A Bibliography of Publications of Yousef Saad

Yousef Saad
Computer Science Dept., University of Minnesota
4-192 EE/CSci Building, 200 Union Street S.E.
Minneapolis, MN 55455
USA

Tel: +1 612 624 7804
FAX: +1 612 625 0572

E-mail: saad@cs.umn.edu (Internet)

15 August 2025
Version 2.81

Abstract

This bibliography records publications of Yousef Saad.

Title word cross-reference

References

Ando:2012:KSM

[ACSS12] Tadashi Ando, Edmond Chow, Yousef Saad, and Jeffrey Skolnick. Krylov subspace methods for computing hydrodynamic interactions in Brownian dynamics simulations. *Journal of Chemical Physics*, 137(6):064106, August 14, 2012. CODEN JCPSA6. ISSN 1089-7690.

Ashby:1990:SSM

[AEKS90] S. Ashby, H. Elman, D. Kincaid, and Y. Saad. Standards for sparse matrix software. Summary of session: *Standards for Sparse Matrix Software*, Copper Mountain Conference on iterative methods, April 1990., 1990.

Arbenz:2003:PMA

[AGPS03] Peter Arbenz, Efstratios Gallopoulos, Bernard Philippe, and Yousef Saad. Parallel Matrix Algorithms and Applications (PMAA '02). *Parallel Computing*, 29(9):1117–1119, September 2003. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic).

Alemany:2007:EFP

[AJT+07] M. M. G. Alemany, Manish Jain, Murilo L. Tiago, Yunkai Zhou, Yousef Saad, and James R. Chelikowsky. Efficient first-principles calculations of the electronic structure of periodic systems. *Computer Physics Communications*, 177(4):339–347, 2007. CO-

DEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic).

Aurentz:2017:CGI

[AKS17] Jared L. Aurentz, Vassilis Kalantzis, and Yousef Saad. Cucheb: a GPU implementation of the filtered Lanczos procedure. *Computer Physics Communications*, 220(??):332–340, November 2017. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0010465517301984.

Anderson:1988:SST

[AS88] Edward Charles Anderson and Youcef Saad. Solving sparse triangular linear systems on parallel computers. Technical Report CSRD 794, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, June 6, 1988. i + 29 pp.

Anderson:1989:SST

[AS89] E. C. Anderson and Y. Saad. Solving sparse triangular systems on parallel computers. *International Journal of High Speed Computing*, 1:73–96, 1989.

Arbenz:2011:SIP

[ASSS11] Peter Arbenz, Yousef Saad, Ahmed Sameh, and Olaf Schenk. Special issue on Parallel Matrix Algorithms and Applications (PMAA'10). *Parallel Computing*, 37(12):731–732, December 2011. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0167819111001426.

Brown:1994:PCL

[BCEP94] J. David Brown, Moody T. Chu, Donald C. Ellison, and Robert J. Plemmons, editors. *Proceedings of the Cornelius Lanczos International Centenary Conference, Raleigh, North Carolina, December 12–17, 1993*, volume 73 of *Proceedings in Applied Mathematics*. SIAM Press, Philadelphia, PA, USA, 1994. ISBN 0-89871-339-0. LCCN QC19.2 .C67 1993.

Brezinski:2022:SAT

[BCRZS22] Claude Brezinski, Stefano Cipolla, Michela Redivo-Zaglia, and Yousef Saad. Shanks and Anderson-type acceleration techniques for systems of nonlinear equations. *IMA Journal of Numerical Analysis*, 42(4): 3058–3093, October 2022. CODEN IJNADH. ISSN 0272-4979 (print), 1464-3642 (electronic). URL http://academic.oup.com/imajna/article/42/4/3058/6354546.

Bekas:2010:SIP

[BDG+10] Costas Bekas, Pasqua D'Ambra, Ananth Grama, Yousef Saad, and Petko Yanev. Special issue on parallel matrix algorithms and applications. *Parallel Computing*, 36(5–6):213–214, June 2010. CODEN PACOEJ. ISSN 0167-

8191 (print), 1872-7336 (electronic).

Baroni:2010:HME

[BGB+10] Stefano Baroni, Ralph Gebauer, O. Baris Malcioglu, Yousef Saad, Paolo Umari, and Jiawei Xian. Harnessing molecular excited states with Lanczos chains. *Journal of Physics: Condensed Matter*, 22(7):074204, February 24, 2010. CODEN JCOMEL. ISSN 1361-648X.

Bekas:2014:PMA

[BGSS14] Costas Bekas, Ananth Grama, Yousef Saad, and Olaf Schenk. Parallel matrix algorithms [Guest editorial]. *Parallel Computing*, 40(7):159–160, July 2014. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0167819114000647`.

Beckermann:2008:SVM

[BJR+09] Bernhard Beckermann, Khalide Jbilou, Lothar Reichel, Yousef Saad, Miloude Sadkane, and Ahmed Salam. Special volume on matrix analysis and applications. *Electronic Transactions on Numerical Analysis*, 33: vii, 2008/2009. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic).

Bekas:2007:EDM

[BKS07] C. Bekas, E. Kokiopoulou, and Y. Saad. An estimator for the diagonal of a matrix. *Applied Numerical Mathematics: Transactions of IMACS*, 57(11–12):1214–1229, November/December 2007. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic).

Bekas:2008:CLI

[BKS08] C. Bekas, E. Kokiopoulou, and Yousef Saad. Computation of large invariant subspaces using polynomial filtered Lanczos iterations with applications in density functional theory. *SIAM Journal on Matrix Analysis and Applications*, 30(1):397–418, ???? 2008. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Brezinski:2018:SST

[BRZS18] Claude Brezinski, Michela Redivo-Zaglia, and Yousef Saad. Shanks sequence transformations and Anderson acceleration. *SIAM Review*, 60(3):646–669, ???? 2018. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Brown:1987:HKM

[BS87] Peter N. Brown and Youcef Saad. Hybrid Krylov methods for nonlinear system of equations. Technical Report CSRD 699, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, November 1987. 42 + 4 pp.

Brown:1989:GCN

[BS89] P. N. Brown and Y. Saad. Globally convergent nonlinear Krylov subspace methods. Technical Report 89-57, Research Institute for Advanced Computer Science, NASA Ames, Moffett field, CA, 1989.

Brown:1990:HKM

[BS90] Peter N. Brown and Youcef Saad. Hybrid Krylov methods for nonlinear systems of equations. *SIAM Journal on Scientific and Statistical Computing*, 11(3):450–481, May 1990. CODEN SIJCD4. ISSN 0196-5204.

Brown:1991:PMS

[BS91] Peter N. Brown and Youcef Saad. Projection methods for solving nonlinear systems of equations. In *Nematics (Orsay, 1990)*, volume 332 of *NATO Adv. Sci. Inst. Ser. C Math. Phys. Sci.*, pages 341–355. Kluwer Academic Publishers, Norwell, MA, USA, and Dordrecht, The Netherlands, 1991.

Brown:1994:CTN

[BS94] Peter N. Brown and Youcef Saad. Convergence theory of nonlinear Newton–Krylov algorithms. *SIAM Journal on Optimization*, 4(2):297–330, May 1994. CODEN SJOPE8. ISSN 1052-6234 (print), 1095-7189 (electronic).

Bollhofer:2001:FAI

[BS02a] Matthias Bollhöfer and Yousef Saad. A factored approximate inverse preconditioner with pivoting. *SIAM Journal on Matrix Analysis and Applications*, 23(3):692–705, 2001/2002. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Bollhofer:2002:FAI

[BS02b] Matthias Bollhöfer and Yousef Saad. A factored approximate inverse preconditioner with pivoting. *SIAM Journal on Matrix Analysis and Applications*, 23(3):692–705, 2002. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/37212`.

Bollhofer:2002:RBI

[BS02c] Matthias Bollhöfer and Yousef Saad. On the relations between ILUs and factored approximate inverses. *SIAM Journal on Matrix Analysis and Applications*, 24(1):219–237, 2002. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/37211`.

Bekas:2005:CSE

[BS05a] Constantine Bekas and Yousef Saad. Computation of smallest eigenvalues using spectral Schur complements. *SIAM Journal on Scientific Computing*, 27(2):458–481, March 2005. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/60352`.

Bollhofer:2005:MPC

[BS05b] Matthias Bollhöfer and Yousef Saad. Multilevel preconditioners constructed from inverse-based

ILUs. *SIAM Journal on Scientific Computing*, 27(5):1627–1650, September 2005. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/volume-27/art_60837.html`.

Burdick:2003:PIT

[BSK+03] W. Russell Burdick, Yousef Saad, Leeor Kronik, Igor Vasiliev, Manish Jain, and James R. Chelikowsky. Parallel implementation of time-dependent density functional theory. *Computer Physics Communications*, 156 (1):22–42, December 1–15, 2003. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0010465503004132`.

Bellalij:2008:ASK

[BSS09] M. Bellalij, Y. Saad, and H. Sadok. Analysis of some Krylov subspace methods for normal matrices via approximation theory and convex optimization. *Electronic Transactions on Numerical Analysis*, 33:17–30, 2008/2009. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.33.2008-2009/pp17-30.dir/pp17-30.pdf`.

Bellalij:2010:FAA

[BSS10] M. Bellalij, Y. Saad, and H. Sadok. Further analysis of the Arnoldi process for eigenvalue problems. *SIAM Journal on Numerical Analysis*, 48(2): 393–407, ???? 2010. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Bekas:2005:CCD

[BSTC05] Constantine Bekas, Yousef Saad, Murilo L. Tiago, and James R. Chelikowsky. Computing charge densities with partially reorthogonalized Lanczos. *Computer Physics Communications*, 171 (3):175–186, October 1, 2005. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0010465505003103`.

Boley:1989:PIM

[BTS+89] Daniel L. Boley, Donald G. Truhlar, Youcef Saad, Robert E. Wyatt, and Lee A. Collins, editors. *Practical Iterative Methods for Large Scale Computations: Proceedings of the Minnesota Supercomputer Institute Workshop on Practical Iterative Methods for Large Scale Computations, Minneapolis, 23–25 October 1988*. North-Holland Publishing Co., Amsterdam, The Netherlands, 1989. ISBN 0-444-88023-2. LCCN QA297.8.M56 1988. Reprinted from *Computer Physics Communications*, 53(1–3), 1989.

Brezinski:2001:NAH

[BW01] Claude Brezinski and Luc Wuytack, editors. *Numerical Analysis: Historical Developments in the 20th Century*. Elsevier, Amsterdam, The Netherlands, 2001. ISBN 0-444-50617-9 (hardcover), 0-444-59858-8 (e-book). v + 505 pp. LCCN QA297 .N843 2001. URL https://www.sciencedirect.com/science/article/pii/B9780444506177500033.

Chen:2011:CLS

[CAS11] Jie Chen, Mihai Anitescu, and Yousef Saad. Computing $f(A)b$ via least squares polynomial approximations. *SIAM Journal on Scientific Computing*, 33(1): 195–222, ???? 2011. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sisc/resource/1/sjoce3/v33/i1/p195_s1.

Cai:2018:SSM

[CCE+18] Difeng Cai, Edmond Chow, Lucas Erlandson, Yousef Saad, and Yuanzhe Xi. SMASH: structured matrix approximation by separation and hierarchy. *Numerical Linear Algebra with Applications*, 25(6):e2204, 25, 2018. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Calgaro:2010:IIL

[CCS10] Caterina Calgaro, Jean-Paul Chehab, and Yousef Saad. Incremental incomplete LU factorizations with applications. *Numerical Linear Algebra with Applications*, 17(5):811–837, October 2010. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Chan:1998:PSP

[CCSY98] T. F. Chan, E. Chow, Y. Saad, and M. C. Yeung. Preserving symmetry in preconditioned Krylov subspace methods. *SIAM Journal on Scientific Computing*, 20(2):568–581, March 1998. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/31155.

Chan:1996:BNR

[Cha96] Tony F. Chan. Book news & reviews: Iterative Methods for Sparse Linear Systems by Yousef Saad. *IEEE Computational Science & Engineering*, 3(4):87–90, Winter 1996. CODEN ISCEE4. ISSN 1070-9924 (print), 1558-190X (electronic).

Chen:2004:ARS

[CJ04] Guizhi Chen and Zhongxiao Jia. An analogue of the results of Saad and Stewart for harmonic Ritz vectors. *Journal of Computational and Applied Mathematics*, 167(2):493–498, June 1, 2004. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0377042703009403.

Chelikowsky:1996:MDQ

[CJWS96] James R. Chelikowsky, Xiaodun Jing, K. Wu, and Y. Saad. Molecular dynamics with quantum forces: Vibrational spectra of localized systems. *Physical Review B: Condensed Matter and*

Materials Physics, 53(18):12071–12079, ???? 1996. CODEN PRBMDO. ISSN 1098-0121. URL http://link.aps.org/doi/10.1103/PhysRevB.53.12071.

