

Leslie Greengard

List of Publications by Year in descending order

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120
papers

11,556
citations

66336

42
h-index

27402

106
g-index

121
all docs

121
docs citations

121
times ranked

6433
citing authors

#	ARTICLE	IF	CITATIONS
1	A fast algorithm for particle simulations. <i>Journal of Computational Physics</i> , 1987, 73, 325-348.	3.8	3,849
2	A new version of the Fast Multipole Method for the Laplace equation in three dimensions. <i>Acta Numerica</i> , 1997, 6, 229-269.	10.7	692
3	Accelerating the Nonuniform Fast Fourier Transform. <i>SIAM Review</i> , 2004, 46, 443-454.	8.4	556
4	A Fast Adaptive Multipole Algorithm in Three Dimensions. <i>Journal of Computational Physics</i> , 1999, 155, 468-498.	3.8	535
5	Fast Direct Methods for Gaussian Processes. <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , 2016, 38, 252-265.	13.9	397
6	The Fast Gauss Transform. <i>SIAM Journal on Scientific and Statistical Computing</i> , 1991, 12, 79-94.	1.5	355
7	Spectral Deferred Correction Methods for Ordinary Differential Equations. <i>BIT Numerical Mathematics</i> , 2000, 40, 241-266.	2.0	321
8	A wideband fast multipole method for the Helmholtz equation in three dimensions. <i>Journal of Computational Physics</i> , 2006, 216, 300-325.	3.8	242
9	Accelerating fast multipole methods for the Helmholtz equation at low frequencies. <i>IEEE Computational Science and Engineering</i> , 1998, 5, 32-38.	0.6	197
10	A Fast Algorithm for Particle Simulations. <i>Journal of Computational Physics</i> , 1997, 135, 280-292.	3.8	193
11	Rapid Evaluation of Nonreflecting Boundary Kernels for Time-Domain Wave Propagation. <i>SIAM Journal on Numerical Analysis</i> , 2000, 37, 1138-1164.	2.3	166
12	Plasmon-Assisted Chemical Vapor Deposition. <i>Nano Letters</i> , 2006, 6, 2592-2597.	9.1	153
13	The type 3 nonuniform FFT and its applications. <i>Journal of Computational Physics</i> , 2005, 206, 1-5.	3.8	149
14	A Fast Direct Solver for Structured Linear Systems by Recursive Skeletonization. <i>SIAM Journal of Scientific Computing</i> , 2012, 34, A2507-A2532.	2.8	148
15	Fast direct solvers for integral equations in complex three-dimensional domains. <i>Acta Numerica</i> , 2009, 18, 243-275.	10.7	144
16	Laplace's Equation and the Dirichlet-Neumann Map in Multiply Connected Domains. <i>Journal of Computational Physics</i> , 1993, 105, 267-278.	3.8	131
17	Quadrature by expansion: A new method for the evaluation of layer potentials. <i>Journal of Computational Physics</i> , 2013, 252, 332-349.	3.8	131
18	A Fast Poisson Solver for Complex Geometries. <i>Journal of Computational Physics</i> , 1995, 118, 348-355.	3.8	112

