Curriculum Vitae
James G. Nagy

Samuel Candler Dobbs Professor and Chair

Department of Mathematics
Emory University
Atlanta, GA, USA
http://www.math.emory.edu/~nagy

Research: Scientific computation, numerical linear algebra, inverse and ill-posed problems, algorithms and software for image processing.

Education:

- Ph.D., Applied Mathematics, North Carolina State University, December 1991.
- M.S., Mathematics, Northern Illinois University, August, 1988.
- B.S., Mathematics, Northern Illinois University, May, 1986.

Current Position:

Professor (since 2006), Samuel Candler Dobbs Professor (since 2018), Chair (since 2018), Department of Mathematics, Emory University.

Previous Positions:

- Emory College Professor for Distinguished Teaching, Emory University (2001–2005)
- Associate Professor, Emory University (1999–2006)
- Associate Professor, Southern Methodist University (1997–1999)
- Assistant Professor, Southern Methodist University (1992–1997)
- NSF MSPRF, University of Maryland, College Park (1994–1995)
- IMA Postdoctoral Research Fellowship, University of Minnesota (1991–1992)

Academic Awards, Honors and Recognitions:

- SIAM Vice President for Programs, January 1, 2020–December 31, 2025.
- SIAM Fellows Selection Committee 2017–2019; Committee Chair 2018–2019.
- SIAM Fellow, selected in 2016.
- Co-Chair, University Research Committee, Emory University, 2016–2022.
- Chair, SIAM Activity Group on Linear Algebra, January 1, 2016 – December 31, 2018.
- Vice Char, SIAM Activity Group on Linear Algebra, January 1, 2013 – December 31, 2015.
- Chair of Householder Committee, 2014–2017.
- Co-Chair, SIAM Conference on Applied Linear Algebra, October 26–30, 2015.
- Editorial board appointments:
  SIAM Journal on Matrix Analysis and Applications, 2006–2021.
  SIAM Journal on Scientific Computing (SISC), 2005–2020.
  SISC Copper Mountain Special Issue, 2016, 2018, 2020, 2022, 2024.
  Numerical Algorithms, 2012–2023.
  Calcolo, 2019–2023.
  Electronic Journal of Linear Algebra, 2011–2023.

- Invited talk at 2008 SIAM Annual meeting recorded and made available at: https://www.pathlms.com/siam/courses/5156
- Talk at 2015 SIAM Applied Linear Algebra meeting recorded and made available at: https://www.pathlms.com/siam/courses/1697/sections/2330
- Northern Illinois University, Golden Anniversary Alumni Award, September 25, 2009.

PI Grants (co-investigator and other collaborative funding not listed here):

- NSF, $346,632, July 1, 2022–June 30, 2025.
- NSF-RTG, $1,320,199, August 1, 2021–July 31, 2027.
- NSF, $306,589, July 1, 2018–June 30, 2021.
- NSF, $10,000, January 1, 2017–December 31, 2017.
- NSF, $299,933, July 15, 2015–June 30, 2018.
- AFOSR, $350,330, March 15, 2012–March 14, 2015.
- NSF, $270,000, September 1, 2011–August 31, 2014.
- AFOSR, $305,052, July 15, 2009–November 30, 2011.
- NSF, $297,373, July 1, 2008–June 30, 2011.
- NSF, $266,448, July 1, 2005–June 30, 2008.
- Emory URC, $21,120, July 1, 2005–June 30, 2006.
- Emory ECOR Seed Funding, $40,500, July 1, 2004–June 30, 2005.
- NSF, $130,000, April 1, 2001–March 31, 2004.
- DOE, $10,000, August 1, 1998–July 31, 1999.
- NSF, $9,660, August 1, 1998–July 31, 1999.
- NSF, $75,000, September 1, 1994–August 31, 1997.
- Oak Ridge Associated Universities, $10,000, September 1993–August 31, 1994.

Scholarly Activity:

Books: **Image Deblurring**, *SIAM Press*, 2006.
co-authors: Per Christian Hansen and Dianne P. O'Leary

Introduction to Scientific Computing using Matlab, *Lulu*, 2011.
co-authors: Ian Gladwell and Warren E. Ferguson, Jr.