Chelikowsky:2003:URS

[CKV+03] James R. Chelikowsky, Leeor Kronik, Igor Vasiliev, Manish Jain, and Yousef Saad. Using real space pseudopotentials for the electronic structure problem. In *Handbook of numerical analysis, Vol. X*, Handb. Numer. Anal., X, pages 613–637. North-Holland Publishing Co., Amsterdam, The Netherlands, 2003.

Carson:2024:TUC

[CLS24] Erin Carson, Jörg Liesen, and Zdeněk Strakoš. Towards understanding CG and GMRES through examples. *Linear Algebra and its Applications*, 692 (??):241–291, July 1, 2024. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0024379524001381.

Chen:2009:FAG

[CrFS09] Jie Chen, Haw ren Fang, and Yousef Saad. Fast approximate kNN graph construction for high dimensional data via recursive Lanczos bisection. *J. Mach. Learn. Res.*, 10:1989–2012, 2009. ISSN 1532-4435.

Chan:1985:MAH

[CS85a] T. F. Chan and Y. Saad. Multigrid algorithms on the hypercube multiprocessor. Research Report 368, Department of Computer Science, Yale University, New Haven, CT, USA, February 1985.

Chan:1985:IMS

[CS85b] Tony F. Chan and Youcef Saad. Iterative methods for solving bordered systems with applications to continuation methods. *SIAM Journal on Scientific and Statistical Computing*, 6(2):438–451, April 1985. CODEN SIJCD4. ISSN 0196-5204.

Chan:1986:MAH

[CS86] T. F. Chan and Y. Saad. Multigrid algorithms on the hypercube multiprocessor. *IEEE Trans. Comput.*, C-35(11):969–977, November 1986. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic). URL http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1676698.

Cai:1992:ODD

[CS92] X. C. Cai and Y. Saad. Overlapping domain decomposition algorithms for general sparse matrices. Technical report, Army High Performance Computing Research Center, 1992. In preparation.

Cai:1993:ODD

[CS93] X. C. Cai and Y. Saad. Overlapping domain decomposition algorithms for general sparse matrices. Technical Report 93-027, Army High Performance Computing Research Center, Minneapolis, MN, USA, 1993. submitted.

Chow:1994:AIP

[CS94] E. Chow and Y. Saad. Approximate inverse preconditioners for general sparse matrices. Technical Report UMSI 94-101, University of Minnesota Supercomputer Institute, Minneapolis, MN 55415, USA, May 1994.

Cai:1996:ODD

[CS96] Xiao-Chuan Cai and Yousef Saad. Overlapping domain decomposition algorithms for general sparse matrices. *Numerical Linear Algebra with Applications*, 3(3):221–237, May/June 1996. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL `http://www3.interscience.wiley.com/cgi-bin/abstract?ID=15000988`.

Castillo:1997:TSA

[CS97a] Paul Castillo and Yousef Saad. Tensor sum approximation preconditioners. In *Proceedings of the Eighth SIAM Conference on Parallel Processing for Scientific Computing (Minneapolis, MN, 1997)*, page 8. SIAM Press, Philadelphia, PA, USA, 1997.

Chapman:1997:DAK

[CS97b] Andrew Chapman and Yousef Saad. Deflated and augmented Krylov subspace techniques. *Numerical Linear Algebra with Applications*, 4(1):43–66, January/February 1997. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL `http://www3.interscience.wiley.com/cgi-bin/abstract?ID=15001011; http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=15001011&PLACEBO=IE.pdf`.

Chow:1997:IPS

[CS97c] Edmond Chow and Yousef Saad. *ILUS*: an incomplete *LU* preconditioner in sparse skyline format. *International Journal for Numerical Methods in Fluids*, 25(7):739–748, 1997. CODEN IJNFDW. ISSN 0271-2091 (print), 1097-0363 (electronic).

Chow:1997:AIT

[CS97d] Edmond Chow and Yousef Saad. Approximate inverse techniques for block-partitioned matrices. *SIAM Journal on Scientific Computing*, 18(6):1657–1675, November 1997. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/28157`.

Chow:1997:ESI

[CS97e] Edmond Chow and Yousef Saad. Experimental study of ILU preconditioners for indefinite matrices. *Journal of Computational and Applied Mathematics*, 86(2):387–414, 1997. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic).

Chow:1997:PAI

[CS97f] Edmond Chow and Yousef Saad. Parallel approximate inverse preconditioners. In *Proceedings of the Eighth SIAM Conference on Parallel Processing for Scientific Computing (Minneapolis, MN, 1997)*, page 10. SIAM Press, Philadelphia, PA, USA, 1997.

Castillo:1998:PME

[CS98a] Paul Castillo and Yousef Saad. Preconditioning the matrix exponential operator with applications. *Journal of Scientific Computing*, 13(3):275–302, 1998. CODEN JSCOEB. ISSN 0885-7474 (print), 1573-7691 (electronic).

Chow:1998:AIP

[CS98b] Edmond Chow and Yousef Saad. Approximate inverse preconditioners via sparse-sparse iterations. *SIAM Journal on Scientific Computing*, 19(3):995–1023, May 1998. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/27041`.

Calvez:1999:MKA

[CS99] Caroline Le Calvez and Yousef Saad. Modified Krylov acceleration for parallel environments. *Applied Numerical Mathematics: Transactions of IMACS*, 30(2–3): 191–212, June 10, 1999. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). URL `http://www.elsevier.com/cgi-bin/cas/tree/store/apnum/cas_sub/browse/browse.cgi?year=1999&volume=30&issue=2-3&aid=975`. Iterative methods and preconditioners (Berlin, 1997).

Chen:2008:TSO

[CS08] Jie Chen and Yousef Saad. On the tensor SVD and the optimal low rank orthogonal approximation of tensors. *SIAM Journal on Matrix Analysis and Applications*, 30(4):1709–1734, 2008. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Chen:2009:LVV

[CS09a] Jie Chen and Yousef Saad. Lanczos vectors versus singular vectors for effective dimension reduction. *IEEE Transactions on Knowledge and Data Engineering*, 21(8):1091–1103, ???? 2009. CODEN ITKEEH. ISSN 1041-4347 (print), 1558-2191 (electronic). URL `http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4674352`.

Chen:2009:TSO

[CS09b] Jie Chen and Yousef Saad. On the tensor SVD and the optimal low rank orthogonal approximation of tensors. *SIAM Journal on Matrix Analysis and Applications*, 30(4):1709–1734, ???? 2009. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Chen:2012:DSE

[CS12] Jie Chen and Yousef Saad. Dense subgraph extraction with application to community detection. *IEEE Transactions* *on Knowledge and Data Engineering*, 24(7):1216–1230, ???? 2012. CODEN ITKEEH. ISSN 1041-4347 (print), 1558-2191 (electronic). URL http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5677532.

Chow:2014:PKS

[CS14] Edmond Chow and Yousef Saad. Preconditioned Krylov subspace methods for sampling multivariate Gaussian distributions. *SIAM Journal on Scientific Computing*, 36(2):A588–A608, ???? 2014. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Chen:2018:PEE

[CS18] Jie Chen and Yousef Saad. A posteriori error estimate for computing $\mathrm{tr}(f(A))$ by using the Lanczos method. *Numerical Linear Algebra with Applications*, 25(5):??, October 2018. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Chan:1985:SEP

[CSS85] T. Chan, Y. Saad, and M. Schultz. Solving elliptic partial differential equations on the hypercube multiprocessor. Technical Report YALEU/DCS/RR-373, Department of Computer Science, Yale University, New Haven, CT, USA, March 1985.

Chan:1987:SEP

[CSS87] Tony F. Chan, Youcef Saad, and Martin H. Schultz. Solving elliptic partial differential equations on the hypercube multiprocessor. *Applied Numerical Mathematics: Transactions of IMACS*, 3(??):81–88, 1987. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic).

Cai:2002:PIM

[CSS02] X. Cai, Y. Saad, and M. Sosonkina. Parallel iterative methods in modern physical applications. In *Computational science—ICCS 2002, Part II (Amsterdam)*, volume 2330 of *Lecture Notes in Computer Science*, pages 345–354. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 2002. URL http://link.springer-ny.com/link/service/series/0558/bibs/2330/23300345.htm; http://link.springer-ny.com/link/service/series/0558/papers/2330/23300345.pdf.

Chapman:2000:HOI

[CSW00] Andrew Chapman, Yousef Saad, and Larry Wigton. High-order ILU preconditioners for CFD problems. *International Journal for Numerical Methods in Fluids*, 33(6):767–788, 2000. CODEN IJNFDW. ISSN 0271-2091 (print), 1097-0363 (electronic).

Chen:2022:GCS

[CSZ22] Jie Chen, Yousef Saad, and Zechen Zhang. Graph coarsening: from scientific computing to machine learning. *SeMA Journal*, 79(1):187–223, 2022. CODEN ???? ISSN 2254-

3902. URL https://doi.org/10.1007/s40324-021-00282-x.

Chelikowsky:1995:APS

[CTJ+95] James R. Chelikowsky, N. Troullier, X. Jing, D. Dean, N. Binggeli, K. Wu, and Y. Saad. Algorithms for predicting the structural properties of clusters. *Computer Physics Communications*, 85(3):325–335, March 1995. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL http://www.sciencedirect.com/science/article/pii/001046559400147T.

Chelikowsky:1993:FDP

[CTS93] James R. Chelikowsky, N. Troullier, and Y. Saad. The finite difference pseudo-potential method: electronic structure calculations without a basis. Technical Report UMSI 93-234, University of Minnesota Supercomputer Institute, Minneapolis, MN 55415, USA, December 1993. appeared in Phys. Rev. Letters, vol. 72 (1994).

Chelikowsky:1994:FDP

[CTS94] James R. Chelikowsky, N. Troullier, and Y. Saad. The finite difference pseudo-potential method: electronic structure calculations without a basis. *Physical Review Letters*, 72:1240–1243, 1994. CODEN PRLTAO. ISSN 0031-9007 (print), 1079-7114 (electronic), 1092-0145. URL http://link.aps.org/doi/10.1103/PhysRevLett.72.1240.

Chelikowsky:2007:AEE

[CTSZ07] James R. Chelikowsky, Murilo L. Tiago, Yousef Saad, and Yunkai Zhou. Algorithms for the evolution of electronic properties in nanocrystals. *Computer Physics Communications*, 177 (1–2):1–5, July 2007. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0010465507000458.

Chelikowsky:1994:HOF

[CTWS94] James R. Chelikowsky, N. Troullier, K. Wu, and Y. Saad. Higher-order finite-difference pseudopotential method: An application to diatomic molecules. *Physical Review B: Condensed Matter and Materials Physics*, 50(16):11355–11364, ???? 1994. CODEN PRBMDO. ISSN 1098-0121. URL http://link.aps.org/doi/10.1103/PhysRevB.50.11355.

Chelikowsky:2009:AEV

[CZC+09] James R. Chelikowsky, Alexey T. Zayak, T-L Chan, Murilo L. Tiago, Yunkai Zhou, and Yousef Saad. Algorithms for the electronic and vibrational properties of nanocrystals. *Journal of Physics: Condensed Matter*, 21 (6):064207, February 11, 2009. CODEN JCOMEL. ISSN 0953-8984 (print), 1361-648x (electronic).

Dillon:2018:HLR

[DKXS18] Geoffrey Dillon, Vassilis Kalantzis, Yuanzhe Xi, and Yousef Saad. A hierarchical low rank Schur complement preconditioner for indefinite linear systems. *SIAM Journal on Scientific Computing*, 40 (4):A2234–A2252, ???? 2018. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

delaGrandmaison:2005:ECC

[dlGGS+05] Emmanuel Lorin de la Grandmaison, Shivaraju B. Gowda, Yousef Saad, Murilo L. Tiago, and James R. Chelikowsky. Efficient computation of the coupling matrix in time-dependent density functional theory. *Computer Physics Communications*, 167(1):7–22, 2005. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic).

DiNapoli:2016:EEE

[DPS16] Edoardo Di Napoli, Eric Polizzi, and Yousef Saad. Efficient estimation of eigenvalue counts in an interval. *Numerical Linear Algebra with Applications*, 23(4): 674–692, August 2016. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Datta:1991:SLL

[DS91a] B. N. Datta and Y. Saad. Solution of large linear algebra problems in control. Presentation at the 1986 SIAM meeting on Linear Algebra and its Applications, Boston Mass., Aug 1986, 1991.

Datta:1991:AML

[DS91b] Biswa Nath Datta and Youcef Saad. Arnoldi methods for large Sylvester-like observer problems, and an associated algorithm for partial spectrum assignment. *Linear Algebra and its Applications*, 154/156:225–244, 1991. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

El-Guide:2020:RAM

[EGMS20] Mohamed El-Guide, Agnieszka Międlar, and Yousef Saad. A rational approximation method for solving acoustic nonlinear eigenvalue problems. *Engineering Analysis with Boundary Elements*, 111:44–54, 2020. ISSN 0955-7997 (print), 1873-197x (electronic).

