Yousef Saad

List of Publications by Year
in descending order

133 papers	12,915 citations	94433 37 h-index	76900 74 g-index
136 all docs	136 docs citations	136 times ranked	7547 citing authors

#	Article	IF	Citations
1	Shanks and Anderson-type acceleration techniques for systems of nonlinear equations. IMA Journal of Numerical Analysis, 2022, 42, 3058-3093.	2.9	4
2	Graph coarsening: from scientific computing to machine learning. SeMA Journal, 2022, 79, 187-223.	2.0	9
3	A Non-perturbative Approach to Computing Seismic Normal Modes in Rotating Planets. Journal of Scientific Computing, 2022, 91, 1.	2.3	2
4	A Power Schur Complement Low-Rank Correction Preconditioner for General Sparse Linear Systems. SIAM Journal on Matrix Analysis and Applications, 2021, 42, 659-682.	1.4	5
5	Proxy-GMRES: Preconditioning via GMRES in Polynomial Space. SIAM Journal on Matrix Analysis and Applications, 2021, 42, 1248-1267.	1.4	4
6	Planetary Normal Mode Computation: Parallel Algorithms, Performance, and Reproducibility. IEEE Transactions on Parallel and Distributed Systems, 2021, 32, 2609-2622.	5.6	2
7	Spectrum-Adapted Polynomial Approximation for Matrix Functions with Applications in Graph Signal Processing. Algorithms, 2020, 13, 295.	2.1	0
8	Multicolor low‑rank preconditioner for general sparse linear systems. Numerical Linear Algebra With Applications, 2020, 27, e2316.	1.6	2
9	Solving the Three-Dimensional High-frequency Helmholtz Equation Using Contour Integration and Polynomial Preconditioning. SIAM Journal on Matrix Analysis and Applications, 2020, 41, 58-82.	1.4	9
10	The Eigenvalues Slicing Library (EVSL): Algorithms, Implementation, and Software. SIAM Journal of Scientific Computing, 2019, 41, C393-C415.	2.8	23
11	Sampling and multilevel coarsening algorithms for fast matrix approximations. Numerical Linear Algebra With Applications, 2019, 26, e2234.	1.6	5
12	Find the dimension that counts: Fast dimension estimation and Krylov PCA. , 2019, , 720-728.		1
13	Domain decomposition approaches for accelerating contour integration eigenvalue solvers for symmetric eigenvalue problems. Numerical Linear Algebra With Applications, 2018, 25, e2154.	1.6	10
14	A posteriori error estimate for computing tr(f (A)) by using the Lanczos method. Numerical Linear Algebra With Applications, 2018, 25, e2170.	1.6	4
15	Computing Planetary Interior Normal Modes with a Highly Parallel Polynomial Filtering Eigensolver. , 2018, , .		12
16	Fast Computation of Spectral Densities for Generalized Eigenvalue Problems. SIAM Journal of Scientific Computing, 2018, 40, A2749-A2773.	2.8	9
17	SMASH: Structured matrix approximation by separation and hierarchy. Numerical Linear Algebra With Applications, 2018, 25, e2204.	1.6	27
18	A Hierarchical Low Rank Schur Complement Preconditioner for Indefinite Linear Systems. SIAM Journal of Scientific Computing, 2018, 40, A2234-A2252.	2.8	7

