Gregory Beylkin

List of Publications by Year
in descending order

82 papers	3,771 citations	172457 29 h-index	123424 61 g-index
85 all docs	85 docs citations	85 times ranked	2060 citing authors

#	Article	IF	Citations
1	Efficient Evaluation of Two-Center Gaussian Integrals in Periodic Systems. Journal of Chemical Theory and Computation, 2021, 17, 3916-3922.	5.3	4
2	A fast algorithm for computing the Boys function. Journal of Chemical Physics, 2021, 155, 174117.	3.0	3
3	Real-space quasi-relativistic quantum chemistry. Computational and Theoretical Chemistry, 2020, 1175, 112711.	2.5	2
4	Efficient Fourier basis particle simulation. Journal of Computational Physics, 2019, 396, 837-847.	3.8	5
5	On derivatives of smooth functions represented in multiwavelet bases. Journal of Computational Physics: X, 2019, 4, 100033.	0.7	5
6	Reduction of multivariate mixtures and its applications. Journal of Computational Physics, 2019, 383, 94-124.	3.8	1
7	Dirac-Fock calculations on molecules in an adaptive multiwavelet basis. Journal of Chemical Physics, 2019, 151, 234112.	3.0	6
8	On computing distributions of products of random variables via Gaussian multiresolution analysis. Applied and Computational Harmonic Analysis, 2019, 47, 306-337.	2.2	6
9	On computing distributions of products of non-negative independent random variables. Applied and Computational Harmonic Analysis, 2019, 46, 400-416.	2.2	7
10	Adaptive algorithm for electronic structure calculations using reduction of Gaussian mixtures. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2019, 475, 20180901.	2.1	2
11	Optimization via separated representations and the canonical tensor decomposition. Journal of Computational Physics, 2017, 348, 220-230.	3.8	4
12	Randomized Alternating Least Squares for Canonical Tensor Decompositions: Application to A PDE With Random Data. SIAM Journal of Scientific Computing, 2016, 38, A2634-A2664.	2.8	26
13	MADNESS: A Multiresolution, Adaptive Numerical Environment for Scientific Simulation. SIAM Journal of Scientific Computing, 2016, 38, S123-S142.	2.8	72
14	Efficient representation and accurate evaluation of oscillatory integrals and functions. Discrete and Continuous Dynamical Systems, 2016, 36, 4077-4100.	0.9	5
15	Layer Stripping Migration Velocity Analysis Using Accurate Survey Sinking. , 2015, , .		0
16	Multiresolution quantum chemistry in multiwavelet bases: excited states from time-dependent Hartree–Fock and density functional theory via linear response. Physical Chemistry Chemical Physics, 2015, 17, 31405-31416.	2.8	27
17	Randomized interpolative decomposition of separated representations. Journal of Computational Physics, 2015, 281, 116-134.	3.8	19
18	ODE solvers using band-limited approximations. Journal of Computational Physics, 2014, 265, 156-171.	3.8	10