Elman:1986:HCK

[ESS86] Howard C. Elman, Youcef Saad, and Paul E. Saylor. A hybrid Chebyshev Krylov subspace algorithm for solving nonsymmetric systems of linear equations. *SIAM Journal on Scientific and Statistical Computing*, 7(3):840–855, July 1986. CODEN SIJCD4. ISSN 0196-5204.

Fitzgibbon:1986:MCM

[Fit86] W. E. Fitzgibbon, editor. *Mathematical and computational methods in seismic exploration and reservoir modeling: [proceedings of the Conference on mathematical and computational methods in seismic exploration and reservoir modeling; Houston, Texas, January 21–24, 1985]*. SIAM Press, Philadelphia, PA, USA, 1986. ISBN 0-89871-205-x. LCCN TN269 .C654 1985.

Ferreira:1996:PAI

[FRSY96] A. Ferreira, J. Rolim, Y. Saad, and T. Yang, editors. *Parallel algorithms for irregularly structured problems*, volume 1117 of *Lecture Notes in Computer Science*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1996. ISBN 3-540-61549-0. LCCN QA76.642 .I59 1996.

Fan:2020:SAP

[FSUS20] Tiffany Fan, David I. Shuman, Shashanka Ubaru, and Yousef Saad. Spectrum-adapted polynomial approximation for matrix functions with applications in graph signal processing. *Algorithms (Basel)*, 13(11):Paper No. 295, 22, November 2020. CODEN ALGOCH. ISSN 1999-4893 (electronic). URL `https://www.mdpi.com/1999-4893/13/11/295`.

Ferng:1992:SMC

[FWPS92] W. Ferng, K. Wu, S. Petiton, and Y. Saad. Sparse matrix computations on the massively parallel computers. Technical Report 92-084, Army High Performance Computing Research Center, Minneapolis, MN, 1992. (A short version of this report appeared in International Journal of Modern Physics).

Golub:1994:RAI

[GGL94] Gene Golub, Anne Greenbaum, and Mitchell Luskin, editors. *Recent advances in iterative methods: [papers from the IMA Workshop on Iterative Methods for Sparse and Structured Problems, held in Minneapolis, Minnesota, February 24–March 1, 1992]*, volume 60 of *The IMA Volumes in Mathematics and its Applications*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1994. ISBN 0-387-94252-1 (New York), 3-540-94252-1 (Berlin). LCCN QA297.8 .R43 1994. URL `http://zbmath.org/?q=an:0790.00015`.

Giraud:2010:SAS

[GHS10] L. Giraud, A. Haidar, and Y. Saad. Sparse approximations of the Schur complement for parallel algebraic hybrid solvers in 3*D*. *Numerical Mathematics. Theory, Methods and Applications*, 3(3):276–294, 2010. CODEN ???? ISSN 1004-8979 (print), 2079-7338 (electronic).

Gear:1981:ISL

[GS81] C. W. Gear and Y. Saad. Iterative solution of linear equations in ODE codes. Report UIUCDCS-R-81-1054, Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL, USA, January 1981. 33 pp.

Gear:1983:ISL

[GS83] C. W. Gear and Y. Saad. Iterative solution of linear equations in ODE codes. *SIAM Journal on Scientific and Statistical Computing*, 4(4):583–601, December 1983. CODEN SIJCD4. ISSN 0196-5204.

Gallopoulos:1987:PBC

[GS87] E. J. (Efstratios J.) Gallopoulos and Y. Saad. A parallel block cyclic reduction algorithm for the fast solution of elliptic equations. Technical Report CSRD 659, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, 1987. 14 pp.

Gallopoulos:1988:PBCb

[GS88a] E. Gallopoulos and Y. Saad. A parallel block cyclic reduction algorithm for the fast solution of elliptic equations. In *Supercomputing (Athens, 1987)*, volume 297 of *Lecture Notes in Computer Science*, pages 563–575. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1988.

Gallopoulos:1988:PBCa

[GS88b] E. J. (Efstratios J.) Gallopoulos and Y. Saad. A parallel block cyclic reduction algorithm for the fast solution of elliptic equations. Technical Report CSRD 753, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, 1988. 17 + 7 pp.

Gallopoulos:1989:PSPb

[GS89a] E. Gallopoulos and Y. Saad. On the parallel solution of parabolic equations. In R. De Groot, editor, *Proceedings of the International Conference on Supercomputing 1989, Heraklion, Crete, June 5–9, 1989*. ACM press, 1989.

Gallopoulos:1989:PBC

[GS89b] E. Gallopoulos and Y. Saad. A parallel block cyclic reduction algorithm for the fast solution of elliptic equations. *Parallel Computing*, 10(2):143–159, April 1989. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic).

Gallopoulos:1989:PSPa

[GS89c] E. J. (Efstratios J.) Gallopoulos and Y. Saad. On the parallel solution of parabolic equations. Technical Report CSRD 854, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, June 1989. 22 pp.

Gallopoulos:1989:SFE

[GS89d] E. J. (Efstratios J.) Gallopoulos and Youcef Saad. Some fast elliptic solvers on parallel architectures and their complexities. Technical Report CSRD 862, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, March 1989. 29 pp.

Gallopoulos:1990:PSP

[GS90a] E. Gallopoulos and Y. Saad. Parallel solution of parabolic equations by the rational approximation approach. Technical report, RIACS, NASA Ames research center, Moffett Field, CA, 1990. In preparation.

Gallopoulos:1990:ESP

[GS90b] E. J. (Efstratios J.) Gallopoulos and Y. Saad. Efficient solution of parabolic equations by polynomial approximation methods. Technical Report CSRD 969, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, February 1990. 32 pp.

Gallopoulos:1992:ESPb

[GS92a] E. Gallopoulos and Y. Saad. Efficient solution of parabolic equations by Krylov approximation methods. *SIAM Journal on Scientific and Statistical Computing*, 13(5):1236–1264, September 1992. CODEN SIJCD4. ISSN 0196-5204.

Gallopoulos:1992:ESPa

[GS92b] E. J. (Efstratios J.) Gallopoulos and Y. Saad. Efficient solution of parabolic equations by Krylov approximation methods. Technical Report CSRD 1147, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, January 1992. 30 pp.

Goehring:1994:HAA

[GS94] T. Goehring and Y. Saad. Heuristic algorithms for automatic graph partitioning. Technical Report UMSI 94-29, University of Minnesota Supercomputer Institute, Minneapolis, MN 55415, USA, February 1994. submitted.

Guillaume:2003:RAP

[GSS03] Philippe Guillaume, Yousef Saad, and Masha Sosonkina. Rational approximation preconditioners for sparse linear systems. *Journal of Computational and Applied Mathematics*, 158(2):419–442, 2003. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic).

Henon:2006:PMI

[HS06] Pascal Hénon and Yousef Saad. A parallel multistage ILU factorization based on a hierarchical graph decomposition. *SIAM Journal on Scientific Computing*, 28(6):2266–2293, January 2006. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

He:2024:NCN

[HTZ+24] Huan He, Ziyuan Tang, Shifan Zhao, Yousef Saad, and Yuanzhe Xi. nlTGCR: a class of nonlinear acceleration procedures based on conjugate residuals. *SIAM Journal on Matrix Analysis and Applications*, 45(1):712–743, 2024. CODEN SJMAEL. ISSN 0895-4798,1095-7162. URL `https://doi.org/10.1137/23M1576360`.

Ipsen:1985:IPA

[IS85] I. Ipsen and Y. Saad. The impact of parallel architectures on the solution of eigenvalue problems. Technical Report YALEU/DCS/RR-444, Department of Computer Science, Yale University, New Haven, CT, USA, December 1985.

Ipsen:1986:IPAb

[IS86a] I.C.F.Ipsen and Y. Saad. The impact of parallel architectures on large sparse matrix techniques. In R. Willoughby J. Cullum, editor, *Proceeding of the 1985 IBM workshop on large eigenvalue computations, Oberlech/Austria, 8-12 July 1985*. North-Holland Publishing Co., Amsterdam, The Netherlands, 1986. To appear.

Ipsen:1986:IPAa

[IS86b] I. Ipsen and Y. Saad. The impact of parallel architectures on the solution of eigenvalue problems. In J. Cullum and R. A. Willoughby, editors, *Large Scale Eigenvalue Problems*. North-Holland, Vol. 127 Mathematics Studies Series, Amsterdam, The Netherlands, 1986.

Ipsen:1984:CDL

[ISS84] I. Ipsen, Y. Saad, and M. H. Schultz. Complexity of dense linear system solution on a multiprocessor ring. Technical Report 349, Department of Computer Science, Yale University, New Haven, CT, USA, 1984.

Ipsen:1986:CDL

[ISS86] Ilse C. F. Ipsen, Youcef Saad, and Martin H. Schultz. Complexity of dense-linear-system solution on a multiprocessor ring. *Linear Algebra and its Applications*, 77:205–239, 1986. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). Special volume on parallel computing.

Ilic:2007:LSS

[ITS07] M. Ilić, I. W. Turner, and Y. Saad. Linear system solution by null-space approximation and projection (SNAP). *Numerical Linear Algebra with Applications*, 14(1):61–82, ???? 2007. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Jay:1999:ESC

[JKSC99] Laurent O. Jay, Hanchul Kim, Yousef Saad, and James R. Chelikowsky. Electronic structure calculations for plane-wave codes without diagonalization. *Computer Physics Communications*, 118(1):21–30, April 1999. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0010465598001921.

Johnsson:1987:ADM

[JSS87] S. Lennart Johnsson, Youcef Saad, and Martin H. Schultz. Alternating direction methods on multiprocessors. *SIAM Journal on Scientific and Statistical Computing*, 8(5):686–700, September 1987. CODEN SIJCD4. ISSN 0196-5204.

Jones:2007:CBI

[JSS07] J. Jones, M. Sosonkina, and Y. Saad. Component-based iterative methods for sparse linear systems. *Concurrency and Computation: Practice and Experience*, 19(5):625–635, April 10, 2007. CODEN CCPEBO.

ISSN 1532-0626 (print), 1532-0634 (electronic).

Jing:1994:IMD

[JTD+94] Xiaodun Jing, N. Troullier, David Dean, N. Binggeli, James R. Chelikowsky, K. Wu, and Y. Saad. Ab initio molecular-dynamics simulations of Si clusters using the higher-order finite-difference-pseudopotential method. *Physical Review B: Condensed Matter and Materials Physics*, 50(16):12234–12237, ???? 1994. CODEN PRBMDO. ISSN 1098-0121. URL `http://link.aps.org/doi/10.1103/PhysRevB.50.12234`.

Kokiopoulou:2009:TOE

[KCS09] E. Kokiopoulou, J. Chen, and Y. Saad. Trace optimization and eigenproblems in dimension reduction methods. Technical Report UMSI-2009-31, Minnesota Supercomputer Institute, University of Minnesota, Minneapolis, MN, USA, 2009.

Kokiopoulou:2011:TOE

[KCS11] E. Kokiopoulou, J. Chen, and Y. Saad. Trace optimization and eigenproblems in dimension reduction methods. *Numerical Linear Algebra with Applications*, 18 (3):565–602, May 2011. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Kalantzis:2018:DDA

[KKPS18] Vassilis Kalantzis, James Kestyn, Eric Polizzi, and Yousef Saad. Domain decomposition approaches for accelerating contour integration eigenvalue solvers for symmetric eigenvalue problems. *Numerical Linear Algebra with Applications*, 25(5):??, October 2018. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Kalantzis:2016:SSC

[KLS16] Vassilis Kalantzis, Ruipeng Li, and Yousef Saad. Spectral Schur complement techniques for symmetric eigenvalue problems. *Electronic Transactions on Numerical Analysis*, 45:305–329, 2016. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.45.2016/pp305-329.dir/pp305-329.pdf`; `http://etna.mcs.kent.edu/volumes/2011-2020/vol45/abstract.php?vol=45&pages=305-329`.

Kalantzis:2018:SID

[KMB+18] Vassilis Kalantzis, A. Cristiano I. Malossi, Costas Bekas, Alessandro Curioni, Efstratios Gallopoulos, and Yousef Saad. A scalable iterative dense linear system solver for multiple right-hand sides in data analytics. *Parallel Computing*, 74(??):136–153, ???? 2018. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0167819117302119`.

Kaagstrom:1983:MPP

[KR83] Bo Kågström and Axel Ruhe,

editors. *Matrix Pencils: Proceedings of a Conference Held at Pite Havsbad, Sweden, March 22–24, 1982*, volume 973 of *Lecture Notes in Mathematics*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1983. CODEN LNMAA2. ISBN 0-387-11983-3 (print), 3-540-11983-3 (print), 3-540-39447-8 (e-book). ISSN 0075-8434 (print), 1617-9692 (electronic). LCCN QA3 .L28 no. 973. URL http://link.springer.com/book/10.1007/BFb0062089; http://www.springerlink.com/content/978-3-540-39447-1.

