Vladimir Rokhlin

List of Publications by Year in Descending Order

58 papers	3,195 citations	26 h-index	56 g-index
62 ext. papers	3,631 ext. citations	3.7 avg, IF	5.29 L-index

#	Paper	IF	Citations
58	On the Numerical Solution of Fourth-Order Linear Two-Point Boundary Value Problems. *SIAM Journal of Scientific Computing*, **2020**, 42, A1789-A1808	2.6	0
57	A fast simple algorithm for computing the potential of charges on a line. *Applied and Computational Harmonic Analysis*, **2020**, 49, 815-830	3.1	3
56	On the Numerical Solution of Elliptic Partial Differential Equations on Polygonal Domains. *SIAM Journal of Scientific Computing*, **2019**, 41, A2552-A2578	2.6	5
55	A fast summation method for oscillatory lattice sums. *Journal of Mathematical Physics*, **2017**, 58, 023511	1.2	3
54	On the nonoscillatory phase function for Legendre's differential equation. *Journal of Computational Physics*, **2017**, 350, 326-342	4.1	1
53	On the solution of elliptic partial differential equations on regions with corners. *Journal of Computational Physics*, **2016**, 305, 150-171	4.1	22
52	Improved estimates for nonoscillatory phase functions. *Discrete and Continuous Dynamical Systems*, **2016**, 36, 4101-4131	2	9
51	On the solution of the Helmholtz equation on regions with corners. *Proceedings of the National Academy of Sciences of the United States of America*, **2016**, 113, 9171-6	11.5	7
50	On the existence of nonoscillatory phase functions for second order ordinary differential equations in the high-frequency regime. *Journal of Computational Physics*, **2015**, 290, 1-27	4.1	9
49	On the asymptotics of Bessel functions in the Fresnel regime. *Applied and Computational Harmonic Analysis*, **2015**, 39, 347-356	3.1	12
48	On the evaluation of prolate spheroidal wave functions and associated quadrature rules. *Applied and Computational Harmonic Analysis*, **2014**, 36, 108-142	3.1	16
47	A fast divide-and-conquer algorithm for computing the spectra of real symmetric tridiagonal matrices. *Applied and Computational Harmonic Analysis*, **2013**, 34, 379-414	3.1	24
46	A randomized approximate nearest neighbors algorithm. *Applied and Computational Harmonic Analysis*, **2013**, 34, 415-444	3.1	10
45	Quadrature Rules and Interpolation via PSWFs. *Applied Mathematical Sciences (Switzerland)*, **2013**, 275-351	0.9	
44	Asymptotic Analysis of PSWFs. *Applied Mathematical Sciences (Switzerland)*, **2013**, 243-274	0.9	
43	Numerical Algorithms. *Applied Mathematical Sciences (Switzerland)*, **2013**, 353-370	0.9	
42	Mathematical and Numerical Preliminaries. *Applied Mathematical Sciences (Switzerland)*, **2013**, 5-32	0.9	

41	A Highly Accurate Solver for Stiff Ordinary Differential Equations. *SIAM Journal of Scientific Computing*, **2012**, 34, A1296-A1315	2.6	12
40	A new class of highly accurate differentiation schemes based on the prolate spheroidal wave functions. *Applied and Computational Harmonic Analysis*, **2012**, 33, 226-260	3.1	14
39	An adaptive fast direct solver for boundary integral equations in two dimensions. *Applied and Computational Harmonic Analysis*, **2011**, 31, 346-369	3.1	32
38	A randomized algorithm for the decomposition of matrices. *Applied and Computational Harmonic Analysis*, **2011**, 30, 47-68	3.1	161
37	Randomized approximate nearest neighbors algorithm. *Proceedings of the National Academy of Sciences of the United States of America*, **2011**, 108, 15679-86	11.5	30
36	A Nonlinear Optimization Procedure for Generalized Gaussian Quadratures. *SIAM Journal of Scientific Computing*, **2010**, 32, 1761-1788	2.6	62
35	A Randomized Algorithm for Principal Component Analysis. *SIAM Journal on Matrix Analysis and Applications*, **2010**, 31, 1100-1124	1.5	183
34	Efficient discretization of Laplace boundary integral equations on polygonal domains. *Journal of Computational Physics*, **2010**, 229, 2507-2525	4.1	28
33	Universal quadratures for boundary integral equations on two-dimensional domains with corners. *Journal of Computational Physics*, **2010**, 229, 8259-8280	4.1	50
32	An algorithm for the rapid evaluation of special function transforms. *Applied and Computational Harmonic Analysis*, **2010**, 28, 203-226	3.1	53
31	A Randomized Approximate Nearest Neighbors Algorithm **2010**,		3
30	Fast direct solvers for integral equations in complex three-dimensional domains. *Acta Numerica*, **2009**, 18, 243-275	15.1	107
29	High-order quadratures for the solution of scattering problems in two dimensions. *Journal of Computational Physics*, **2009**, 228, 2152-2174	4.1	18
28	A New Class of Highly Accurate Solvers for Ordinary Differential Equations. *Journal of Scientific Computing*, **2009**, 38, 368-399	2.3	50
27	A fast randomized algorithm for overdetermined linear least-squares regression. *Proceedings of the National Academy of Sciences of the United States of America*, **2008**, 105, 13212-7	11.5	75
26	A fast randomized algorithm for the approximation of matrices. *Applied and Computational Harmonic Analysis*, **2008**, 25, 335-366	3.1	176
25	Approximate formulae for certain prolate spheroidal wave functions valid for large values of both order and band-limit. *Applied and Computational Harmonic Analysis*, **2007**, 22, 105-123	3.1	33
24	Randomized algorithms for the low-rank approximation of matrices. *Proceedings of the National Academy of Sciences of the United States of America*, **2007**, 104, 20167-72	11.5	291