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19	Bandlimited implicit Runge–Kutta integration for Astrodynamics. Celestial Mechanics and Dynamical Astronomy, 2014, 119, 143-168.	1.4	7
20	On generalized Gaussian quadratures for bandlimited exponentials. Applied and Computational Harmonic Analysis, 2013, 34, 352-365.	2.2	6
21	Near optimal rational approximations of large data sets. Applied and Computational Harmonic Analysis, 2013, 35, 251-263.	2.2	5
22	Rational approximations for tomographic reconstructions. Inverse Problems, 2013, 29, 065020.	2.0	4
23	Solving BurgersÊ¼ equation using optimal rational approximations. Applied and Computational Harmonic Analysis, 2013, 34, 83-95.	2.2	11
24	Sequential Orbit Determination with the Cubed-Sphere Gravity Model. Journal of Spacecraft and Rockets, 2012, 49, 145-156.	1.9	1
25	Fast and Accurate Con-Eigenvalue Algorithm for Optimal Rational Approximations. SIAM Journal on Matrix Analysis and Applications, 2012, 33, 1101-1125.	1.4	15
26	On the Design of Highly Accurate and Efficient IIR and FIR Filters. IEEE Transactions on Signal Processing, 2012, 60, 4045-4054.	5.3	10
27	Multiresolution representation of operators with boundary conditions on simple domains. Applied and Computational Harmonic Analysis, 2012, 33, 109-139.	2.2	16
28	A multiresolution model for small-body gravity estimation. Celestial Mechanics and Dynamical Astronomy, 2011, 111, 309-335.	1.4	2
29	Approximation by exponential sums revisited. Applied and Computational Harmonic Analysis, 2010, 28, 131-149.	2.2	112
30	Comparisons of the Cubed-Sphere Gravity Model with the Spherical Harmonics. Journal of Guidance, Control, and Dynamics, 2010, 33, 415-425.	2.8	27
31	A New Representation For Small-Body Gravity Estimation. , 2010, , .		0
32	Full–wave–equation depth migration using multiple reflections. , 2010, , .		4
33	Rotationally invariant quadratures for the sphere. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2009, 465, 3103-3125.	2.1	41
34	Fast convolution with the free space Helmholtz Green's function. Journal of Computational Physics, 2009, 228, 2770-2791.	3.8	28
35	Nonlinear inversion of a band-limited Fourier transform. Applied and Computational Harmonic Analysis, 2009, 27, 351-366.	2.2	26
36	Multivariate Regression and Machine Learning with Sums of Separable Functions. SIAM Journal of Scientific Computing, 2009, 31, 1840-1857.	2.8	70

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37	Full-wave-equation depth extrapolation for migration. Geophysics, 2009, 74, WCA121-WCA128.	2.6	30
38	Fast adaptive algorithms in the non-standard form for multidimensional problems. Applied and Computational Harmonic Analysis, 2008, 24, 354-377.	2.2	31
39	Approximating a wavefunction as an unconstrained sum of Slater determinants. Journal of Mathematical Physics, 2008, 49, .	1.1	31
40	Fast algorithms for Helmholtz Green's functions. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2008, 464, 3301-3326.	2.1	24
41	Grids and transforms for band-limited functions in a disk. Inverse Problems, 2007, 23, 2059-2088.	2.0	16
42	Multiresolution separated representations of singular and weakly singular operators. Applied and Computational Harmonic Analysis, 2007, 23, 235-253.	2.2	25
43	Preliminary results on approximating a wavefunction as an unconstrained sum of Slater determinants. Proceedings in Applied Mathematics and Mechanics, 2007, 7, 1010301-1010302.	0.2	5
44	Acoustic and elastic modeling using bases for bandlimited functions. , 2006, , .		3
45	Efficient solution of Poisson's equation with free boundary conditions. Journal of Chemical Physics, 2006, 125, 074105.	3.0	176
46	Multiresolution computational chemistry. Journal of Physics: Conference Series, 2005, 16, 243-246.	0.4	6
47	The fast Gauss transform with complex parameters. Journal of Computational Physics, 2005, 203, 274-286.	3.8	8
48	Wave propagation using bases for bandlimited functions. Wave Motion, 2005, 41, 263-291.	2.0	47
49	Multiresolution adaptive space refinement in geophysical fluid dynamics simulation. , 2005, , 161-170.		5
50	Algorithms for Numerical Analysis in High Dimensions. SIAM Journal of Scientific Computing, 2005, 26, 2133-2159.	2.8	267
51	On approximation of functions by exponential sums. Applied and Computational Harmonic Analysis, 2005, 19, 17-48.	2.2	226
52	Multiresolution quantum chemistry in multiwavelet bases: Hartree–Fock exchange. Journal of Chemical Physics, 2004, 121, 6680-6688.	3.0	98
53	Multiresolution quantum chemistry: Basic theory and initial applications. Journal of Chemical Physics, 2004, 121, 11587-11598.	3.0	214
54	Multiresolution quantum chemistry in multiwavelet bases: Analytic derivatives for Hartree–Fock and density functional theory. Journal of Chemical Physics, 2004, 121, 2866-2876.	3.0	84