Kerkhoven:1987:ATD

[KS87] T. Kerkhoven and Y. Saad. Acceleration techniques for decoupling algorithms in semiconductor simulation. Technical Report 684, University of Illinois, CSRD, Urbana, IL., 1987.

Kerkhoven:1992:AMC

[KS92] T. Kerkhoven and Y. Saad. On acceleration methods for coupled nonlinear elliptic systems. *Numerische Mathematik*, 60(4):525–548, January 1992. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Kokiopoulou:2005:FRU

[KS05a] Effrosyni Kokiopoulou and Yousef Saad. Face recognition using OPRA-faces. In *Proceedings. Fourth International Conference on Machine Learning and Applications, 2005*, page ?? IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2005. URL http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1607433.

Kokiopoulou:2005:ONP

[KS05b] Effrosyni Kokiopoulou and Yousef Saad. Orthogonal neighborhood preserving projections. In *Fifth IEEE International Conference on Data Mining*, page ?? IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2005. URL http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1565684.

Kokiopoulou:2007:ONP

[KS07] Effrosyni Kokiopoulou and Yousef Saad. Orthogonal neighborhood preserving projections: a projection-based dimensionality reduction technique. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 29(12):2143–2156, December 2007. CODEN ITPIDJ. ISSN 0162-8828, 1939-3539, 2160-9292. URL http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4359299.

Kechroud:2003:PTS

[KSS03] Riyad Kechroud, Azzeddine Soulaimani, and Yousef Saad. Preconditioning techniques for the solution of the Helmholtz equation by the finite element method. In *Computational science and its applications—ICCSA 2003. Part II*, volume

2668 of *Lecture Notes in Computer Science*, pages 847–858. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 2003.

Kechroud:2004:PTS

[KSSG04] Riyad Kechroud, Azzeddine Soulaimani, Yousef Saad, and Shivaraju Gowda. Preconditioning techniques for the solution of the Helmholtz equation by the finite element method. *Mathematics and Computers in Simulation*, 65(4-5):303–321, 2004. CODEN MCSIDR. ISSN 0378-4754 (print), 1872-7166 (electronic).

Kalantzis:2018:BAM

[KXS18] Vassilis Kalantzis, Yuanzhe Xi, and Yousef Saad. Beyond automated multilevel substructuring: Domain decomposition with rational filtering. *SIAM Journal on Scientific Computing*, 40 (4):C477–C502, ???? 2018. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Little:2002:PPS

[LLCS02] L. Little, Z. Li, H. G. Choi, and Y. Saad. Particle partitioning strategies for the parallel computation of solid-liquid flows. *Computers and Mathematics with Applications*, 43(12): 1591–1616, June 2002. CODEN CMAPDK. ISSN 0898-1221 (print), 1873-7668 (electronic).

Little:2003:BPSa

[LS03] Leigh Little and Yousef Saad. Block preconditioners for saddle point problems. *Numerical Algorithms*, 33(1–4):367–379, August 2003. CODEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL `http://ipsapp007.kluweronline.com/content/getfile/5058/46/30/abstract.htm`; `http://ipsapp007.kluweronline.com/content/getfile/5058/46/30/fulltext.pdf`. International Conference on Numerical Algorithms, Vol. I (Marrakesh, 2001).

Li:2005:CVI

[LS05a] Na Li and Yousef Saad. Crout versions of ILU factorization with pivoting for sparse symmetric matrices. *Electronic Transactions on Numerical Analysis*, 20:75–85, 2005. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.20.2005/pp75-85.dir/pp75-85.pdf`.

Li:2005:SRV

[LS05b] Zhongze Li and Yousef Saad. SchurRAS: A restricted version of the overlapping Schur complement preconditioner. *SIAM Journal on Scientific Computing*, 27(5):1787–1801, September 2005. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/volume-27/art_60835.html`.

Li:2006:MMI

[LS06] Na Li and Yousef Saad. MIQR: A multilevel incomplete QR preconditioner for large sparse least-squares problems. *SIAM Journal on Matrix Analysis and Applications*, 28(2):524–550, January 2006. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Li:2013:DCL

[LS13a] Ruipeng Li and Yousef Saad. Divide and conquer low-rank preconditioners for symmetric matrices. *SIAM Journal on Scientific Computing*, 35(4):A2069–A2095, ???? 2013. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Li:2013:GAP

[LS13b] Ruipeng Li and Yousef Saad. GPU-accelerated preconditioned iterative linear solvers. *The Journal of Supercomputing*, 63(2): 443–466, February 2013. CODEN JOSUED. ISSN 0920-8542 (print), 1573-0484 (electronic). URL `http://link.springer.com/article/10.1007/s11227-012-0825-3`.

Li:2017:LRC

[LS17] Ruipeng Li and Yousef Saad. Low-rank correction methods for algebraic domain decomposition preconditioners. *SIAM Journal on Matrix Analysis and Applications*, 38(3):807–828, 2017. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Li:2003:CVG

[LSC03] Na Li, Yousef Saad, and Edmond Chow. Crout versions of *ILU* for general sparse matrices. *SIAM Journal on Scientific Computing*, 25(2):716–728, March 2003. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/40509`.

Lee:1986:EMS

[LSS86] D. Lee, Y. Saad, and M. H. Schultz. An efficient method with for solving the three-dimensional wide angle wave equation. Technical Report YALEU/DCS/RR-463, Department of Computer Science, Yale University, New Haven, CT, USA, 1986.

Li:2003:PPV

[LSS03a] Zhongze Li, Yousef Saad, and Masha Sosonkina. pARMS: a parallel version of the algebraic recursive multilevel solver. *Numerical Linear Algebra with Applications*, 10(5–6):485–509, July/September 2003. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). Preconditioning, 2001 (Tahoe City, CA).

Little:2003:BPSb

[LSS03b] Leigh Little, Yousef Saad, and Laurent Smoch. Block *LU* preconditioners for symmetric and nonsymmetric saddle point problems. *SIAM Journal on Scientific Computing*, 25(2):729–748, March 2003. CODEN SJOCE3.

ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/40551.

Lin:2016:ASD

[LSY16] Lin Lin, Yousef Saad, and Chao Yang. Approximating spectral densities of large matrices. *SIAM Review*, 58(1):34–65, 2016. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Li:2019:ESL

[LXES19] Ruipeng Li, Yuanzhe Xi, Lucas Erlandson, and Yousef Saad. The Eigenvalues Slicing Library (EVSL): Algorithms, implementation, and software. *SIAM Journal on Scientific Computing*, 41 (4):C393–C415, ???? 2019. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Li:2016:SCB

[LXS16] Ruipeng Li, Yuanzhe Xi, and Yousef Saad. Schur complement-based domain decomposition preconditioners with low-rank corrections. *Numerical Linear Algebra with Applications*, 23(4): 706–729, August 2016. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Liu:2020:STD

[LXSdH20] Xiao Liu, Yuanzhe Xi, Yousef Saad, and Maarten V. de Hoop. Solving the three-dimensional high-frequency Helmholtz equation using contour integration and polynomial preconditioning. *SIAM Journal on Matrix Analysis and Applications*, 41(1):58–82, 2020. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Li:2016:TRL

[LXV+16] Ruipeng Li, Yuanzhe Xi, Eugene Vecharynski, Chao Yang, and Yousef Saad. A thick-restart Lanczos algorithm with polynomial filtering for Hermitian eigenvalue problems. *SIAM Journal on Scientific Computing*, 38(4):A2512–A2534, ???? 2016. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

MacLachlan:2012:MCS

[MOKS12] S. MacLachlan, D. Osei-Kuffuor, and Yousef Saad. Modification and compensation strategies for threshold-based incomplete factorizations. *SIAM Journal on Scientific Computing*, 34 (1):A48–A75, ???? 2012. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sisc/resource/1/sjoce3/v34/i1/pA48_s1.

Ma:1992:BAP

[MS92] S. Ma and Y. Saad. Block-ADI preconditioners for solving sparse nonsymmetric linear systems of equations. Technical Report 92-161, Minnesota Supercomputer Institute, University of Minnesota, Minneapolis, 1992. Appeared in Numerical Linear Algebra, L. Reichel and A. Ruttan and R. S. Varga eds, Walter de Gruyter publications, New-York,pp. 165-178 (1993).

Ma:1993:BAP

[MS93] Sangback Ma and Youcef Saad. Block-ADI preconditioners for solving sparse nonsymmetric linear systems of equations. In L. Reichel, A. Ruttan, and R. S. Varga, editors, *Numerical linear algebra (Kent, OH, 1992)*, pages 165–178. Walter de Gruyter, New York, 1993.

Ma:1994:DIS

[MS94] S. Ma and Y. Saad. Distributed ILU(0) and SOR preconditioners for unstructured sparse linear systems. Technical Report 94—, Army High Performance Computing Research Center, University of Minnesota, Minneapolis, MN, 1994.

MacLachlan:2007:GSC

[MS07a] S. MacLachlan and Yousef Saad. A greedy strategy for coarse-grid selection. *SIAM Journal on Scientific Computing*, 29(5): 1825–1853, ???? 2007. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

MacLachlan:2007:GCS

[MS07b] Scott MacLachlan and Yousef Saad. Greedy coarsening strategies for nonsymmetric problems. *SIAM Journal on Scientific Computing*, 29(5):2115–2143, ???? 2007. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Ngo:2010:TRO

[NBS10] T. T. Ngo, M. Bellalij, and Y. Saad. The trace ratio optimization problem for dimensionality reduction. *SIAM Journal on Matrix Analysis and Applications*, 31(5):2950–2971, ???? 2010. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL `http://epubs.siam.org/simax/resource/1/sjmael/v31/i5/p2950_s1`.

Ngo:2012:TRO

[NBS12] T. T. Ngo, M. Bellalij, and Y. Saad. The trace ratio optimization problem. *SIAM Review*, 54(3):545–569, ???? 2012. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Napoli:2016:EEE

[NPS16] Edoardo Di Napoli, Eric Polizzi, and Yousef Saad. Efficient estimation of eigenvalue counts in an interval. *Numerical Linear Algebra with Applications*, 23(4):674–692, 2016. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Ogut:2003:ICL

[ÖBSC03] Serdar Öğüt, Russ Burdick, Yousef Saad, and James R. Chelikowsky. Ab initio calculations for large dielectric matrices of confined systems. *Physical Review Letters*, 90(12):127401:1–127401:??, March 28, 2003. CODEN PRLTAO. ISSN 0031-9007 (print), 1079-7114 (electronic), 1092-0145. URL http://link.aps.org/doi/10.1103/PhysRevLett.90.127401.

Osei-Kuffuor:2015:MRU

[OKLS15] Daniel Osei-Kuffuor, Ruipeng Li, and Yousef Saad. Matrix reordering using multilevel graph coarsening for ILU preconditioning. *SIAM Journal on Scientific Computing*, 37(1):A391–A419, 2015. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Osei-Kuffuor:2010:PHL

[OKS10] Daniel Osei-Kuffuor and Yousef Saad. Preconditioning Helmholtz linear systems. *Applied Numerical Mathematics: Transactions of IMACS*, 60(4):420–431, April 2010. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic).

Parlett:1985:CSI

[PS85] Beresford N. Parlett and Y. Saad. Complex shift and invert strategies for real matrices. Research report RR-424, Department of Computer Science, Yale University, New Haven, CT, USA, 1985. 17 pp.

Parlett:1987:CSI

[PS87] Beresford N. Parlett and Youcef Saad. Complex shift and invert strategies for real matrices. *Linear Algebra and its Applications*, 88/89(??):575–595, 1987. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL https://www.math.utah.edu/pub/bibnet/authors/s/saad-yousef.bib; https://www.math.utah.edu/pub/tex/bib/linala1980.bib.

Philippe:1989:SLS

[PS89] B. Philippe and Y. Saad. Solving large sparse eigenvalue problems on supercomputers. In *Proceedings of International Workshop on Parallel Algorithms and Architectures, Bonas, France Oct. 3-6 1988*. North-Holland Publishing Co., Amsterdam, The Netherlands, 1989.

Philippe:2007:CED

[PS07] Bernard Philippe and Yousef Saad. On correction equations and domain decomposition for computing invariant subspaces. *Computer Methods in Applied Mechanics and Engineering*, 196 (8):1471–1483, 2007. CODEN CMMECC. ISSN 0045-7825, 0374-2830.

Polizzi:2020:CMS

[PS20] Eric Polizzi and Yousef Saad. Computational materials science and engineering. In *Parallel Algorithms in Computational Science and Engineering*, Model. Simul. Sci. Eng. Technol., pages 123–150. Birkhäuser, Cambridge, MA, USA; Berlin, Germany; Basel, Switzerland, 2020.

Philippe:1992:NMM

[PSS92] B. Philippe, Y. Saad, and W. J. Stewart. Numerical methods in Markov chain modeling. *Jour-*

nal of Operations Research, 40: ??, 1992.