23	A Fast Algorithm for the Calculation of the Roots of Special Functions. *SIAM Journal of Scientific Computing*, **2007**, 29, 1420-1438	2.6	81
22	A New Class of Analysis-Based Fast Transforms **2007**,		6
21	Fast Algorithms for Spherical Harmonic Expansions. *SIAM Journal of Scientific Computing*, **2006**, 27, 1903-1928	2.6	57
20	On interpolation and integration in finite-dimensional spaces of bounded functions. *Communications in Applied Mathematics and Computational Science*, **2006**, 1, 133-142	1.1	20
19	Approximation of bandlimited functions. *Applied and Computational Harmonic Analysis*, **2006**, 21, 413-420	3.1	27
18	A wideband fast multipole method for the Helmholtz equation in three dimensions. *Journal of Computational Physics*, **2006**, 216, 300-325	4.1	193
17	A Randomized Algorithm for the Approximation of Matrices **2006**,		11
16	Second kind integral equations for the classical potential theory on open surfaces II. *Journal of Computational Physics*, **2004**, 195, 1-16	4.1	31
15	High-Frequency Asymptotic Expansions for Certain Prolate Spheroidal Wave Functions. *Journal of Fourier Analysis and Applications*, **2003**, 9, 575-596	1.1	15
14	Second kind integral equations for the classical potential theory on open surfaces I: analytical apparatus. *Journal of Computational Physics*, **2003**, 191, 40-74	4.1	6
13	Quadruple and octuple layer potentials in two dimensions I: Analytical apparatus. *Applied and Computational Harmonic Analysis*, **2003**, 14, 47-74	3.1	12
12	A Generalized Fast Multipole Method for Nonoscillatory Kernels. *SIAM Journal of Scientific Computing*, **2003**, 24, 796-817	2.6	56
11	Spectral Deferred Correction Methods for Ordinary Differential Equations. *BIT Numerical Mathematics*, **2000**, 40, 241-266	1.7	242
10	An Improved Fast Multipole Algorithm for Potential Fields on the Line. *SIAM Journal on Numerical Analysis*, **1999**, 36, 629-666	2.4	40
9	A Generalized One-Dimensional Fast Multipole Method with Application to Filtering of Spherical Harmonics. *Journal of Computational Physics*, **1998**, 147, 594-609	4.1	21
8	An Improved Fast Multipole Algorithm for Potential Fields. *SIAM Journal of Scientific Computing*, **1998**, 19, 1804-1826	2.6	48
7	High-Order Corrected Trapezoidal Quadrature Rules for Singular Functions. *SIAM Journal on Numerical Analysis*, **1997**, 34, 1331-1356	2.4	66
6	A new version of the Fast Multipole Method for the Laplace equation in three dimensions. *Acta Numerica*, **1997**, 6, 229-269	15.1	582

LIST OF PUBLICATIONS

5 An Improved Fast Multipole Algorithm for Potential Fields. **1995**,   6

4 Sparse Diagonal Forms for Translation Operators for the Helmholtz Equation in Two Dimensions, **1995**,   12

3 On the numerical solution of two-point boundary value problems II. *Communications on Pure and Applied Mathematics*, **1994**, 47, 1117-1159   2.5   19

2 A Fast Algorithm for the Evaluation of Legendre Expansions. *SIAM Journal on Scientific and Statistical Computing*, **1991**, 12, 158-179   129

1 On the accurate calculation of vortex shedding. *Physics of Fluids A, Fluid Dynamics*, **1990**, 2, 883-885   15