119 publications, which may be classified as follows:

Refereed Publications:	85	Conference Proceedings:	29
Educational Articles:	3	Book Chapters:	2

Google Scholar: https://scholar.google.com/citations?user=fMdqZFsAAAAJ&hl=en

Selected publications, since 2010 (* indicates student, and † indicates postdoc at time paper was written):

- J. Nagy and L. Onisk† , *Mixed precision iterative refinement for linear inverse problems* SIAM Journal on Matrix Analysis and Applications, 47 (1), 388–411, 2026. https://doi.org/10.1137/24M1703756.
- M. Sabate Landman† , A. Brown*, J. Chung and J. Nagy, *Randomized and Inner-product Free Krylov Methods for Large-scale Inverse Problems*, Numerical Algorithms, 100, 1965–1985 (2025). https://doi.org/10.1007/s11075-025-02167-w.

- A. Brown,* J. Chung, J. Nagy, and M. Sabate Landman†, *Inner Product Free Krylov Methods for Large-Scale Inverse Problems*, SIAM J. Sci. Comput., (0), S161-S182, 2025. https://doi.org/10.1137/24M1672699
- A. Brown*, M. Sabate Landman† and J. G. Nagy, *H-CMRH: An Inner Product Free Hybrid Krylov Method for Large-Scale Inverse Problems*, SIAM J. Matrix Analysis and Application, 46 (1), 232-255, 2025. https://doi.org/10.1137/24M1634874
- D. Evangelista*, J. G. Nagy, E. Morotti and E. Loli Piccolomini, *To be or not to be stable, that is the question: understanding neural networks for inverse problems*, SIAM Journal on Scientific Computing, 47 (1), C77-C99, 2025. https://doi.org/10.1137/23M1586872
- K. Kan*, J. G. Nagy, and L. Ruthotto, *LSEMINK: A modified Newton-Krylov method for log-sum-exp minimization*, Electronic Transactions on Numerical Analysis. 60, 618–635, 2024. https://doi.org/10.1553/etna_vol60s618
- D. Evangelista, E. Morotti, E. Loli Piccolomini, and J. G. Nagy, Ambiguity in Solving Imaging Inverse Problems with Deep-Learning-Based Operators, J. Imaging, 9 (2023), pp. 831–847. https://doi.org/10.3390/jimaging9070133
- C. Meng* and J. G. Nagy, Numerical Methods for CT Reconstruction with Unknown Geometry Parameters, Numerical Algorithms, 92 (2023), 15 pages. https://doi.org/10.1007/s11075-022-01451-3
- M. Mikerov, K. Michielsen, J. G. Nagy and I. Sechopoulos, Effect of attenuation model on iodine quantification in contrast-enhanced breast CT, 7th International Conference on Image Formation in X-Ray Computed Tomography, volume 12304 (2022), pp. 635–640. https://doi.org/10.1117/12.2646452
- C. Wang, M. Tao, C-N. Chuah, J. G. Nagy and Y. Lou, Minimizing L_1 over L_2 norms on the gradient Inverse Problems, 38 (2022), pp. 065011. https://doi.org/10.1088/1361-6420/ac64fb
- D. Cai†, J. G. Nagy, and Y. Xi. Fast deterministic approximation of symmetric indefinite kernel matrices with high dimensional datasets, SIAM J. Matrix Anal. Applic., 44 (2022), pp. 1003-1028, https://doi.org/10.1137/21M1424627
- C. Wang, M. Tao, J. G. Nagy, and Y. Lou, Limited-angle CT reconstruction via the $L1/L2$ minimization, SIAM J. Imaging Sci., 14 (2021), pp. 749–777. https://doi.org/10.1137/20M1341490
- S. Gazzola, J. G. Nagy and M. Sabaté Landman*, Iteratively Reweighted FGMRES and FLSQR for sparse reconstruction, SIAM J. Sci. Comput., 43 (2021), pp. S47-S69. https://doi.org/10.1137/20M1333948
- J. Zhang and J. G. Nagy, An Effective Alternating Direction Method of Multipliers for Color Image Restoration, Applied Numerical Mathematics, 164 (2021), pp. 43–56. https://doi.org/10.1016/j.apnum.2020.07.008
- S. Gazzola, M. E. Kilmer, J. G. Nagy, O. Semerici and E. L. Miller, An Inner-Outer Iterative Method for Edge Preservation in Image Restoration and Reconstruction, Inverse Problems, 36 (2020), pp. 124004 (33 pages). https://doi.org/10.1088/1361-6420/abb299
- K. Michielsen, A. Rodŕiguez-Ruiz, I. Reiser, J. G. Nagy, and I. Sechopoulos, Iodine Quantification in Limited Angle Tomography, J. Medical Physics, 47 (2020), pp. 4906–4916. https://doi.org/10.1002/mp.14400