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19	Integral Equation Methods for Stokes Flow and Isotropic Elasticity in the Plane. Journal of Computational Physics, 1996, 125, 403-414.	3.8	109
20	Nonreflecting Boundary Conditions for the Time-Dependent Wave Equation. Journal of Computational Physics, 2002, 180, 270-296.	3.8	108
21	A New Version of the Fast Multipole Method for Screened Coulomb Interactions in Three Dimensions. Journal of Computational Physics, 2002, 180, 642-658.	3.8	105
22	A parallel version of the fast multipole method. Computers and Mathematics With Applications, 1990, 20, 63-71.	2.7	98
23	A fast algorithm for the evaluation of heat potentials. Communications on Pure and Applied Mathematics, 1990, 43, 949-963.	3.1	91
24	A renormalization method for the evaluation of lattice sums. Journal of Mathematical Physics, 1994, 35, 6036-6048.	1.1	90
25	On the numerical evaluation of elastostatic fields in locally isotropic two-dimensional composites. Journal of the Mechanics and Physics of Solids, 1998, 46, 1441-1462.	4.8	82
26	A New Fast-Multipole Accelerated Poisson Solver in Two Dimensions. SIAM Journal of Scientific Computing, 2001, 23, 741-760.	2.8	75
27	The Numerical Solution of the N -Body Problem. Computers in Physics, 1990, 4, 142-152.	0.5	73
28	A fast multipole method for the three-dimensional Stokes equations. Journal of Computational Physics, 2008, 227, 1613-1619.	3.8	73
29	A Direct Adaptive Poisson Solver of Arbitrary Order Accuracy. Journal of Computational Physics, 1996, 125, 415-424.	3.8	69
30	On the numerical solution of two-point boundary value problems. Communications on Pure and Applied Mathematics, 1991, 44, 419-452.	3.1	64
31	Visualizing skin effects in conductors with MRI: $\langle \text{mml:math} \text{xmlns:mml="http://www.w3.org/1998/Math/MathML" altimg="si5.gif" overflow="scroll" \rangle \langle \text{mml:mrow} \langle \text{mml:msup} \langle \text{mml:mrow} / \rangle \langle \text{mml:mrow} \rangle \langle \text{mml:mn} \rangle 7 \langle / \text{mml:mn} \rangle \langle / \text{mml:mrow} \rangle \langle / \text{mml:msup} \rangle \langle / \text{mml:mrow} \rangle \langle / \text{mml:math} \rangle$ Li MRI experiments and calculations. Journal of Magnetic Resonance, 2014, 245, 143-149.	2.1	63
32	Fast convolution with free-space Green's functions. Journal of Computational Physics, 2016, 323, 191-203.	3.8	63
33	Spectral Approximation of the Free-Space Heat Kernel. Applied and Computational Harmonic Analysis, 2000, 9, 83-97.	2.2	62
34	On the numerical evaluation of electrostatic fields in composite materials. Acta Numerica, 1994, 3, 379-410.	10.7	60
35	The Decoupled Potential Integral Equation for Time-Dependent Harmonic Electromagnetic Scattering. Communications on Pure and Applied Mathematics, 2016, 69, 771-812.	3.1	60
36	A fast and stable method for rotating spherical harmonic expansions. Journal of Computational Physics, 2009, 228, 5621-5627.	3.8	55

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37	On the numerical solution of the biharmonic equation in the plane. <i>Physica D: Nonlinear Phenomena</i> , 1992, 60, 216-225.	2.8	53
38	A new integral representation for quasi-periodic scattering problems in two dimensions. <i>BIT Numerical Mathematics</i> , 2011, 51, 67-90.	2.0	52
39	A Fast Adaptive Numerical Method for Stiff Two-Point Boundary Value Problems. <i>SIAM Journal of Scientific Computing</i> , 1997, 18, 403-429.	2.8	51
40	Efficient representation of nonreflecting boundary conditions for the time-dependent Schrödinger equation in two dimensions. <i>Communications on Pure and Applied Mathematics</i> , 2008, 61, 261-288.	3.1	49
41	A new integral representation for quasi-periodic fields and its application to two-dimensional band structure calculations. <i>Journal of Computational Physics</i> , 2010, 229, 6898-6914.	3.8	48
42	A Method of Images for the Evaluation of Electrostatic Fields in Systems of Closely Spaced Conducting Cylinders. <i>SIAM Journal on Applied Mathematics</i> , 1998, 58, 122-141.	1.8	45
43	Fast multi-particle scattering: A hybrid solver for the Maxwell equations in microstructured materials. <i>Journal of Computational Physics</i> , 2013, 232, 22-32.	3.8	42
44	Validation of neural spike sorting algorithms without ground-truth information. <i>Journal of Neuroscience Methods</i> , 2016, 264, 65-77.	2.5	42
45	Fast and Accurate Evaluation of Nonlocal Coulomb and Dipole-Dipole Interactions via the Nonuniform FFT. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, B777-B794.	2.8	41
46	A free-space adaptive FMM-Based PDE solver in three dimensions. <i>Communications in Applied Mathematics and Computational Science</i> , 2011, 6, 79-122.	1.8	39
47	On the Numerical Evaluation of Electrostatic Fields in Dense Random Dispersions of Cylinders. <i>Journal of Computational Physics</i> , 1997, 136, 629-639.	3.8	38
48	Debye Sources and the Numerical Solution of the Time Harmonic Maxwell Equations II. <i>Communications on Pure and Applied Mathematics</i> , 2013, 66, 753-789.	3.1	38
49	An Integral Equation Approach to the Incompressible Navier-Stokes Equations in Two Dimensions. <i>SIAM Journal of Scientific Computing</i> , 1998, 20, 318-336.	2.8	37
50	A Fast Direct Solver for Elliptic Partial Differential Equations on Adaptively Refined Meshes. <i>SIAM Journal of Scientific Computing</i> , 1999, 21, 1551-1566.	2.8	34
51	A mathematical tool for exploring the dynamics of biological networks. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2007, 104, 19169-19174.	7.1	34
52	A fast multipole method for the Rotne-Prager-Yamakawa tensor and its applications. <i>Journal of Computational Physics</i> , 2013, 234, 133-139.	3.8	34
53	On the numerical solution of the heat equation I: Fast solvers in free space. <i>Journal of Computational Physics</i> , 2007, 226, 1891-1901.	3.8	33
54	On the Convergence of Local Expansions of Layer Potentials. <i>SIAM Journal on Numerical Analysis</i> , 2013, 51, 2660-2679.	2.3	33