Petiton:1993:BSM

[PSWF93] S. Petiton, Y. Saad, K. Wu, and W. Ferng. Basic sparse matrix computations on the CM-5. *Internat. J. of Modern Physics*, 4: 65–83, 1993.

Fang:2009:TCM

[rFS09] Haw ren Fang and Yousef Saad. Two classes of multisecant methods for nonlinear acceleration. *Numerical Linear Algebra with Applications*, 16(3):197–221, ???? 2009. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Fang:2012:FLP

[rFS12] Haw ren Fang and Yousef Saad. A filtered Lanczos procedure for extreme and interior eigenvalue problems. *SIAM Journal on Scientific Computing*, 34(4):A2220–A2246, ???? 2012. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Rocca:2008:TCT

[RGSB08] Dario Rocca, Ralph Gebauer, Yousef Saad, and Stefano Baroni. Turbo charging time-dependent density-functional theory with Lanczos chains. *Journal of Chemical Physics*, 128 (15):154105, April 21, 2008. CODEN JCPSA6. ISSN 0021-9606 (print), 1089-7690 (electronic).

Reichel:1993:NLA

[RRV93] Lothar Reichel, Arden Ruttan, and Richard S. Varga, editors. *Numerical linear algebra: proceedings of the Conference in Numerical Linear Algebra and Scientific Computation, Kent (Ohio), USA, March 13–14, 1992*. Walter de Gruyter, New York, 1993. ISBN 3-11-013784-4. LCCN QA184.C655 1993.

Ruhe:1994:RKA

[Ruh94] Axel Ruhe. The rational Krylov algorithm for nonsymmetric eigenvalue problems. III: Complex shifts for real matrices. *BIT (Nordisk tidskrift for informationsbehandling)*, 34(1):165–176, March 1994. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-9125 (electronic). URL `http://www.mai.liu.se/BIT/contents/bit34.html; http://www.springerlink.com/openurl.asp?genre=article&issn=0006-3835&volume=34&issue=1&spage=165`.

Saad:1974:CEL

[Saa74a] Y. Saad. *Computation of eigenvalues of large Hermitian matrices by partitioning techniques*. Doctorate de 3ème cycle, INPG - University of Grenoble, Grenoble, France, 1974.

Saad:1974:ETO

[Saa74b] Youcef Saad. Études des translations d'origine dans les algorithmes LR et QR. *C. R. Acad.*

Sci. Paris Sér. A, 278:93–96, 1974.

Saad:1974:SOA

[Saa74c] Youcef Saad. Shifts of origin for the OR algorithm. In *Information processing 74 (Proc. IFIP Congress, Stockholm, 1974)*, pages 527–531. North-Holland Publishing Co., Amsterdam, The Netherlands, 1974.

Saad:1980:LBA

[Saa80a] Y. Saad. The Lanczos biorthogonalization algorithm and other oblique projection methods for solving large unsymmetric systems. Report 1036, Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL, USA, 1980. 44 pp.

Saad:1980:RCL

[Saa80b] Y. Saad. On the rates of convergence of the Lanczos and the block Lanczos methods. *SIAM Journal on Numerical Analysis*, 17(5):687–706, October 1980. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Saad:1980:VAM

[Saa80c] Y. Saad. Variations on Arnoldi's method for computing eigenelements of large unsymmetric matrices. *Linear Algebra and its Applications*, 34:269–295, 1980. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

Saad:1981:KSM

[Saa81] Y. Saad. Krylov subspace methods for solving large unsymmetric linear systems. *Mathematics of Computation*, 37(155):105–126, 1981. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).

Saad:1982:LBA

[Saa82a] Y. Saad. The Lanczos biorthogonalization algorithm and other oblique projection methods for solving large unsymmetric systems. *SIAM Journal on Numerical Analysis*, 19(3):485–506, June 1982. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Saad:1982:PMS

[Saa82b] Y. Saad. Projection methods for solving large sparse eigenvalue problems. In B. Kagstrom and A. Ruhe, editors, *Matrix Pencils, proceedings, Pitea Havsbad*, pages 121–144. University of Umea, Sweden, Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1982. Lecture notes in Math. Series, Number 973.

Saad:1983:LSP

[Saa83a] Y. Saad. Least squares polynomials in the complex plane with applications to solving sparse nonsymmetric matrix problems. Technical report YALEU/DCS/RR-276, Department of Computer Science, Yale University, New Haven, CT, USA, 1983.

Saad:1983:NMS

[Saa83b] Y. Saad. *Numerical methods for the solution of large dimension matrix problems.* Doctorat d'etat, Université scientifique et medicale de Grenoble et INPG, Grenoble, France, 1983.

Saad:1983:BRB

[Saa83c] Youcef Saad. Book review: *The Symmetric Eigenvalue Problem* (Beresford N. Parlett). *SIAM Review*, 25(2):286–287, ???? 1983. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Saad:1983:ISI

[Saa83d] Youcef Saad. Iterative solution of indefinite symmetric linear systems by methods using orthogonal polynomials over two disjoint intervals. *SIAM Journal on Numerical Analysis*, 20(4):784–811, August 1983. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Saad:1983:PMS

[Saa83e] Youcef Saad. Projection methods for solving large sparse eigenvalue problems. *Lecture Notes in Mathematics*, 973:121–144, 1983. CODEN LNMAA2. ISBN 0-387-11983-3, 3-540-11983-3 (print), 3-540-39447-8 (e-book). ISSN 0075-8434 (print), 1617-9692 (electronic). URL `http://link.springer.com/chapter/10.1007/BFb0062098/`.

Saad:1984:CNM

[Saa84a] Y. Saad. On the condition numbers of modified moment matrices arising in least squares approximation in the complex plane. Technical Report YALEU/DCS/RR-347, Department of Computer Science, Yale University, New Haven, CT, USA, 1984.

Saad:1984:CAT

[Saa84b] Youcef Saad. Chebyshev acceleration techniques for solving nonsymmetric eigenvalue problems. *Mathematics of Computation*, 42 (166):567–588, April 1984. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).

Saad:1984:PUS

[Saa84c] Youcef Saad. Practical use of some Krylov subspace methods for solving indefinite and nonsymmetric linear systems. *SIAM Journal on Scientific and Statistical Computing*, 5(1):203–228, March 1984. CODEN SIJCD4. ISSN 0196-5204.

Saad:1985:CCG

[Saa85a] Y. Saad. Communication complexity of the Gaussian elimination algorithm on multiprocessors. Research Report 348, Department of Computer Science, Yale University, New Haven, CT, USA, 1985.

Saad:1985:PEL

[Saa85b] Y. Saad. Partial eigensolutions of large nonsymmetric matrices. Technical Report YALEU/DCS/RR-397, Department of Computer Science, Yale University, New Haven, CT, USA, 1985.

Saad:1985:PUP

[Saa85c] Youcef Saad. Practical use of polynomial preconditionings for the conjugate gradient method. *SIAM Journal on Scientific and Statistical Computing*, 6(4):865–881, October 1985. CODEN SIJCD4. ISSN 0196-5204.

Saad:1986:GEHa

[Saa86a] Y. Saad. Gaussian elimination on hypercubes. Technical Report YALEU/DCS/RR-462, Department of Computer Science, Yale University, New Haven, CT, USA, 1986.

Saad:1986:CNM

[Saa86b] Y. Saad. On the condition numbers of modified moment matrices arising in least squares approximation in the complex plane. *Numerische Mathematik*, 48:337–347, 1986. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Saad:1986:CCG

[Saa86c] Youcef Saad. Communication complexity of the Gaussian elimination algorithm on multiprocessors. *Linear Algebra and its Applications*, 77:315–340, 1986. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). Special volume on parallel computing.

Saad:1986:GEHb

[Saa86d] Youcef Saad. Gaussian elimination on hypercubes. In M. Cosnard, Y. Robert, P. Quinton, and M. Tchuente, editors, *Parallel algorithms & architectures (Luminy, 1986)*, pages 5–17. North-Holland Publishing Co., Amsterdam, The Netherlands, 1986.

Saad:1986:CNS

[Saa86e] Youcef Saad. On the condition number of some Gram matrices arising from least squares approximation in the complex plane. *Numerische Mathematik*, 48(3):337–347, March 1986. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Saad:1987:DPNa

[Saa87a] Y. Saad. On the design of parallel numerical methods in message passing and shared memory environments. Technical Report CSRD-614, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, 1987. 20 pp.

Saad:1987:DPNb

[Saa87b] Y. Saad. On the design of parallel numerical methods in message passing and shared memory environments. In ????, editor, *Proceedings of International Seminar on Scientific Supercomputers, Paris, France, February 2–6, 1987*. ????, ????, 1987.

Saad:1987:LSP

[Saa87c] Youcef Saad. Least squares polynomials in the complex plane and their use for solving nonsymmetric linear systems. *SIAM Journal on Numerical Analysis*, 24 (1):155–169, February 1987. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Saad:1987:LMS

[Saa87d] Youcef Saad. On the Lanczos method for solving symmetric systems with several right-hand sides. *Mathematics of Computation*, 48(178):651–662, April 1987. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).

Saad:1988:PTI

[Saa88a] Y. Saad. Preconditioning techniques for indefinite and nonsymmetric linear systems. *Journal of Comp. and Appl. Math.*, 24:89–105, 1988.

Saad:1988:PTNa

[Saa88b] Y. Saad. Preconditioning techniques for nonsymmetric and indefinite linear systems. Technical Report CSRD 792, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, 1988. 18 + 3 pp.

Saad:1988:PTNb

[Saa88c] Youcef Saad. Preconditioning techniques for nonsymmetric and indefinite linear systems. *Journal of Computational and Applied Mathematics*, 24(1–2):89–105, 1988. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic). Iterative methods for the solution of linear systems.

Saad:1988:PDM

[Saa88d] Youcef Saad. Projection and deflation methods for partial pole assignment in linear state feedback. *IEEE Transactions on Automatic Control*, 33(3):290–297, 1988. CODEN IETAA9. ISSN 0018-9286 (print), 1558-2523 (electronic).

Saad:1989:KSM

[Saa89a] Youcef Saad. Krylov subspace methods on supercomputers. *SIAM Journal on Scientific and Statistical Computing*, 10(6): 1200–1232, November 1989. CODEN SIJCD4. ISSN 0196-5204. Sparse matrix algorithms on supercomputers.

Saad:1989:NSL

[Saa89b] Youcef Saad. Numerical solution of large nonsymmetric eigenvalue problems. *Computer Physics Communications*, 53(1–3):71–90, May 1989. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL `http://www.sciencedirect.com/science/article/pii/0010465589901495`. Practical iterative methods for large scale computations (Minneapolis, MN, 1988).

Saad:1990:SBT

[Saa90a] Y. Saad. SPARSKIT: A basic tool kit for sparse matrix computations. Technical Report 90-20, Research Institute for Advanced Computer Science, NASA Ames Research Center, Moffett Field, CA, 1990.

Saad:1990:KSM

[Saa90b] Youcef Saad. Krylov subspace methods: theory, algorithms, and applications. In *Computing methods in applied sciences and engineering (Paris, 1990)*, pages 24–41. SIAM Press, Philadelphia, PA, USA, 1990.

Saad:1990:NSL

[Saa90c] Youcef Saad. Numerical solution of large Lyapunov equations. In M. A. Kaashoek, J. H. van Schuppen, and A. C. Ran, editors, *Signal Processing, Scattering, Operator Theory, and Numerical Methods. Proceedings of the International Symposium MTNS-89, vol III (Amsterdam, 1989)*, volume 5 of *Progr. Systems Control Theory*, pages 503–511. Birkhäuser, Cambridge, MA, USA; Berlin, Germany; Basel, Switzerland, 1990.

Saad:1990:OKS

[Saa90d] Youcef Saad. An overview of Krylov subspace methods with applications to control problems. In M. A. Kaashoek, J. H. van Schuppen, and A. C. Ran, editors, *Signal Processing, Scattering, Operator Theory, and Numerical Methods. Proceedings of the international symposium MTNS-89, vol III, (Amsterdam, 1989)*, volume 5 of *Progr. Systems Control Theory*, pages 401–410. Birkhäuser, Cambridge, MA, USA; Berlin, Germany; Basel, Switzerland, 1990.

Saad:1991:FIO

[Saa91a] Y. Saad. A flexible inner-outer preconditioned GMRES algorithm. Technical Report 91-279, Minnesota Supercomputer Institute, University of Minnesota, Minneapolis, Minnesota, 1991. Appeared in SISSC, vol.4, 1993.

Saad:1991:SIP

[Saa91b] Y. Saad. Supercomputer implementations of preconditioned Krylov subspace methods. Technical Report 91-311, Minnesota Supercomputer Institute, University of Minnesota, Minneapolis, Minnesota, 1991.

Saad:1991:PMN

[Saa91c] Youcef Saad. Projection methods for the numerical solution of Markov chain models. In *Numerical solution of Markov chains*, volume 8 of *Probab. Pure Appl.*, pages 455–471. Dekker, New York, 1991.