- S. Gazzola, C. Meng* and J. G. Nagy, Krylov Methods for Low-Rank Regularization, SIAM J. Matrix Anal. Applic., 41 (2020), pp. 1477–1504. https://doi.org/10.1137/19M1302727
- J. L. Herring, J. G. Nagy and L. Ruthotto, Gauss–Newton Optimization for Phase Recovery from the Bispectrum, IEEE Transactions on Computational Imaging, 6 (2020), pp. 235–247. https://doi.org/10.1109/TCI.2019.2948784
- B. J. Rossetti*, S. A. Wilbert, J. L. Markd-Welch, G. B. Borisy, and J. G. Nagy, Semi-blind sparse affine spectral unmixing of autofluorescence-contaminated micrographs, Bioinformatics, 36 (2020), pp. 910–917. https://doi.org/10.1093/bioinformatics/btz674
- Z. Chen, J. G. Nagy, Y. Xi and B. Yu, Structured FISTA for Image Restoration, J. Numer. Linear Alg. Applic., (2019), https://doi.org/10.1002/nla.2278
- Y. Hu*, J. G. Nagy and M. Andersen, Spectral Computed Tomography with Linearization and Preconditioning, SIAM J. Sci. Comput., 41(5), S370–S389 (2019). https://doi.org/10.1137/18M1194419
- G. Landi, E. Loli-Piccolomini and J. G. Nagy, Nonlinear Conjugate Gradient Method for Spectral Tomosynthesis, Inverse Problems 35(9), 2019. https://doi.org/10.1088/1361-6420/ab1c94.
- Y. Hu*, J. G. Nagy, J. Zhang, and M. Andersen. *Nonlinear Optimization for Mixed Attenuation Polyenergetic Image Reconstruction*, Inverse Problems 35(6), 2019. https://doi.org/10.1088/1361-6420/ab0131
- J. L. Herring*, J. G. Nagy and L. Ruthotto, LAP: A Linearize and Project Method for Solving Inverse Problems with Coupled Variables, Sampling Theory in Signal and Image Processing Journal, 17(2), 127–152 (2018).
- C. Garvey*, C. Meng* and J. G. Nagy. *Singular Value Decomposition Approximation via Kronecker Product Summations for Imaging Applications*, SIAM J. Matrix Anal. Applic., 39(4), 1836–1857 (2018), https://doi.org/10.1137/18M1164147.
- S. Gazzola, P. C. Hansen, and J. G. Nagy. *IR Tools: A MATLAB Package of Iterative Regularization Methods and Large-Scale Test Problems*, Numerical Algorithms (2018), https://doi.org/10.1007/s11075-018-0570-7
- J. Zhang, Y. Hu* and J. Nagy. *A scaled gradient method for digital tomographic image reconstruction.* Inverse Problems and Imaging, 12 (2018), pp. 239–259. https://doi.org/10.3934/ipi.2018010
- M. Kubínová* and J. Nagy. *Robust regression for mixed Poisson-Gaussian model*, Numerical Algorithms (2018), 21 pages, https://doi.org/10.1007/s11075-017-0463-1
- J. Zhang and J. Nagy. *An alternating direction method of multipliers for the solution of matrix equations arising in inverse problems.* Numerical Linear Algebra and Applications (2017), 15 pages, https://doi.org/10.1002/nla.2123.
- E. Loli-Piccolomini, G. Landi and J. Nagy. *A Limited Memory BFGS method for a nonlinear inverse problem in digital breast tomosynthesis*, Inverse Problems 33 (2017), https://doi.org/10.1088/1361-6420/aa7a20.
- D. Hope, S. Jefferies, M. Hart and J. Nagy. *High-Resolution Speckle Imaging Through Strong Atmospheric Turbulence.* Optics Express, 24 (2016), pp. 12116–12129.