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55	Fast, accurate integral equation methods for the analysis of photonic crystal fibers I: Theory. <i>Optics Express</i> , 2004, 12, 3791.	3.4	32
56	A Fast Direct Solver for High Frequency Scattering from a Large Cavity in Two Dimensions. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, B887-B903.	2.8	30
57	Computational Software: Simple FMM Libraries for Electrostatics, Slow Viscous Flow, and Frequency-Domain Wave Propagation. <i>Communications in Computational Physics</i> , 2015, 18, 516-528.	1.7	30
58	Rapid Solution of the Cryo-EM Reconstruction Problem by Frequency Marching. <i>SIAM Journal on Imaging Sciences</i> , 2017, 10, 1170-1195.	2.2	30
59	A fast, high-order solver for the Grad-Shafranov equation. <i>Journal of Computational Physics</i> , 2013, 243, 28-45.	3.8	29
60	Electrostatics and heat conduction in high contrast composite materials. <i>Journal of Computational Physics</i> , 2006, 211, 64-76.	3.8	28
61	Overcoming Low-Frequency Breakdown of the Magnetic Field Integral Equation. <i>IEEE Transactions on Antennas and Propagation</i> , 2013, 61, 1285-1290.	5.1	28
62	An integral equation formulation for rigid bodies in Stokes flow in three dimensions. <i>Journal of Computational Physics</i> , 2017, 332, 504-519.	3.8	28
63	The fast multipole method for gridless particle simulation. <i>Computer Physics Communications</i> , 1988, 48, 117-125.	7.5	27
64	An Integral Evolution Formula for the Wave Equation. <i>Journal of Computational Physics</i> , 2000, 162, 536-543.	3.8	26
65	Integral equation methods for Stokes flow in doubly-periodic domains. <i>Journal of Engineering Mathematics</i> , 2004, 48, 157-170.	1.2	26
66	On the efficient representation of the half-space impedance Green's function for the Helmholtz equation. <i>Wave Motion</i> , 2014, 51, 1-13.	2.0	26
67	High Order Accurate Methods for the Evaluation of Layer Heat Potentials. <i>SIAM Journal of Scientific Computing</i> , 2009, 31, 3847-3860.	2.8	24
68	The Fast Generalized Gauss Transform. <i>SIAM Journal of Scientific Computing</i> , 2010, 32, 3092-3107.	2.8	24
69	Fast elliptic solvers in cylindrical coordinates and the Coulomb collision operator. <i>Journal of Computational Physics</i> , 2011, 230, 7840-7852.	3.8	24
70	High Resolution Inverse Scattering in Two Dimensions Using Recursive Linearization. <i>SIAM Journal on Imaging Sciences</i> , 2017, 10, 641-664.	2.2	24
71	Boundary integral equation analysis on the sphere. <i>Numerische Mathematik</i> , 2014, 128, 463-487.	1.9	22
72	The fast sinc transform and image reconstruction from nonuniform samples in k -space. <i>Communications in Applied Mathematics and Computational Science</i> , 2006, 1, 121-131.	1.8	21