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19	Beyond Automated Multilevel Substructuring: Domain Decomposition with Rational Filtering. SIAM Journal of Scientific Computing, 2018, 40, C477-C502.	2.8	9
20	Shanks Sequence Transformations and Anderson Acceleration. SIAM Review, 2018, 60, 646-669.	9.5	38
21	Applications of Trace Estimation Techniques. Lecture Notes in Computer Science, 2018, , 19-33.	1.3	3
22	A Rational Function Preconditioner For Indefinite Sparse Linear Systems. SIAM Journal of Scientific Computing, 2017, 39, A1145-A1167.	2.8	8
23	Fast Estimation of Approximate Matrix Ranks Using Spectral Densities. Neural Computation, 2017, 29, 1317-1351.	2.2	12
24	Fast Estimation of $tr(f(A))$ via Stochastic Lanczos Quadrature. SIAM Journal on Matrix Analysis and Applications, 2017, 38, 1075-1099.	1.4	66
25	Low-Rank Correction Methods for Algebraic Domain Decomposition Preconditioners. SIAM Journal on Matrix Analysis and Applications, 2017, 38, 807-828.	1.4	18
26	Cucheb: A GPU implementation of the filtered Lanczos procedure. Computer Physics Communications, 2017, 220, 332-340.	7.5	10
27	Low rank approximation and decomposition of large matrices using error correcting codes. IEEE Transactions on Information Theory, 2017, , 1-1.	2.4	3
28	Improving the Incoherence of a Learned Dictionary via Rank Shrinkage. Neural Computation, 2017, 29, 263-285.	2.2	19
29	Efficient estimation of eigenvalue counts in an interval. Numerical Linear Algebra With Applications, 2016, 23, 674-692.	1.6	63
30	Schur complementâ€based domain decomposition preconditioners with lowâ€rank corrections. Numerical Linear Algebra With Applications, 2016, 23, 706-729.	1.6	21
31	PFEAST: A High Performance Sparse Eigenvalue Solver Using Distributed-Memory Linear Solvers. , 2016, , .		12
32	Computing Partial Spectra with Least-Squares Rational Filters. SIAM Journal of Scientific Computing, 2016, 38, A3020-A3045.	2.8	20
33	A Thick-Restart Lanczos Algorithm with Polynomial Filtering for Hermitian Eigenvalue Problems. SIAM Journal of Scientific Computing, 2016, 38, A2512-A2534.	2.8	38
34	Approximating Spectral Densities of Large Matrices. SIAM Review, 2016, 58, 34-65.	9.5	84
35	Analysis of Subspace Iteration for Eigenvalue Problems with Evolving Matrices. SIAM Journal on Matrix Analysis and Applications, 2016, 37, 103-122.	1.4	17
36	An Algebraic Multilevel Preconditioner with Low-Rank Corrections for Sparse Symmetric Matrices. SIAM Journal on Matrix Analysis and Applications, 2016, 37, 235-259.	1.4	26

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37	Spectral recycling strategies for the solution of nonlinear eigenproblems in thermoacoustics. Numerical Linear Algebra With Applications, 2015, 22, 1039-1058.	1.6	4
38	Matrix Reordering Using Multilevel Graph Coarsening for ILU Preconditioning. SIAM Journal of Scientific Computing, 2015, 37, A391-A419.	2.8	13
39	Efficient Algorithms for Estimating the Absorption Spectrum within Linear Response TDDFT. Journal of Chemical Theory and Computation, 2015, 11, 5197-5208.	5.3	35
40	Fast Methods for Large Eigenvalues Problems for Chemistry. , 2015, , 493-498.		0
41	Prewhitening High-Dimensional fMRI Data Sets Without Eigendecomposition. Neural Computation, 2014, 26, 907-919.	2.2	10
42	Fast Updating Algorithms for Latent Semantic Indexing. SIAM Journal on Matrix Analysis and Applications, 2014, 35, 1105-1131.	1.4	3
43	Chebyshev-filtered subspace iteration method free of sparse diagonalization for solving the Kohn–Sham equation. Journal of Computational Physics, 2014, 274, 770-782.	3.8	57
44	Preconditioned Krylov Subspace Methods for Sampling Multivariate Gaussian Distributions. SIAM Journal of Scientific Computing, 2014, 36, A588-A608.	2.8	45
45	Divide and Conquer Low-Rank Preconditioners for Symmetric Matrices. SIAM Journal of Scientific Computing, 2013, 35, A2069-A2095.	2.8	24
46	GPU-accelerated preconditioned iterative linear solvers. Journal of Supercomputing, 2013, 63, 443-466.	3.6	196
47	Krylov subspace methods for computing hydrodynamic interactions in Brownian dynamics simulations. Journal of Chemical Physics, 2012, 137, 064106.	3.0	69
48	A Filtered Lanczos Procedure for Extreme and Interior Eigenvalue Problems. SIAM Journal of Scientific Computing, 2012, 34, A2220-A2246.	2.8	46
49	Modification and Compensation Strategies for Threshold-based Incomplete Factorizations. SIAM Journal of Scientific Computing, 2012, 34, A48-A75.	2.8	10
50	Dense Subgraph Extraction with Application to Community Detection. IEEE Transactions on Knowledge and Data Engineering, 2012, 24, 1216-1230.	5.7	186
51	A probing method for computing the diagonal of a matrix inverse. Numerical Linear Algebra With Applications, 2012, 19, 485-501.	1.6	87
52	A spectrum slicing method for the Kohn–Sham problem. Computer Physics Communications, 2012, 183, 497-505.	7.5	98
53	Using Chebyshev-Filtered Subspace Iteration and Windowing Methods to Solve the Kohn-Sham Problem. , 2011, , 167-189.		1
54	Domain-Decomposition-Type Methods for Computing the Diagonal of a Matrix Inverse. SIAM Journal of Scientific Computing, 2011, 33, 2823-2847.	2.8	14