- S. Berisha*, J. Nagy and R. J. Plemmons. *Deblurring and Sparse Unmixing of Hyperspectral Images using Multiple Point Spread Functions.* SIAM J. Sci. Comput., 37 (2015), pp. S389–S406
- S. Berisha*, J. Nagy and R. J. Plemmons. *Estimation of Atmospheric PSF Parameters for Hyperspectral Imaging.* Numer. Lin. Alg. Appl., 22 (2015), pp. 795–813.
- P. C. Hansen, K. Kigkos and J. Nagy. *Rotational Image Deblurring with Sparse Matrices*, BIT Numerical Mathematics, 54 (2014), pp. 649–671.
- S. Gazzola* and J. Nagy. *Generalized Arnoldi-Tikhonov Method for Sparse Reconstruction*, SIAM J. Sci. Comp., 36 (2014), pp. B225–B247.
- V. Mejia-Bustamante*, J. Nagy and I. Sechopoulos. *Iterative Breast Tomosynthesis Image Reconstruction*, SIAM J. Sci. Comp., 35 (2013), pp. S192–S208.
- Q. Chu*, S. Jefferies and J. Nagy. *Iterative Wavefront Reconstruction for Astronomical Imaging*, SIAM J. Sci. Comp., 35 (2013), pp. S84–S103.
- J. Bardsley, M. Howard* and J. Nagy. *Image Deblurring, Gaussian Random Fields, and Neumann Boundary Conditions*, ETNA, 40 (2013), pp. 476–488.
- Y.-W. Fan* and J. Nagy. *An Efficient Computational Approach for Multiframe Blind Deconvolution*, J. Comput. Appl. Math., 236 (2012), pp. 2112–2125.
- J. Chung, S. Knepper* and J. Nagy. *Large-Scale Inverse Problems in Imaging*, Chapter 2 in Handbook of Mathematical Methods in Imaging, Otmar Scherzer, ed., Springer (2011), pp. 43–86.
- P. Wendykier* and J. Nagy. *Parallel Colt: A High Performance Java Library for Scientific Computing and Image Processing*, ACM Transactions on Mathematical Software, 37 (2010), pp. 31:1–31:22.
- J. Chung* and J. Nagy. *An Efficient Iterative Approach for Large-Scale Separable Nonlinear Inverse Problems*, SIAM J. Sci. Comput., 31 (2010), pp. 4654-4674.

Conference and Lecturing Activities:

Conferences Organized:	3	Invited Plenary Presentations:	54
Minisymposia Organized:	19	Invited Minisymposia Presentations:	83
Short Courses Organized:	7	Posters:	11

External Invited Seminar and Colloquium Presentations: 49

Selected conference organization activities, and some recent talks:

- Member of Householder Committee, *Householder Symposium XXI*, Ithaca, New York, June 8–13, 2025.
- Member of Householder Committee, 2014–2025, Committee Chair in 2017.
- Chair, *Georgia Scientific Computing Symposium*, Atlanta, GA, February, 2020, 2016
- Member of Program Committee, *Copper Mountain Conference on Iterative Methods*, March 21–25, 2016; March 26–30, 2018; April 4–8, 2022; April 14–19, 2024.
- Co-Chair, *SIAM Conference on Applied Linear Algebra*, Atlanta, GA, October 26–30, 2015.
- Member of Householder Committee, *Householder Symposium XIX*, Spa, Belgium, June 8–13, 2014.
- Member of Organizing Committee, *SIAM Conference on Applied Linear Algebra*, 2006 and 2009.

- Invited Talk, *ICIAM Workshop on Industrial and Applied Mathematics 2025*, Hanoi, Vietnam, September 11, 2025.
- Invited Talk, *Eighth International Conference on Numerical Algebra and Scientific Computing*, Xi'an, China, July 19–23, 2025.
- Invited Talk, *Applied Linear Algebra 2025*, Novi Sad, Serbia, July 3–5, 20025.
- Invited Talk, *International Workshop on Structured Matrix and Image Processing*, Nanjing, China November 15-19, 2024.

Refereeing:

- Average approximately 10 journal papers per year.
- Proposals from AFOSR, NSF (including several Panels), DOD, NIH, NSERC (Canada).

Student Supervision:

- Currently supervising 1 undergraduate student and 3 postdocs.
- Former Ph.D. students (* indicates jointly advised with Lars Ruthotto):

Ariana Brown, 2025.	Kelvin Kan*, 2023.	Chang Meng, 2022.
Blair Rosetti, 2019.	Yunyi Hu, 2019.	Clarissa Garvey, 2018.
James Herring*, 2018.	Sebastian Berisha, 2014.	Qing Chu, 2013.
Veronica Mejia-Bustamante, 2013.	Sarah Knepper, 2011.	Ying-Wai (Daniel) Fan, 2010.
Piotr Wendykier, 2009.	Julianne Chung, 2009.	Lisa Perrone, 2004.
Katrina Palmer, 2004.	Julie Kamm, 1998.	

- Former M.S. students: K. Johnson, 2005; Z. Xie, 2007; N. Adams, 2013.
- Former B.S./M.S. Honors students: S. Sulaiman, 2001; R. Wright, 2002.
- Former B.A./B.S. Honors students: J. Chung, 2004; J. Herring, 2010; J. Nance, 2011; C. Cheng, 2013; H. Xia, 2015; L. Lin, 2016; C. Meng, 2016; S. Raju, 2016; R. Platero, 2017; H. Wu, 2017; M. Hu, 2019; S. Huang, 2019; F. Yin, 2019; W. Ding, 2021; M. P. Pham Huynh, 2022; L. Sheng, 2022; J. Zheng, 2022; K. Gong, 2023; Y. Chen, 2024.

Teaching Awards:

- Emory Williams Distinguished Teaching Award, Emory University, 2010.
- Crystal Apple Award for Excellence in Graduate Teaching, Emory University, 2007.
- Emory College Professor for Distinguished Teaching, August 2001–July 2005.
- Golden Mustang Award for Excellence in Teaching and Scholarship, Southern Methodist University, 1996.

Teaching Activities:

- Workshop for *Sonia Kovalevsky High School Math Day*, Emory University, May 8, 2008.
- Organized MATLAB Training Sessions for Emory faculty, postdocs and graduate students, August 2003, August 2004, October 2004.
- National Public Radio Interview, *Emory Scientists Seek Perfect Pictures*, October 28, 2003.
- Teaching Problem-Solving Skills Presentation, *Teaching Assistant Seminar*, August 20, 1998.
- Faculty Mentor, *Fifth Annual Teaching Effectiveness Symposium*, Southern Methodist University, August 18, 1998.
- Invited Faculty Panel Participant, *Reflections of Teaching Award Winners*, for the *Fifth Annual Teaching Effectiveness Symposium*, Southern Methodist University, August 19, 1997.

- Selected Member of *Project Kaleidoscope Faculty for the 21st Century*, an alliance of individuals, institutions, and organizations dedicated to strengthening the nation's undergraduate and mathematics community. (Supported by the Exxon Foundation and the NSF.) 1996–1999.
- Group Leader, break-out session on Teaching Mathematics and Quantitative Analysis, *Third Annual Teaching Effectiveness Symposium*, Southern Methodist University, August 25, 1995.

University Service Activities (Emory):

- Emory College Tenure and Promotion Committee, 2025–2026.
- Member, Grievance Committee, Emory College of Arts and Sciences, 2022–2025.
- Member, Curriculum, Assessment and Educational Policy Committee, Emory College of Arts and Sciences, 2021–2024.
- Co-Chair, University Research Committee (URC), 2016–2022.
- Unconscious Bias Faculty Facilitator, 2018–2019.
- Member, University Research Advisory Board, 2018–2023.
- Member, Program for Enhancement of Research and Scholarship Committee, 2015–2018
- Member, College Senate Working Group on Evaluation of Teaching Excellence, Spring, 2017.
- Member, Recruitment Advisory Committee for Associate Dean of Research, 2014–2015.
- Laney Graduate School Appointments Committee, 2014–2016.
- Chair, Emory College Tenure and Promotion Committee, 2012–2013.
- Emory College Tenure and Promotion Committee, 2010–2013.
- Graduate Studies Committee, Math. and Comp. Sci., Emory University, 2010–present.
- Director of Graduate Studies, Math. and Comp. Sci., Emory University, 2003–2009.
- University Research Committee (URC), 2006–2009.
- Emerson Lecture Committee, 2006–2009.
- Computational and Life Sciences Advisory Committee, 2006–present.
- Graduate School of Arts and Sciences Executive Council, Emory University, 2006–2007.
- Center for Teaching and Curriculum Advisory Committee, Emory University, 2002–2005.
- CTC Teaching Initiatives Committee, fall, 2002 – spring, 2003.
- Integrated Natural, Physical and Computational Sciences (INPACS) degree planning committee member, spring 2001 – 2003.

University Service Activities (SMU):

- Director of Graduate Studies, Mathematics, Southern Methodist University, 1997–1999.
- Athletic Council Member (Executive, Academic, Budget, and Equity Subcommittees)
- Chair, Athletic Council Budget Subcommittee, spring, 1999.
- Athletics Policies Committee for SACS Accreditation, 1998–1999.

Additional Awards and Honors

- Northern Illinois University, Golden Anniversary Alumni Award, September 25, 2009.
- NCAA All American, Gymnastics. (3rd place on Still Rings at the 1986 NCAA National Championships, University of Nebraska).