Saad:1992:AST

[Saa92a] Y. Saad. Algorithms and software tools for general purpose automatic domain decomposition. Technical report, Army High Performance Computing

Research Center, 1992. In preparation.

Saad:1992:ASK

[Saa92b] Y. Saad. Analysis of some Krylov subspace approximations to the matrix exponential operator. *SIAM Journal on Numerical Analysis*, 29(1):209–228, February 1992. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Saad:1992:IPM

[Saa92c] Y. Saad. ILUM: A parallel multi-elimination ILU preconditioner for general sparse matrices. Technical Report 92-241, University of Minnesota, Army High Performance Computing Research Center, Minneapolis, Minnesota, 1992. submitted, under revision.

Saad:1992:IDT

[Saa92d] Y. Saad. ILUT: A dual threshold incomplete ILU factorization. Technical Report 92-38, Minnesota Supercomputer Institute, University of Minnesota, Minneapolis, 1992. to appear.

Saad:1992:KSM

[Saa92e] Y. Saad. Krylov subspace methods in distributed computing environments. Technical Report 92-126, Army High Performance Computing Research Center, Minneapolis, MN, 1992.

Saad:1992:NTP

[Saa92f] Youcef Saad. New trends in preconditioned Krylov subspace methods. In *Proceedings of International Conference on Scientific Computation (Hangzhou, 1991)*, volume 1 of *Ser. Appl. Math.*, pages 121–136. World Sci. Publ., River Edge, NJ, 1992.

Saad:1992:NML

[Saa92g] Youcef Saad. *Numerical methods for large eigenvalue problems.* Algorithms and Architectures for Advanced Scientific Computing. Halsted Press, New York, USA, 1992. ISBN 0-7190-3386-1 (UK), 0-470-21820-7 (US). xii + 346 pp. LCCN QA188 .S18 1992.

Saad:1992:RAP

[Saa92h] Youcef Saad. Review of ABS projection algorithms by J. Abaffy and E. Spedicato. *Linear Algebra and its Applications*, 165:267–??, March 1, 1992. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

Saad:1993:FIO

[Saa93a] Youcef Saad. A flexible inner-outer preconditioned GMRES algorithm. *SIAM Journal on Scientific Computing*, 14(2): 461–469, March 1993. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Saad:1993:SIP

[Saa93b] Youcef Saad. Supercomputer implementations of preconditioned Krylov subspace methods. In *Algorithmic trends in computational fluid dynamics (1991)*, ICASE/NASA LaRC Ser., pages 107–136. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1993.

Saad:1994:DSA

[Saa94a] Y. Saad. Data structures and algorithms for domain decomposition and distributed sparse matrix computations. Technical Report 94—, Army High Performance Computing Research Center, Minneapolis, MN, USA, 1994.

Saad:1994:TEBa

[Saa94b] Y. Saad. Theoretical error bounds and general analysis of a few Lanczos-type algorithms. Technical Report UMSI 94-90, University of Minnesota Supercomputer Institute, Minneapolis, MN 55415, USA, 1994.

Saad:1994:HPP

[Saa94c] Youcef Saad. Highly parallel preconditioners for general sparse matrices. In G. Golub, M. Luskin, and A. Greenbaum, editors, *Recent Advances in Iterative Methods*, volume 60 of *IMA volumes in Mathematics and its Applications*, pages 165–199. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1994.

Saad:1994:IDT

[Saa94d] Yousef Saad. ILUT: a dual threshold incomplete *LU* factorization. *Numerical Linear Algebra with Applications*, 1(4):387–402, 1994. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Saad:1994:TEBb

[Saa94e] Yousef Saad. Theoretical error bounds and general analysis of a few Lanczos-type algorithms. In Brown et al. [BCEP94], pages 123–134. ISBN 0-89871-339-0. LCCN QC19.2 .C67 1993.

Saad:1995:BNR

[Saa95] Youcef Saad. Book news & reviews: Concurrent Scientific Computing by Eric F. Van de Velde. *IEEE Computational Science & Engineering*, 2(1):94, Spring 1995. CODEN ISCEE4. ISSN 1070-9924 (print), 1558-190X (electronic).

Saad:1996:IME

[Saa96] Y. Saad. ILUM: A multi-elimination ILU preconditioner for general sparse matrices. *SIAM Journal on Scientific Computing*, 17(4):830–847, July 1996. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Saad:1997:AAK

[Saa97] Yousef Saad. Analysis of augmented Krylov subspace methods. *SIAM Journal on Matrix Analysis and Applications*, 18(2):435–449, April 1997. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/29428`.

Saad:1998:PKS

[Saa98] Y. Saad. Preconditioned Krylov subspace methods. In *Algorithms* *for large scale linear algebraic systems (Gran Canaria, 1996)*, volume 508 of *NATO Adv. Sci. Inst. Ser. C Math. Phys. Sci.*, pages 131–149. Kluwer Academic Publishers, Norwell, MA, USA, and Dordrecht, The Netherlands, 1998.

Saad:2000:E

[Saa00a] Yousef Saad. Editorial. *Numerical Linear Algebra with Applications*, 7(7–8):489–490, October/December 2000. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL http://www3.interscience.wiley.com/cgi-bin/abstract/73505473/START; http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=73505473&PLACEBO=IE.pdf.

Saad:2000:FAM

[Saa00b] Yousef Saad. Further analysis of minimum residual iterations. *Numerical Linear Algebra with Applications*, 7(2):67–93, March 2000. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL http://www3.interscience.wiley.com/cgi-bin/abstract/71008526/START; http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=71008526&PLACEBO=IE.pdf.

Saad:2001:PIM

[Saa01] Y. Saad. Parallel iterative methods for sparse linear systems. In *Inherently parallel algorithms in feasibility and optimization and their applications (Haifa, 2000)*, volume 8 of *Stud. Comput. Math.*, pages 423–440. North-Holland Publishing Co., Amsterdam, The Netherlands, 2001.

Saad:2003:FEA

[Saa03a] Yousef Saad. Finding exact and approximate block structures for ILU preconditioning. *SIAM Journal on Scientific Computing*, 24(4):1107–1123, July 2003. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/39339.

Saad:2003:IMS

[Saa03b] Yousef Saad. *Iterative methods for sparse linear systems*. SIAM Press, Philadelphia, PA, USA, second edition, 2003. ISBN 0-89871-534-2. xviii + 528 pp. LCCN QA188 .S17 2003.

Saad:2005:MIR

[Saa05] Yousef Saad. Multilevel ILU with reorderings for diagonal dominance. *SIAM Journal on Scientific Computing*, 27(3):1032–1057, May 2005. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/SISC/volume-27/art_60273.html.

Saad:2006:FCR

[Saa06] Yousef Saad. Filtered conjugate residual-type algorithms with applications. *SIAM Journal on Matrix Analysis and Applications*, 28(3):845–870, January 2006. CODEN SJMAEL.

ISSN 0895-4798 (print), 1095-7162 (electronic).

Saad:2007:SCP

[Saa07] Yousef Saad. Schur complement preconditioners for distributed general sparse linear systems. In *Domain decomposition methods in science and engineering XVI*, volume 55 of *Lect. Notes Comput. Sci. Eng.*, pages 127–138. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 2007.

Saad:2011:KSM

[Saa11a] Youcef Saad. *Krylov Subspace Methods*, chapter 6, pages 125–162. Volume 66 of *Classics in applied mathematics* [Saa11b], second edition, 2011. ISBN 1-61197-072-5. LCCN QA188 .S18 2011. URL `http://www.cs.umn.edu/~saad/eig_book_2ndEd.pdf`.

Saad:2011:NML

[Saa11b] Youcef Saad. *Numerical Methods for Large Eigenvalue Problems*, volume 66 of *Classics in applied mathematics*. SIAM Press, Philadelphia, PA, USA, second edition, 2011. ISBN 1-61197-072-5. xv + 276 pp. LCCN QA188 .S18 2011. URL `http://www.cs.umn.edu/~saad/eig_book_2ndEd.pdf`.

Saad:2016:ASI

[Saa16] Yousef Saad. Analysis of subspace iteration for eigenvalue problems with evolving matrices. *SIAM Journal on Matrix Analysis and Applications*, 37(1):103–122, ???? 2016. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Saad:2020:IML

[Saa20] Yousef Saad. Iterative methods for linear systems of equations: a brief historical journey. In *75 years of mathematics of computation*, volume 754 of *Contemp. Math.*, pages 197–215. American Mathematical Society, Providence, RI, USA, 2020.

Saad:2022:ODK

[Saa22] Yousef Saad. The origin and development of Krylov subspace methods. *Computing in Science and Engineering*, 24(4):28–39, July/August 2022. CODEN CSENFA. ISSN 1521-9615 (print), 1558-366X (electronic).

Saad:2023:RBJ

[Saa23] Yousef Saad. Revisiting the (block) Jacobi subspace rotation method for the symmetric eigenvalue problem. *Numerical Algorithms*, 92(1):917–944, January 2023. CODEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL `https://link.springer.com/article/10.1007/s11075-022-01377-w`.

Saad:2024:FKC

[Saa24] Yousef Saad. Five key concepts that shaped iterative solution methods for linear systems. *SIAM News*, 57(2):3, 7, 2024. ISSN 1557-9573.

Saad:2025:AMF

[Saa25] Yousef Saad. Acceleration methods for fixed-point iterations. *Acta Numerica*, 34: 805–890, July 2025. CODEN ANUMFU. ISSN 0962-4929 (print), 1474-0508 (electronic). URL https://www.cambridge.org/core/journals/acta-numerica/article/acceleration-methods-for-fixedpoint-iterations/2FABE7BD50568960C8CD86A6F4D77D72.

Saad:2000:PTL

[SAD+00] Yousef Saad, Owe Axelsson, Iain Duff, Wei-Pai Tang, and Andy Wathen, editors. *Preconditioning techniques for large sparse matrix problems in industrial applications*. Wiley, New York, NY, USA, 2000. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). Papers from the International Conference (SPARSE '99) held at the University of Minnesota, Minneapolis, MN, June 10–12, 1999, Numer. Linear Algebra Appl. **7** (2000), no. 7–8.

Saad:2010:NME

[SCS10] Yousef Saad, James R. Chelikowsky, and Suzanne M. Shontz. Numerical methods for electronic structure calculations of materials. *SIAM Review*, 52(1):3–54, ???? 2010. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Schofield:2012:SSM

[SCS12] Grady Schofield, James R. Chelikowsky, and Yousef Saad. A spectrum slicing method for the Kohn–Sham problem. *Computer Physics Communications*, 183 (3):497–505, March 2012. CODEN CPHCBZ. ISSN 0010-4655 (print), 1879-2944 (electronic). URL http://www.sciencedirect.com/science/article/pii/S0010465511003675.

Salas:2015:SRS

[SGSM15] Pablo Salas, Luc Giraud, Yousef Saad, and Stéphane Moreau. Spectral recycling strategies for the solution of nonlinear eigenproblems in thermoacoustics. *Numerical Linear Algebra with Applications*, 22(6):1039–1058, 2015. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Said:1988:HES

[SKBS88] M. Said, M. A. Kanesha, M. Balkanski, and Y. Saad. Higher excited states of acceptors in cubic semiconductors. *Physical Review B: Condensed Matter and Materials Physics*, 35(2): 687–695, 1988. CODEN PRBMDO. ISSN 1098-0121. URL http://link.aps.org/doi/10.1103/PhysRevB.35.687.

Saad:1997:PPL

[SKL+97] Yousef Saad, Sergey Kuznetsov, Gen-Ching Lo, Andrei Malevsky, and Andrew Chapman. P_SPARSLIB: a portable library of parallel sparse iterative solvers. In *Proceedings of the Eighth SIAM Conference on Parallel Processing for Scientific Comput-*

ing (Minneapolis, MN, 1997), page 8. SIAM Press, Philadelphia, PA, USA, 1997.

Saad:1986:NAS

[SL86] Y. Saad and D. Lee. A new algorithm for solving the wide angle wave equation. Technical Report YALEU/DCS/RR-Draft, Department of Computer Science, Yale University, New Haven, CT, USA, 1986.

Saad:1988:NAS

[SL88] Youcef Saad and Ding Lee. A new algorithm for solving the wide angle wave equation. In *Computational acoustics, Vol. 2 (New Haven, Conn., 1986)*, pages 119–132. North-Holland Publishing Co., Amsterdam, The Netherlands, 1988.

Shi:2022:NPA

[SLX+22] Jia Shi, Ruipeng Li, Yuanzhe Xi, Yousef Saad, and Maarten V. de Hoop. A non-perturbative approach to computing seismic normal modes in rotating planets. *Journal of Scientific Computing*, 91(2):Paper No. 67, 52, 2022. CODEN JSCOEB. ISSN 0885-7474,1573-7691. URL https://doi.org/10.1007/s10915-022-01836-5.