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55	Singular operators in multiwavelet bases. IBM Journal of Research and Development, 2004, 48, 161-171.	3.1	32
56	A fast reconstruction algorithm for electron microscope tomography. Journal of Structural Biology, 2003, 144, 61-72.	2.8	45
57	Multiresolution Quantum Chemistry in Multiwavelet Bases. Lecture Notes in Computer Science, 2003, , 103-110.	1.3	32
58	A Multiresolution Approach to Regularization of Singular Operators and Fast Summation. SIAM Journal of Scientific Computing, 2002, 24, 81-117.	2.8	21
59	Adaptive Solution of Partial Differential Equations in Multiwavelet Bases. Journal of Computational Physics, 2002, 182, 149-190.	3.8	204
60	On Generalized Gaussian Quadratures for Exponentials and Their Applications. Applied and Computational Harmonic Analysis, 2002, 12, 332-373.	2.2	61
61	Numerical operator calculus in higher dimensions. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 10246-10251.	7.1	210
62	Toward Multiresolution Estimation and Efficient Representation of Gravitational Fields. Celestial Mechanics and Dynamical Astronomy, 2002, 84, 87-104.	1.4	31
63	<title>Approximations and fast algorithms</title>. , 2001, , .		0
64	Multiresolution Analysis of Elastic Degradation in Heterogeneous Materials. Meccanica, 2001, 36, 131-150.	2.0	7
65	Fast Spectral Projection Algorithms for Density-Matrix Computations. Journal of Computational Physics, 1999, 152, 32-54.	3.8	44
66	Compactly Supported Wavelets Based on Almost Interpolating and Nearly Linear Phase Filters (Coiflets). Applied and Computational Harmonic Analysis, 1999, 7, 184-210.	2.2	43
67	A New Class of Time Discretization Schemes for the Solution of Nonlinear PDEs. Journal of Computational Physics, 1998, 147, 362-387.	3.8	209
68	A Multiresolution Strategy for Reduction of Elliptic PDEs and Eigenvalue Problems. Applied and Computational Harmonic Analysis, 1998, 5, 129-155.	2.2	69
69	Multiscale Inversion of Elliptic Operators. Wavelet Analysis and Its Applications, 1998, 7, 341-359.	0.2	4
70	Fast radon transform for multiple attenuation. , 1998, , .		0
71	On the Adaptive Numerical Solution of Nonlinear Partial Differential Equations in Wavelet Bases. Journal of Computational Physics, 1997, 132, 233-259.	3.8	119
72	<title>Adaptive pseudowavelet algorithms for solving nonlinear partial differential equations</title>. , 1996, , .		0

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73	Implementation of Operators via Filter Banks. Applied and Computational Harmonic Analysis, 1996, 3, 164-185.	2.2	13
74	On Factored FIR Approximation of IIR Filters. Applied and Computational Harmonic Analysis, 1995, 2, 293-298.	2.2	5
75	A Multiresolution Strategy for Numerical Homogenization. Applied and Computational Harmonic Analysis, 1995, 2, 327-349.	2.2	109
76	On the Fast Fourier Transform of Functions with Singularities. Applied and Computational Harmonic Analysis, 1995, 2, 363-381.	2.2	277
77	Multiresolution representations using the autocorrelation functions of compactly supported wavelets. IEEE Transactions on Signal Processing, 1993, 41, 3584-3590.	5.3	124
78	GRT inversion for elastic parameters usingPP, PS, SP, andSSseismic data. , 1990, , .		1
79	Multiparameter inversion for acoustic and elastic media. , 1987, , .		6
80	Reconstructing discontinuities in multidimensional inverse scattering problems: smooth errors vs small errors. Applied Optics, 1985, 24, 4086.	2.1	13
81	The inversion problem and applications of the generalized radon transform. Communications on Pure and Applied Mathematics, 1984, 37, 579-599.	3.1	164
82	<title>Inversion Of The Generalized Radon Transform</title>. Proceedings of SPIE, 1983, 0413, 32.	0.8	4