of Parallel and Distributed Computing, 2021, 154, 64-73. | 2.7 | 7 |

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|---|---|---|---|
| 73 | Optimizing the Adaptive Fast Multipole Method for Fractal Sets. SIAM Journal of Scientific Computing, 2015, 37, A1040-A1066. | 1.3 | 6 |
| 74 | Sparse Supernodal Solver Using Block Low-Rank Compression. , 2017, , . | | 6 |
| 75 | Sparse hierarchical solvers with guaranteed convergence. International Journal for Numerical Methods in Engineering, 2019, 120, 964-986. | 1.5 | 6 |
| 76 | Parallelization of the inverse fast multipole method with an application to boundary element method. Computer Physics Communications, 2020, 247, 106975. | 3.0 | 6 |
| 77 | Fast Algorithms for Bayesian Inversion. The IMA Volumes in Mathematics and Its Applications, 2013, , 101-142. | 0.5 | 6 |
| 78 | On the fractional Laplacian of variable order. Fractional Calculus and Applied Analysis, 2022, 25, 15-28. | 1.2 | 6 |
| 79 | The accuracy of the CHARMM22/CMAP and AMBER ff99SB force fields for modelling the antimicrobial peptide cecropin P1. Molecular Simulation, 2013, 39, 922-936. | 0.9 | 5 |
| 80 | Building a Coarse-Grained Model Based on the Mori-Zwanzig Formalism. Materials Research Society Symposia Proceedings, 2015, 1753, 90. | 0.1 | 5 |
| 81 | An efficient preconditioner for the fast simulation of a 2D stokes flow in porous media. International Journal for Numerical Methods in Engineering, 2018, 113, 561-580. | 1.5 | 5 |
| 82 | Generalized fast multipole method. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012230. | 0.3 | 4 |
| 83 | Hierarchical Orthogonal Factorization: Sparse Least Squares Problems. Journal of Scientific Computing, 2022, 91, 1. | 1.1 | 4 |
| 84 | Optimization of the parallel black-box fast multipole method on CUDA. , 2012, , . | | 3 |
| 85 | Cauchy Fast Multipole Method for General Analytic Kernels. SIAM Journal of Scientific Computing, 2014, 36, A396-A426. | 1.3 | 3 |
| 86 | Low-Rank Factorizations in Data Sparse Hierarchical Algorithms for Preconditioning Symmetric Positive Definite Matrices. SIAM Journal on Matrix Analysis and Applications, 2018, 39, 1701-1725. | 0.7 | 3 |
| 87 | A task-based distributed parallel sparsified nested dissection algorithm. , 2021, , . | | 3 |
| 88 | Sparse Hierarchical Preconditioners Using Piecewise Smooth Approximations of Eigenvectors. SIAM Journal of Scientific Computing, 2020, 42, A3907-A3931. | 1.3 | 3 |
| 89 | Hierarchical Orthogonal Factorization: Sparse Square Matrices. SIAM Journal on Matrix Analysis and Applications, 2022, 43, 94-123. | 0.7 | 3 |
| 90 | Time integrators based on approximate discontinuous Hamiltonians. International Journal for Numerical Methods in Engineering, 2012, 89, 71-104. | 1.5 | 1 |

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|---|---|---|---|
| 91 | Fast Multipole Method Using the Cauchy Integral Formula. Lecture Notes in Computational Science and Engineering, 2012, , 127-144. | 0.1 | 1 |
| 92 | Learning generative neural networks with physics knowledge. Research in Mathematical Sciences, 2022, 9, . | 0.5 | 1 |
| 93 | Transition Pathways, Rare Events and Related Questions. , 2015, , 1500-1504. | | 0 |
| 94 | Scalable low-rank factorization using a task-based runtime system with distributed memory. , 2022, , . | | 0 |
| 95 | Secondâ€order accurate hierarchical approximate factorizations for solving sparse linear systems. International Journal for Numerical Methods in Engineering, 0, , . | 1.5 | 0 |