Saad:1995:DSC

[SM95] Y. Saad and A. V. Malevsky. Data structures, computational, and communication kernels for distributed memory sparse iterative solvers. *Lecture Notes in Computer Science*, 964:252–??, 1995. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic).

Sosonkina:2000:PSL

[SMSW00] Maria Sosonkina, John T. Melson, Yousef Saad, and Layne T. Watson. Preconditioning strategies for linear systems arising in tire design. *Numerical Linear Algebra with Applications*, 7(7–8):743–757, October/December 2000. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL http://www3.interscience.wiley.com/cgi-bin/abstract/73505476/START; http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=73505476&PLACEBO=IE.pdf. Preconditioning techniques for large sparse matrix problems in industrial applications (Minneapolis, MN, 1999).

Stathopoulos:2000:PMT

[SÖS+00] Andreas Stathopoulos, Serdar Ögüt, Yousef Saad, James Chelikowsky, and Hanchul Kim. Parallel methods and tools for predicting material properties. *Computing in Science and Engineering*, 2(4):19–33, July/August 2000. CODEN CSENFA. ISSN 1521-9615 (print), 1558-366X (electronic). URL http://dlib.computer.org/cs/books/cs2000/pdf/c4019.pdf; http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=852388; http://www.computer.org/cse/cs1999/c4019abs.htm.

Sakellaridi:2008:GBM

[SrFS08] Sophia Sakellaridi, Haw ren Fang, and Yousef Saad. Graph-based multilevel dimensionality reduction with applications to eigenfaces and latent semantic indexing. In *ICMLA '08. Seventh International Conference on Machine Learning and Applications, 2008*, pages 194–200. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2008. URL `http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4724975`.

Saad:1980:PBS

[SS80] Y. Saad and A. H. Sameh. A parallel block Stiefel method for solving positive definite systems. In M. H. Schultz, editor, *Proc. Elliptic Problem Solver Conf.*, pages 405–412. Academic Press, New York, NY, USA, 1980.

Saad:1981:IMS

[SS81] Y. Saad and A. Sameh. Iterative methods for the solution of elliptic differential equations on multiprocessors. In Wolfgang Handler, editor, *Proceedings of the CONPAR 81 Conference*, pages 395–411. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1981.

Saad85e

[SS85a] Y. Saad and M. Schultz. Data communication in hypercubes. Technical Report YALEU/DCS/RR-428, Department of Computer Science, Yale University, New Haven, CT, USA, October 1985.

Saad:1985:TPH

[SS85b] Y. Saad and M. Schultz. Topological properties of hypercubes. Technical Report YALEU/DCS/RR-389, Department of Computer Science, Yale University, New Haven, CT, USA, June 1985.

Saad:1985:ADM

[SS85c] Y. Saad and M. H. Schultz. Alternating direction methods on multiprocessors: An extended abstract. Research Report YALEU/DCS/RR-381, Department of Computer Science, Yale University, New Haven, CT, USA, April 1985.

Saad:1985:DCH

[SS85d] Y. Saad and M. H. Schultz. Data communication in hypercubes. Technical Report 428, Department of Computer Science, Yale University, New Haven, CT, USA, 1985. to appear.

Saad:1985:DPM

[SS85e] Y. Saad and M. H. Schultz. Direct parallel methods for solving banded linear systems. Research Report 387, Department of Computer Science, Yale University, New Haven, CT, USA, 1985.

Saad:1985:PIP

[SS85f] Y. Saad and M. H. Schultz. Parallel implementations of preconditioned conjugate gradient methods. Research Report 425, Department of Computer Science, Yale University, New Haven, CT, USA, 1985.

Saad:1985:CGL

[SS85g] Youcef Saad and Martin H. Schultz. Conjugate gradient-like algorithms for solving nonsymmetric linear systems. *Mathematics of Computation*, 44(170):417–424, April 1985. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).

Saad:1986:PIP

[SS86a] Y. Saad and M. Schultz. Parallel implementations of preconditioned conjugate gradient methods. In Fitzgibbon [Fit86], page ?? ISBN 0-89871-205-x. LCCN TN269 .C654 1985.

Saad:1986:DCP

[SS86b] Y. Saad and M. H. Schultz. Data communication in parallel architectures. Research Report YALEU/DCS/RR-461, Department of Computer Science, Yale University, New Haven, CT, USA, 1986.

Saad:1986:GGM

[SS86c] Youcef Saad and Martin H. Schultz. GMRES: a generalized minimal residual algorithm for solving nonsymmetric linear systems. *SIAM Journal on Scientific and Statistical Computing*, 7 (3):856–869, July 1986. CODEN SIJCD4. ISSN 0196-5204.

Saad:1987:PDM

[SS87] Y. Saad and M. Schultz. Parallel direct methods for solving banded linear systems. *Linear Algebra and its Applications*, 88/89(??):623–650, 1987. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

Saad:1988:TPH

[SS88] Y. Saad and M. H. Schultz. Topological properties of hypercubes. *IEEE Trans. Comput.*, 37 (7):867–872, 1988. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic).

Saad:1989:DCH

[SS89a] Y. Saad and M. H. Schultz. Data communication in hypercubes. *Journal of Parallel and Distributed Computing*, 6(1): 115–135, February 1989. CODEN JPDCER. ISSN 0743-7315 (print), 1096-0848 (electronic).

Saad:1989:DCP

[SS89b] Youcef Saad and Martin H. Schultz. Data communication in parallel architectures. *Parallel Computing*, 11(2):131–150, ???? 4, 1989. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic).

Saad:1998:SDS

[SS98a] Y. Saad and M. Sosonkina. Solution of distributed sparse linear systems using PSPARSLIB. *Lecture Notes in Computer Science*, 1541:503–509, 1998. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic).

Stathopoulos:1998:RTJ

[SS98b] Andreas Stathopoulos and Yousef Saad. Restarting techniques for the (Jacobi–)Davidson symmetric eigenvalue methods. *Electronic Transactions on Numerical Analysis*, 7:163–181, 1998. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.7.1998/pp163-181.dir/pp163-181.pdf`. Large scale eigenvalue problems (Argonne, IL, 1997).

Saad:1999:DSC

[SS99a] Yousef Saad and Maria Sosonkina. Distributed Schur complement techniques for general sparse linear systems. *SIAM Journal on Scientific Computing*, 21(4):1337–1356, July 1999. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/32899`.

Saad:1999:EPM

[SS99b] Yousef Saad and Maria Sosonkina. Enhanced parallel multicolor preconditioning techniques for linear systems. In *Proceedings of the Ninth SIAM Conference on Parallel Processing for Scientific Computing 1999 (San Antonio, TX)*, page 10. SIAM Press, Philadelphia, PA, USA, 1999.

Saad:1999:NSP

[SS99c] Yousef Saad and Maria Sosonkina. Non-standard parallel solution strategies for distributed sparse linear systems. *Lecture Notes in Computer Science*, 1557:13–27, 1999. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic). URL `http://link.springer-ny.com/link/service/series/0558/bibs/1557/15570013.htm; http://link.springer-ny.com/link/service/series/0558/papers/1557/15570013.pdf`.

Saad:2002:PPS

[SS02a] Y. Saad and M. Sosonkina. pARMS: A package for solving general sparse linear systems on parallel computers. *Lecture Notes in Computer Science*, 2328:446–??, 2002. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic). URL `http://link.springer-ny.com/link/service/series/0558/bibs/2328/23280446.htm; http://link.springer-ny.com/link/service/series/0558/papers/2328/23280446.pdf`.

Saad:2002:AAR

[SS02b] Y. Saad and B. Suchomel. ARMS: an algebraic recursive multilevel solver for general sparse linear systems. *Numerical Linear Algebra with Applications*, 9(5):359–378, July/August 2002. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Sidje:2011:RAF

[SS11] Roger B. Sidje and Yousef Saad. Rational approximation to the Fermi–Dirac function with applications in density functional theory. *Numerical Algorithms*, 56 (3):455–479, March 2011. CODEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL http://www.springerlink.com/openurl.asp?genre=article&issn=1017-1398&volume=56&issue=3&spage=455.

Seghouane:2014:PHD

[SS14] Abd-Krim Seghouane and Yousef Saad. Prewhitening high-dimensional fMRI data sets without eigendecomposition. *Neural Comput.*, 26(5):907–919, 2014. ISSN 0899-7667 (print), 1530-888x (electronic).

Saad:1996:SLE

[SSC+96] Y. Saad, A. Stathopoulos, J. Chelikowsky, K. Wu, and S. Öğüt. Solution of large eigenvalue problems in electronic structure calculations. *BIT Numerical Mathematics*, 36(3):563–578, September 1996. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-9125 (electronic). URL http://www.mai.liu.se/BIT/contents/bit36.html; http://www.springerlink.com/openurl.asp?genre=article&issn=0006-3835&volume=36&issue=3&spage=563. International Linear Algebra Year (Toulouse, 1995).

Sosonkina:2004:UPA

[SSC04] M. Sosonkina, Y. Saad, and X. Cai. Using the parallel algebraic recursive multilevel solver in modern physical applications. *Future Generation Computer Systems*, 20(3):489–500, April 1, 2004. CODEN FGSEVI. ISSN 0167-739X (print), 1872-7115 (electronic).

Stathopoulos:1993:RPL

[SSF93] A. Stathopoulos, Y. Saad, and C. F. Fisher. Robust preconditioning of large, symmetric eigenvalue problems. Technical Report 93-093, Army High Performance Computing Research Center, Minneapolis, MN, USA, 1993. to appear Journal of Computational and Applied Mathematics.

Stathopoulos:1995:RPL

[SSF95] Andreas Stathopoulos, Yousef Saad, and Charlotte Froese Fischer. Robust preconditioning of large, sparse, symmetric eigenvalue problems. *Journal of Computational and Applied Mathematics*, 64(3):197–215, 1995. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic).

Saad:1985:SED

[SSS85] Y. Saad, A. Sameh, and P. Saylor. Solving elliptic difference equations on a linear array of processors. *SIAM Journal on Scientific and Statistical Computing*, 6(4):1049–1063, October 1985. CODEN SIJCD4. ISSN 0196-5204.

Sheehan:2010:CET

[SSS10] Bernard N. Sheehan, Yousef Saad, and Roger B. Sidje. Computing $\exp(-\tau A)b$ with Laguerre polynomials. *Electronic Transactions on Numerical Analysis*, 37:147–165, 2010. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.37.2010/pp147-165.dir/pp147-165.pdf`.

Saad:2004:VAR

[SST04] Yousef Saad, Azzeddine Soulaimani, and Ridha Touihri. Variations on algebraic recursive multilevel solvers (ARMS) for the solution of CFD problems. *Applied Numerical Mathematics: Transactions of IMACS*, 51(2–3): 305–327, November 2004. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic).

Stathopoulos:1998:DTR

[SSW98] Andreas Stathopoulos, Yousef Saad, and Kesheng Wu. Dynamic thick restarting of the Davidson, and the implicitly restarted Arnoldi methods. *SIAM Journal on Scientific Computing*, 19 (1):227–245, January 1998. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL `http://epubs.siam.org/sam-bin/dbq/article/30416`. Special issue on iterative methods (Copper Mountain, CO, 1996).

Saad:1998:DDM

[SSZ98] Yousef Saad, Maria Sosonkina, and Jun Zhang. Domain decomposition and multi-level type techniques for general sparse linear systems. In *Domain decomposition methods, 10 (Boulder, CO, 1997)*, volume 218 of *Contemp. Math.*, pages 174–190. American Mathematical Society, Providence, RI, USA, 1998.

Saad:2000:ISL

[Sv00] Yousef Saad and Henk A. van der Vorst. Iterative solution of linear systems in the 20th century. *Journal of Computational and Applied Mathematics*, 123(1–2): 1–33, 2000. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic). Numerical analysis 2000, Vol. III. Linear algebra.

Saad:1988:BPSb

[SW88a] Y. Saad and H. Wijshoff. A benchmark package for sparse matrix computations. In J. Lenfant and D. De groot, editors, *Proceedings of ICS conference 1988, St Malo, France*, pages 500–509. ACM, 1988.

Saad:1988:BPSa

[SW88b] Youcef Saad and Harry A. G. Wijshoff. Benchmark package for sparse matrix computations. Technical Report CSRD 787, University of Illinois at Urbana-Champaign, Center for Supercomputing Research and Development, Urbana, IL 61801, USA, 1988. 10 pp.

Saad:1989:SSH

[SW89] Y. Saad and H. Wijshoff. Some statistics on the Harwell–Boeing sparse matrices. Technical report, University of Illinois, CSRD, Urbana, IL, 1989. In preparation.

Saad:1990:SBP

[SW90] Youcef Saad and Harry A. G. Wijshoff. SPARK: a benchmark package for sparse computations. *ACM SIGARCH Computer Architecture News*, 18(3b): 239–253, September 1990. CODEN CANED2. ISSN 0163-5964 (ACM), 0884-7495 (IEEE).