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73	Stable and accurate integral equation methods for scattering problems with multiple material interfaces in two dimensions. <i>Journal of Computational Physics</i> , 2012, 231, 2389-2395.	3.8	19
74	Fast, Adaptive, High-Order Accurate Discretization of the Lippmann–Schwinger Equation in Two Dimensions. <i>SIAM Journal of Scientific Computing</i> , 2016, 38, A1770-A1787.	2.8	19
75	Integral Equation Methods for Elastance and Mobility Problems in Two Dimensions. <i>SIAM Journal on Numerical Analysis</i> , 2016, 54, 2889-2909.	2.3	18
76	Integral Equation Methods for Unsteady Stokes Flow in Two Dimensions. <i>SIAM Journal of Scientific Computing</i> , 2012, 34, A2197-A2219.	2.8	17
77	Efficient sum-of-exponentials approximations for the heat kernel and their applications. <i>Advances in Computational Mathematics</i> , 2015, 41, 529-551.	1.6	17
78	On the stability of time-domain integral equations for acoustic wave propagation. <i>Discrete and Continuous Dynamical Systems</i> , 2016, 36, 4367-4382.	0.9	17
79	High order marching schemes for the wave equation in complex geometry. <i>Journal of Computational Physics</i> , 2004, 198, 295-309.	3.8	16
80	Debye sources and the numerical solution of the time harmonic Maxwell equations. <i>Communications on Pure and Applied Mathematics</i> , 2010, 63, 413-463.	3.1	16
81	On the accurate calculation of vortex shedding. <i>Physics of Fluids A, Fluid Dynamics</i> , 1990, 2, 883-885.	1.6	15
82	A fast direct solver for scattering from periodic structures with multiple material interfaces in two dimensions. <i>Journal of Computational Physics</i> , 2014, 258, 738-751.	3.8	15
83	Inverse Obstacle Scattering in Two Dimensions with Multiple Frequency Data and Multiple Angles of Incidence. <i>SIAM Journal on Imaging Sciences</i> , 2015, 8, 280-298.	2.2	15
84	Coulomb Interactions on Planar Structures: Inverting the Square Root of the Laplacian. <i>SIAM Journal of Scientific Computing</i> , 2001, 22, 2093-2108.	2.8	14
85	A fast solver for multi-particle scattering in a layered medium. <i>Optics Express</i> , 2014, 22, 20481.	3.4	14
86	A high-order wideband direct solver for electromagnetic scattering from bodies of revolution. <i>Journal of Computational Physics</i> , 2019, 387, 205-229.	3.8	14
87	Robust integral formulations for electromagnetic scattering from three-dimensional cavities. <i>Journal of Computational Physics</i> , 2017, 345, 1-16.	3.8	13
88	Sensitivity analysis of photonic crystal fiber. <i>Optics Express</i> , 2004, 12, 4220.	3.4	12
89	On the Calculation of Displacement, Stress, and Strain Induced by Triangular Dislocations. <i>Bulletin of the Seismological Society of America</i> , 2012, 102, 2776-2780.	2.3	12
90	Decoupled field integral equations for electromagnetic scattering from homogeneous penetrable obstacles. <i>Communications in Partial Differential Equations</i> , 2018, 43, 159-184.	2.2	12

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91	A fluctuating boundary integral method for Brownian suspensions. <i>Journal of Computational Physics</i> , 2018, 374, 1094-1119.	3.8	12
92	A fast spectral method for electrostatics in doubly periodic slit channels. <i>Journal of Chemical Physics</i> , 2021, 154, 204107.	3.0	12
93	A mesh-free approach to acoustic scattering from multiple spheres nested inside a large sphere by using diagonal translation operators. <i>Journal of the Acoustical Society of America</i> , 2010, 127, 850-861.	1.1	11
94	A Consistency Condition for the Vector Potential in Multiply-Connected Domains. <i>IEEE Transactions on Magnetics</i> , 2013, 49, 1072-1076.	2.1	10
95	The solution of the scalar wave equation in the exterior of a sphere. <i>Journal of Computational Physics</i> , 2014, 274, 191-207.	3.8	10
96	Debye Sources, Beltrami Fields, and a Complex Structure on Maxwell Fields. <i>Communications on Pure and Applied Mathematics</i> , 2015, 68, 2237-2280.	3.1	10
97	The Anisotropic Truncated Kernel Method for Convolution with Free-Space Green's Functions. <i>SIAM Journal of Scientific Computing</i> , 2018, 40, A3733-A3754.	2.8	10
98	High-order discretization of a stable time-domain integral equation for 3D acoustic scattering. <i>Journal of Computational Physics</i> , 2020, 402, 109047.	3.8	10
99	A numerical study of the $\hat{\eta}^2$ parameter for random suspensions of disks. <i>Journal of Applied Physics</i> , 1995, 77, 2015-2019.	2.5	9
100	A Fast Semidirect Least Squares Algorithm for Hierarchically Block Separable Matrices. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2014, 35, 725-748.	1.4	9
101	A new hybrid integral representation for frequency domain scattering in layered media. <i>Applied and Computational Harmonic Analysis</i> , 2018, 45, 359-378.	2.2	9
102	Strongly consistent marching schemes for the wave equation. <i>Journal of Computational Physics</i> , 2003, 188, 194-208.	3.8	7
103	Pseudo-spectral Methods for the Laplace-Beltrami Equation and the Hodge Decomposition on Surfaces of Genus One. <i>Numerical Methods for Partial Differential Equations</i> , 2017, 33, 941-955.	3.6	7
104	Extension of the Lorenz-Mie-Debye method for electromagnetic scattering to the time-domain. <i>Journal of Computational Physics</i> , 2015, 299, 98-105.	3.8	6
105	An Adaptive Fast Gauss Transform in Two Dimensions. <i>SIAM Journal of Scientific Computing</i> , 2018, 40, A1274-A1300.	2.8	6
106	A fast solver for the narrow capture and narrow escape problems in the sphere. <i>Journal of Computational Physics: X</i> , 2020, 5, 100047.	0.7	6
107	Hybrid asymptotic/numerical methods for the evaluation of layer heat potentials in two dimensions. <i>Advances in Computational Mathematics</i> , 2019, 45, 847-867.	1.6	5
108	A High-Order Integral Equation-Based Solver for the Time-Dependent Schrödinger Equation. <i>Communications on Pure and Applied Mathematics</i> , 2020, , .	3.1	5

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109	Fast multipole methods for the evaluation of layer potentials with locally-corrected quadratures. <i>Journal of Computational Physics: X</i> , 2021, 10, 100092.	0.7	5
110	Spectral edge detection in two dimensions using wavefronts. <i>Applied and Computational Harmonic Analysis</i> , 2011, 30, 69-95.	2.2	4
111	Norm-Preserving Discretization of Integral Equations for Elliptic PDEs with Internal Layers I: The One-Dimensional Case. <i>SIAM Review</i> , 2014, 56, 625-641.	8.4	4
112	A fast summation method for oscillatory lattice sums. <i>Journal of Mathematical Physics</i> , 2017, 58, 023511.	1.1	4
113	A New Mixed Potential Representation for Unsteady, Incompressible Flow. <i>SIAM Review</i> , 2019, 61, 733-755.	8.4	4
114	Integral Equation Methods for Electrostatics, Acoustics, and Electromagnetics in Smoothly Varying, Anisotropic Media. <i>SIAM Journal on Numerical Analysis</i> , 2019, 57, 1020-1035.	2.3	4
115	A Fast Boundary Integral Method for High-Order Multiscale Mesh Generation. <i>SIAM Journal of Scientific Computing</i> , 2020, 42, A1380-A1401.	2.8	3
116	Explicit unconditionally stable methods for the heat equation via potential theory. <i>Pure and Applied Analysis</i> , 2019, 1, 709-742.	1.1	2
117	Recovering Missing Data in Coherent Diffraction Imaging. <i>SIAM Journal on Imaging Sciences</i> , 2021, 14, 620-644.	2.2	2
118	A fast multipole method for the evaluation of elastostatic fields in a half-space with zero normal stress. <i>Advances in Computational Mathematics</i> , 2016, 42, 175-198.	1.6	1
119	An Augmented Regularized Combined Source Integral Equation for Nonconforming Meshes. <i>IEEE Transactions on Antennas and Propagation</i> , 2019, 67, 2513-2521.	5.1	1
120	On the accurate evaluation of unsteady Stokes layer potentials in moving two-dimensional geometries. <i>Advances in Computational Mathematics</i> , 2020, 46, 1.	1.6	0