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55	Computing $f(A)b$ via Least Squares Polynomial Approximations. SIAM Journal of Scientific Computing, 2011, 33, 195-222.	2.8	28
56	Rational approximation to the Fermiâ€"Dirac function with applications in density functional theory. Numerical Algorithms, 2011, 56, 455-479.	1.9	13
57	Incremental incomplete LU factorizations with applications. Numerical Linear Algebra With Applications, 2010, 17, 811-837.	1.6	15
58	Preconditioning Helmholtz linear systems. Applied Numerical Mathematics, 2010, 60, 420-431.	2.1	45
59	Harnessing molecular excited states with Lanczos chains. Journal of Physics Condensed Matter, 2010, 22, 074204.	1.8	15
60	Hypergraph-based multilevel matrix approximation for text information retrieval. , 2010, , .		3
61	Multilevel manifold learning with application to spectral clustering. , 2010, , .		6
62	Numerical Methods for Electronic Structure Calculations of Materials. SIAM Review, 2010, 52, 3-54.	9.5	231
63	Divide and Conquer Strategies for Effective Information Retrieval. , 2009, , .		4
64	Lanczos Vectors versus Singular Vectors for Effective Dimension Reduction. IEEE Transactions on Knowledge and Data Engineering, 2009, 21, 1091-1103.	5.7	31
65	Two classes of multisecant methods for nonlinear acceleration. Numerical Linear Algebra With Applications, 2009, 16, 197-221.	1.6	183
66	Algorithms for the electronic and vibrational properties of nanocrystals. Journal of Physics Condensed Matter, 2009, 21, 064207.	1.8	9
67	Block Krylovâ€"Schur method for large symmetric eigenvalue problems. Numerical Algorithms, 2008, 47, 341-359.	1.9	31
68	Graph-Based Multilevel Dimensionality Reduction with Applications to Eigenfaces and Latent Semantic Indexing. , 2008, , .		11
69	Computation of Large Invariant Subspaces Using Polynomial Filtered Lanczos Iterations with Applications in Density Functional Theory. SIAM Journal on Matrix Analysis and Applications, 2008, 30, 397-418.	1.4	25
70	Turbo charging time-dependent density-functional theory with Lanczos chains. Journal of Chemical Physics, 2008, 128, 154105.	3.0	234
71	A Chebyshevâ€"Davidson Algorithm for Large Symmetric Eigenproblems. SIAM Journal on Matrix Analysis and Applications, 2007, 29, 954-971.	1.4	43
72	A Greedy Strategy for Coarse-Grid Selection. SIAM Journal of Scientific Computing, 2007, 29, 1825-1853.	2.8	22

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73	Greedy Coarsening Strategies for Nonsymmetric Problems. SIAM Journal of Scientific Computing, 2007, 29, 2115-2143.	2.8	7
74	On correction equations and domain decomposition for computing invariant subspaces. Computer Methods in Applied Mechanics and Engineering, 2007, 196, 1471-1483.	6.6	8
75	Algorithms for the evolution of electronic properties in nanocrystals. Computer Physics Communications, 2007, 177, 1-5.	7.5	8
76	Efficient first-principles calculations of the electronic structure of periodic systems. Computer Physics Communications, 2007, 177, 339-347.	7.5	18
77	Schur Complement Preconditioners for Distributed General Sparse Linear Systems. , 2007, , 127-138.		2
78	A Parallel Multistage ILU Factorization Based on a Hierarchical Graph Decomposition. SIAM Journal of Scientific Computing, 2006, 28, 2266-2293.	2.8	36
79	MIQR: A Multilevel Incomplete QR Preconditioner for Large Sparse Least–Squares Problems. SIAM Journal on Matrix Analysis and Applications, 2006, 28, 524-550.	1.4	26
80	Filtered Conjugate Residual–type Algorithms with Applications. SIAM Journal on Matrix Analysis and Applications, 2006, 28, 845-870.	1.4	23
81	Multilevel Preconditioners Constructed From Inverse-Based ILUs. SIAM Journal of Scientific Computing, 2006, 27, 1627-1650.	2.8	107
82	SchurRAS: A Restricted Version of the Overlapping Schur Complement Preconditioner. SIAM Journal of Scientific Computing, 2006, 27, 1787-1801.	2.8	11
83	Evolution of Magnetism in Iron from the Atom to the Bulk. Physical Review Letters, 2006, 97, 147201.	7.8	82
84	PARSEC – the pseudopotential algorithm for real-space electronic structure calculations: recent advances and novel applications to nano-structures. Physica Status Solidi (B): Basic Research, 2006, 243, 1063-1079.	1.5	285
85	Diagonalization methods in PARSEC. Physica Status Solidi (B): Basic Research, 2006, 243, 2188-2197.	1.5	10
86	Self-consistent-field calculations using Chebyshev-filtered subspace iteration. Journal of Computational Physics, 2006, 219, 172-184.	3.8	152
87	Parallel self-consistent-field calculations via Chebyshev-filtered subspace acceleration. Physical Review E, 2006, 74, 066704.	2.1	145
88	Applying Parallel Direct Solver Techniques to Build Robust High Performance Preconditioners. Lecture Notes in Computer Science, 2006, , 611-619.	1.3	0
89	Efficient computation of the coupling matrix in time-dependent density functional theory. Computer Physics Communications, 2005, 167, 7-22.	7.5	5
90	Computing charge densities with partially reorthogonalized Lanczos. Computer Physics Communications, 2005, 171, 175-186.	7.5	24

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91	Computation of Smallest Eigenvalues using Spectral Schur Complements. SIAM Journal of Scientific Computing, 2005, 27, 458-481.	2.8	34
92	Multilevel ILU With Reorderings for Diagonal Dominance. SIAM Journal of Scientific Computing, 2005, 27, 1032-1057.	2.8	35
93	Preconditioning techniques for the solution of the Helmholtz equation by the finite element method. Mathematics and Computers in Simulation, 2004, 65, 303-321.	4.4	30
94	Variations on algebraic recursive multilevel solvers (ARMS) for the solution of CFD problems. Applied Numerical Mathematics, 2004, 51, 305-327.	2.1	7
95	pARMS: a parallel version of the algebraic recursive multilevel solver. Numerical Linear Algebra With Applications, 2003, 10, 485-509.	1.6	91
96	Rational approximation preconditioners for sparse linear systems. Journal of Computational and Applied Mathematics, 2003, 158, 419-442.	2.0	0
97	Parallel implementation of time-dependent density functional theory. Computer Physics Communications, 2003, 156, 22-42.	7.5	36
98	Finding Exact and Approximate Block Structures for ILU Preconditioning. SIAM Journal of Scientific Computing, 2003, 24, 1107-1123.	2.8	20
99	Crout Versions of ILU for General Sparse Matrices. SIAM Journal of Scientific Computing, 2003, 25, 716-728.	2.8	90
100	Block LU Preconditioners for Symmetric and Nonsymmetric Saddle Point Problems. SIAM Journal of Scientific Computing, 2003, 25, 729-748.	2.8	11
101	Preconditionning Techniques for the Solution of the Helmholtz Equation by the Finite Element Method. Lecture Notes in Computer Science, 2003, , 847-858.	1.3	0
102	Enhanced GMRES Acceleration Techniques for some CFD Problems. International Journal of Computational Fluid Dynamics, 2002, 16, 1-20.	1.2	23
103	A Factored Approximate Inverse Preconditioner with Pivoting. SIAM Journal on Matrix Analysis and Applications, 2002, 23, 692-705.	1.4	15
104	On the Relations between ILUs and Factored Approximate Inverses. SIAM Journal on Matrix Analysis and Applications, 2002, 24, 219-237.	1.4	36
105	Enhanced multi-level block ILU preconditioning strategies for general sparse linear systems. Journal of Computational and Applied Mathematics, 2001, 130, 99-118.	2.0	22
106	An edge based stabilized finite element method for solving compressible flows: formulation and parallel implementation. Computer Methods in Applied Mechanics and Engineering, 2001, 190, 6735-6761.	6.6	14
107	Iterative solution of linear systems in the 20th century. , 2001, , 175-207.		4
108	Further analysis of minimum residual iterations. Numerical Linear Algebra With Applications, 2000, 7, 67-93.	1.6	12

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109	High-order ILU preconditioners for CFD problems. International Journal for Numerical Methods in Fluids, 2000, 33, 767-788.	1.6	29
110	Preconditioning strategies for linear systems arising in tire design. Numerical Linear Algebra With Applications, 2000, 7, 743-757.	1.6	3
111	Iterative solution of linear systems in the 20th century. Journal of Computational and Applied Mathematics, 2000, 123, 1-33.	2.0	333
112	Highâ€order ILU preconditioners for CFD problems. International Journal for Numerical Methods in Fluids, 2000, 33, 767-788.	1.6	2
113	Distributed Schur Complement Techniques for General Sparse Linear Systems. SIAM Journal of Scientific Computing, 1999, 21, 1337-1356.	2.8	104
114	Electronic structure calculations for plane-wave codes without diagonalization. Computer Physics Communications, 1999, 118, 21-30.	7.5	35
115	Diagonal threshold techniques in robust multi-level ILU preconditioners for general sparse linear systems. Numerical Linear Algebra With Applications, 1999, 6, 257-280.	1.6	18
116	BILUTM: A Domain-Based Multilevel Block ILUT Preconditioner for General Sparse Matrices. SIAM Journal on Matrix Analysis and Applications, 1999, 21, 279-299.	1.4	62
117	BILUM: Block Versions of Multielimination and Multilevel ILU Preconditioner for General Sparse Linear Systems. SIAM Journal of Scientific Computing, 1999, 20, 2103-2121.	2.8	76
118	Non-standard Parallel Solution Strategies for Distributed Sparse Linear Systems. Lecture Notes in Computer Science, 1999, , 13-27.	1.3	8
119	An arbitrary Lagrangian-Eulerian finite element method for solving three-dimensional free surface flows. Computer Methods in Applied Mechanics and Engineering, 1998, 162, 79-106.	6.6	53
120	Dynamic Thick Restarting of the Davidson, and the Implicitly Restarted Arnoldi Methods. SIAM Journal of Scientific Computing, 1998, 19, 227-245.	2.8	92
121	Approximate Inverse Preconditioners via Sparse-Sparse Iterations. SIAM Journal of Scientific Computing, 1998, 19, 995-1023.	2.8	191
122	Approximate Inverse Techniques for Block-Partitioned Matrices. SIAM Journal of Scientific Computing, 1997, 18, 1657-1675.	2.8	77
123	Analysis of Augmented Krylov Subspace Methods. SIAM Journal on Matrix Analysis and Applications, 1997, 18, 435-449.	1.4	93
124	Experimental study of ILU preconditioners for indefinite matrices. Journal of Computational and Applied Mathematics, 1997, 86, 387-414.	2.0	188
125	Deflated and Augmented Krylov Subspace Techniques. Numerical Linear Algebra With Applications, 1997, 4, 43-66.	1.6	136
126	ILUS: An incomplete LU preconditioner in sparse skyline format. International Journal for Numerical Methods in Fluids, 1997, 25, 739-748.	1.6	20

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127	ILUS: An incomplete LU preconditioner in sparse skyline format. International Journal for Numerical Methods in Fluids, 1997, 25, 739-748.	1.6	1
128	Deflated and Augmented Krylov Subspace Techniques. Numerical Linear Algebra With Applications, 1997, 4, 43-66.	1.6	19
129	Overlapping Domain Decomposition Algorithms for General Sparse Matrices. Numerical Linear Algebra With Applications, 1996, 3, 221-237.	1.6	45
130	DQGMRES: a Direct Quasi-minimal Residual Algorithm Based on Incomplete Orthogonalization. Numerical Linear Algebra With Applications, 1996, 3, 329-343.	1.6	25
131	Overlapping Domain Decomposition Algorithms for General Sparse Matrices. Numerical Linear Algebra With Applications, 1996, 3, 221-237.	1.6	14
132	Robust preconditioning of large, sparse, symmetric eigenvalue problems. Journal of Computational and Applied Mathematics, 1995, 64, 197-215.	2.0	32
133	ILUT: A dual threshold incomplete LU factorization. Numerical Linear Algebra With Applications, 1994, 1, 387-402.	1.6	530