Saad:1993:DQM

[SW93] Y. Saad and K. Wu. DQGMRES: a quasi-minimal residual algorithm based on incomplete orthogonalization. Technical Report UMSI-93/131, Minnesota Supercomputing Institute, Minneapolis, MN, USA, 1993. submitted.

Saad:1994:PSM

[SW94] Y. Saad and K. Wu. Parallel sparse matrix library (P_SPARSLIB): The iterative solvers module. Technical Report 94-008, Army High Performance Computing Research Center, Minneapolis, MN, USA, 1994. A short version to appear in Proceedings of PCG-94, Yokohama, Japan, March 14-17, 1994.

Saad:1995:DIS

[SW95] Yousef Saad and Kesheng Wu. Design of an iterative solution module for a parallel sparse matrix library (P_SPARSLIB). *Applied Numerical Mathematics: Transactions of IMACS*, 19(3): 343–357, 1995. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). Special issue on iterative methods for linear equations (Atlanta, GA, 1994).

Saad:1996:DIS

[SW96a] Yousef Saad and Kesheng Wu. Design of an iterative solution module for a parallel sparse matrix library (P_SPARSLIB). *Applied Numerical Mathematics: Transactions of IMACS*, 19(3): 343–357, January 15, 1996. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). URL `http://www.elsevier.com/cgi-bin/cas/tree/store/apnum/cas_sub/browse/browse.cgi?year=1996&volume=19&issue=3&aid=638`. Special issue on iterative methods for linear equations (Atlanta, GA, 1994).

Saad:1996:DDQ

[SW96b] Yousef Saad and Kesheng Wu. DQGMRES: a direct quasi-minimal residual algorithm based on incomplete orthogonalization. *Numerical Linear Algebra with Applications*, 3(4):329–343, July/August 1996. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL `http://www3.interscience.wiley.com/cgi-bin/abstract?ID=15000994`.

Saad:2000:DVC

[SYEG00] Y. Saad, M. Yeung, J. Erhel, and F. Guyomarc'h. A deflated version of the conjugate gradient algorithm. *SIAM Journal on Scientific Comput-*

ing, 21(5):1909–1926, September 2000. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/33976. Iterative methods for solving systems of algebraic equations (Copper Mountain, CO, 1998).

Saad:1999:BBV

[SZ99a] Yousef Saad and Jun Zhang. BILUM: Block versions of multielimination and multilevel ILU preconditioner for general sparse linear systems. *SIAM Journal on Scientific Computing*, 20(6): 2103–2121, November 1999. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/32753.

Saad:1999:BDB

[SZ99b] Yousef Saad and Jun Zhang. BILUTM: A domain-based multilevel block ILUT preconditioner for general sparse matrices. *SIAM Journal on Matrix Analysis and Applications*, 21 (1):279–299, 1999. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL http://epubs.siam.org/sam-bin/dbq/article/34126.

Saad:1999:DTT

[SZ99c] Yousef Saad and Jun Zhang. Diagonal threshold techniques in robust multi-level ILU preconditioners for general sparse linear systems. *Numerical Linear Algebra with Applications*, 6 (4):257–280, June 1999. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic). URL http://www3.interscience.wiley.com/cgi-bin/abstract/65500095/START; http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=65500095&PLACEBO=IE.pdf.

Saad:2001:EML

[SZ01] Yousef Saad and Jun Zhang. Enhanced multi-level block ILU preconditioning strategies for general sparse linear systems. *Journal of Computational and Applied Mathematics*, 130(1–2):99–118, 2001. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic).

Tang:2011:DDT

[TS11] Jok M. Tang and Yousef Saad. Domain-decomposition-type methods for computing the diagonal of a matrix inverse. *SIAM Journal on Scientific Computing*, 33(5):2823–2847, ???? 2011. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic). URL http://epubs.siam.org/sisc/resource/1/sjoce3/v33/i5/p2823_s1.

Tang:2012:PMC

[TS12] Jok M. Tang and Yousef Saad. A probing method for computing the diagonal of a matrix inverse. *Numerical Linear Algebra with Applications*, 19(3):485–501, May 2012. CODEN NLAAEM.

ISSN 1070-5325 (print), 1099-1506 (electronic).

Tiago:2006:EMI

[TZA+06] Murilo L. Tiago, Yunkai Zhou, M. M. G. Alemany, Yousef Saad, and James R. Chelikowsky. Evolution of magnetism in iron from the atom to the bulk. *Physical Review Letters*, 97(14):147201:1–147201:4, October 6, 2006. CODEN PRLTAO. ISSN 0031-9007 (print), 1079-7114 (electronic), 1092-0145. URL http://link.aps.org/doi/10.1103/PhysRevLett.97.147201.

Ubaru:2017:FES

[UCS17] Shashanka Ubaru, Jie Chen, and Yousef Saad. Fast estimation of $\mathrm{tr}(f(A))$ via stochastic Lanczos quadrature. *SIAM Journal on Matrix Analysis and Applications*, 38(4):1075–1099, ???? 2017. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Ubaru:2017:LRA

[UMS17] Shashanka Ubaru, Arya Mazumdar, and Yousef Saad. Low rank approximation and decomposition of large matrices using error correcting codes. *IEEE Transactions on Information Theory*, 63(9):5544–5558, 2017. CODEN IETTAW. ISSN 0018-9448 (print), 1557-9654 (electronic).

Ubaru:2019:SMC

[US19] Shashanka Ubaru and Yousef Saad. Sampling and multilevel coarsening algorithms for fast matrix approximations. *Numerical Linear Algebra with Applications*, 26(3):e2234:1–e2234:??, May 2019. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Ubaru:2017:FEA

[USS17a] Shashanka Ubaru, Yousef Saad, and Abd-Krim Seghouane. Fast estimation of approximate matrix ranks using spectral densities. *Neural Computation*, 29(5):1317–1351, 2017. ISSN 0899-7667 (print), 1530-888x (electronic).

Ubaru:2017:IIL

[USS17b] Shashanka Ubaru, Abd-Krim Seghouane, and Yousef Saad. Improving the incoherence of a learned dictionary via rank shrinkage. *Neural Computation*, 29(1):263–285, 2017. ISSN 0899-7667 (print), 1530-888x (electronic).

Vecharynski:2014:FUA

[VS14] Eugene Vecharynski and Yousef Saad. Fast updating algorithms for latent semantic indexing. *SIAM Journal on Matrix Analysis and Applications*, 35(3):1105–1131, 2014. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Vecharynski:2014:GPU

[VSS14] Eugene Vecharynski, Yousef Saad, and Masha Sosonkina. Graph partitioning using matrix values for preconditioning symmetric positive definite systems. *SIAM Journal on Scientific Computing*, 36(1):A63–A87, 2014. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Wang:2018:PRR

[WGSC18] Gang Wang, Georgios B. Giannakis, Yousef Saad, and Jie Chen. Phase retrieval via reweighted amplitude flow. *IEEE Transactions on Signal Processing*, 66(11):2818–2833, 2018. CODEN ITPRED. ISSN 1053-587x (print), 1941-0476 (electronic).

Wu:1993:PCM

[WS93] Kesheng Wu and Youcef Saad. Performance of the CM-5 message passing primitives. Technical Report 20, Department of Computer Science, University of Minnesota, Minneapolis, MN 55455, USA, 1993.

Wu:1998:INP

[WSS98] Kesheng Wu, Yousef Saad, and Andreas Stathopoulos. Inexact Newton preconditioning techniques for large symmetric eigenvalue problems. *Electronic Transactions on Numerical Analysis*, 7:202–214, 1998. CODEN ???? ISSN 1068-9613 (print), 1097-4067 (electronic). URL `http://etna.mcs.kent.edu/vol.7.1998/pp202-214.dir/pp202-214.pdf`. Large scale eigenvalue problems (Argonne, IL, 1997).

Xu:2023:PAC

[XAKS23] Tianshi Xu, Anthony Austin, Vasileios Kalantzis, and Yousef Saad. A parallel algorithm for computing partial spectral factorizations of matrix pencils via Chebyshev approximation. *SIAM Journal on Scientific Computing*, 46(2):S324–S351, September 2023. CODEN SJOCE3. ISSN 1095-7197.

Xu:2024:PAC

[XAKS24] Tianshi Xu, Anthony Austin, Vasileios Kalantzis, and Yousef Saad. A parallel algorithm for computing partial spectral factorizations of matrix pencils via Chebyshev approximation. *SIAM Journal on Scientific Computing*, 46(2): S324–S351, 2024. CODEN SJOCE3. ISSN 1064-8275,1095-7197. URL `https://doi.org/10.1137/22M1501155`.

Xu:2022:PPM

[XKL+22] Tianshi Xu, Vassilis Kalantzis, Ruipeng Li, Yuanzhe Xi, Geoffrey Dillon, and Yousef Saad. parGeMSLR: a parallel multilevel Schur complement low-rank preconditioning and solution package for general sparse matrices. *Parallel Computing*, 113(??):??, October 2022. CODEN PACOEJ. ISSN 0167-8191 (print), 1872-7336 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0167819122000497`.

Xi:2016:AMP

[XLS16] Yuanzhe Xi, Ruipeng Li, and Yousef Saad. An algebraic multilevel preconditioner with low-rank corrections for sparse symmetric matrices. *SIAM Journal on Matrix Analysis and Applications*, 37(1):235–259, 2016. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Xi:2018:FCS

[XLS18] Yuanzhe Xi, Ruipeng Li, and Yousef Saad. Fast computation of spectral densities for generalized eigenvalue problems. *SIAM Journal on Scientific Computing*, 40(4):A2749–A2773, ???? 2018. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Xi:2016:CPS

[XS16] Yuanzhe Xi and Yousef Saad. Computing partial spectra with least-squares rational filters. *SIAM Journal on Scientific Computing*, 38(5):A3020–A3045, ???? 2016. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Xi:2017:RFP

[XS17] Yuanzhe Xi and Yousef Saad. A rational function preconditioner for indefinite sparse linear systems. *SIAM Journal on Scientific Computing*, 39(3): A1145–A1167, ???? 2017. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Ye:2021:PGP

[YXS21] Xin Ye, Yuanzhe Xi, and Yousef Saad. Proxy-GMRES: Preconditioning via GMRES in polynomial space. *SIAM Journal on Matrix Analysis and Applications*, 42(3):1248–1267, ???? 2021. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Zhou:2014:CFS

[ZCS14] Yunkai Zhou, James R. Chelikowsky, and Yousef Saad. Chebyshev-filtered subspace iteration method free of sparse diagonalization for solving the Kohn–Sham equation. *Journal of Computational Physics*, 274 (??):770–782, October 1, 2014. CODEN JCTPAH. ISSN 0021-9991 (print), 1090-2716 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0021999114004744`.

Zhou:2007:CDA

[ZS07] Yunkai Zhou and Yousef Saad. A Chebyshev–Davidson algorithm for large symmetric eigenproblems. *SIAM Journal on Matrix Analysis and Applications*, 29(3): 954–971, ???? 2007. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).

Zhou:2008:BKS

[ZS08] Yunkai Zhou and Yousef Saad. Block Krylov–Schur method for large symmetric eigenvalue problems. *Numerical Algorithms*, 47 (4):341–359, April 2008. CO-

DEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL http://www.springerlink.com/openurl.asp?genre=article&issn=1017-1398&volume=47&issue=4&spage=341.

Zhou:2006:PSC

[ZSTC06a] Yunkai Zhou, Yousef Saad, Murilo L. Tiago, and James R. Chelikowsky. Parallel self-consistent-field calculations via Chebyshev-filtered subspace acceleration. *Physical Review E (Statistical physics, plasmas, fluids, and related interdisciplinary topics)*, 74(6): 066704:1–066704:8, December 2006. CODEN PLEEE8. ISSN 1539-3755 (print), 1550-2376 (electronic). URL http://link.aps.org/doi/10.1103/PhysRevE.74.066704.

Zhou:2006:SCF

[ZSTC06b] Yunkai Zhou, Yousef Saad, Murilo L. Tiago, and James R. Chelikowsky. Self-consistent-field calculation using Chebyshev-filtered subspace iteration. *Journal of Computational Physics*, 219(1):172–184, November 20, 2006. CODEN JCTPAH. ISSN 0021-9991 (print), 1090-2716 (electronic). URL http://www.sciencedirect.com/science/article/pii/S002199910600146X.

Zheng:2020:MLR

[ZXS20] Qingqing Zheng, Yuanzhe Xi, and Yousef Saad. Multicolor low-rank preconditioner for general sparse linear systems. *Numerical Linear Algebra with Applications*, 27(4):e2316:1–e2316:??, August 2020. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Zheng:2021:PSC

[ZXS21] Qingqing Zheng, Yuanzhe Xi, and Yousef Saad. A power Schur complement low-rank correction preconditioner for general sparse linear systems. *SIAM Journal on Matrix Analysis and Applications*, 42(2):659–682, 2021. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic).