Curriculum Vitae
James G. Nagy

Samuel Candler Dobbs Professor and Chair

Department of Mathematics
Emory University
Atlanta, GA, USA
http://www.mathcs.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.

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–present.
- SIAM Fellows Selection Committee 2017–2019; Committee Chair 2018–2019.
- SIAM Fellow, selected in 2016.
- Co-Chair, University Research Committee, Emory University, 2016–present.
- 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.
- Current editorial board appointments:
  SIAM Journal on Matrix Analysis and Applications
  SIAM Journal on Scientific Computing
  Numerical Algorithms
  Electronic Journal of Linear Algebra
- 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.
  http://www.niu.edu/clas/aboutus/awards/past-CLAS-award-honorees.pdf

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

102 publications, which may be classified as follows:

Refereed Publications:	65	Conference Proceedings:	29
Educational Articles:	3	Submitted Manuscripts:	5

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

Selected publications (* indicates student at time paper was written):

- 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, submitted for publication December, 2019. https://arxiv.org/abs/1912.13103
- S. Gazzola, C. Meng* and J. G. Nagy, Krylov Methods for Low-Rank Regularization, submitted for publication November, 2019. https://arxiv.org/abs/1910.10664
- J. L. Herring, J. G. Nagy and L. Ruthotto, Gauss–Newton Optimization for Phase Recovery from the Bispectrum, IEEE Transactions on Computational Imaging, accepted for publication in October 2019. 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, accepted for publication in August 2019.
  https://doi.org/10.1093/bioinformatics/btz674

- 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.
- F. Di Benedetto, C. Estatico, M. Pastorino and J. Nagy. *Numerical Linear Algebra for Nonlinear Microwave Imaging*, Elect. Trans Numer. Anal., 33 (2009), pp. 105-125.
- J. Chung*, J. Nagy and D. O'Leary *A Weighted GCV Method for Lanczos Hybrid Regularization*, Elect. Trans. Numer. Anal., 28 (2008), pp. 149–167.
- M. Kilmer and J. Nagy. *Kronecker Product Approximations for Dense Block Toeplitz-plus-Hankel Matrices*, Num. Lin. Alg. Applic., 14 (2007), pp. 581–602.

Conference and Lecturing Activities:

Conferences Organized:	3	Invited Plenary Presentations:	35
Minisymposia Organized:	16	Invited Minisymposia Presentations:	55
Short Courses Organized:	6	Contributed Presentations/Posters:	7

External Invited Seminar and Colloquium Presentations: 36

Selected conference, seminar and colloquium activities include:

- Chair of Householder Committee, *Householder Symposium XX*, Blacksburg, VA, June 18–23, 2017.
- Chair, *Georgia Scientific Computing Symposium*, Atlanta, GA, February, 2016.
- Member of Program Committee, *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, March 21–25, 2016; March 26–30, 2018.
- 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.
- Plenary Talk, *17th International Conference of Numerical Analysis and Applied Mathematics*, Rhodes, Greece, September 13–18, 2018.
- Plenary Talk, *Parameter Learning and Sparsity Workshop*, Isaac Newton Institute, Cambridge University, UK, October 27 – November 4, 2017.
- Plenary Talk, *International Conference on Numerical Algebra and Scientific Computing*, Hangzhou, China, October 22–26, 2016.
- Plenary Talk, *The International Industrial Mathematics Conference*, University of Sri Jayewardenepura, Sri Lanka, June 3-5, 2016.

- Plenary Talk, *SIAM-SEAS Conference*, University of Alabama at Birmingham, March 20–22, 2015.
- Plenary Talks, *4th Workshop on Mathematical Analysis on Inverse Problems and Imaging*, National Astronomical Observatory of Japan, Tokyo, Japan. January 7–8, 2014.
- Plenary Talk, *International Workshop on Numerical Linear Algebra with Applications*, Hong Kong, China. November 17–18, 2013.
- Plenary Talk, *Optimization Techniques for Inverse Problems*, Modena, Italy, September 20–21, 2012.
- Plenary Talk, *SAMSI Opening Workshop, Massive Datasets Program*, Raleigh, NC, September 9-11, 2012.
- Plenary Talk, *24th Biennial Conference on Numerical Analysis*, University of Strathclyde, Glasgow, Scotland, June 28 - July 1, 2011
- Plenary Talk, *Advanced Maui Optical and Space Surveillance Technologies Conference*, Maui, HI, September 24, 2009.
- Invited Topical Talk, *SIAM Annual Meeting*, San Diego, CA, July 7–11, 2008.
- Plenary Talk, *International Linear Algebra Society (ILAS) Conference*, Cancun, Mexico, June 15–21, 2008.
- Plenary Talk, *Householder Symposium*, Zeuthen, Germany, May 31 June 7, 2008.
- Plenary Talk, *Advanced Maui Optical and Space Surveillance Technologies Conference*, Maui, HI, September 24, 2007.
- Plenary Talk, *Householder Symposium*, Champion, PA, May 23–27, 2005.
- Plenary Talk, *SIAM-SEAS Conference*, Charleston, SC, March 25–26, 2005.
- Plenary Talk, *SIAM Conference on Applied Linear Algebra*, Williamsburg, VA, July 15–18, 2003.
- Plenary Talk, *Householder Symposium*, Whistler, B.C., Canada, June 13–18, 1999.
- Plenary Talk, *SIAM Conference on Sparse Matrices*, Coeur d'Alene, Idaho, October 9–11, 1996.

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

Student Supervision:
- Currently supervising 3 Ph.D. students and 3 undergraduate honors students.
- Former Ph.D. students (* indicates jointly advised with Lars Ruthotto):
  Blair Rosetti, 2019. Current position: Comp. Imaging Sci., Janelia Research, HHMI.
  Yunyi Hu, 2019. Current position: Quantitative Associate, Wells Fargo.
  Clarissa Garvey, 2018. Current position: Software Engineer, Google.
  James Herring*, 2018. Current Position: Posdoc, U. Houston.
  Sebastian Berisha, 2014. Current position: Postdoc, U. of Houston.
  Qing Chu, 2013. Current position: Highmark Health.
  Veronica Mejia-Bustamante, 2013. Current position: Financial Analytics, JP Morgan Chase.
  Sarah Knepper, 2011. Current position: Staff Scientist for MKL Group, Intel.
  Ying-Wai (Daniel) Fan, 2010. Current position: Software Engineer, Google.
  Piotr Wendykier, 2009. Current position: Software Engineer, Wolfram Research.

Julianne Chung, 2009. Current position: Associate Prof., VA Tech.
Lisa Perrone, 2004. Current position: United States Navy, Honolulu, HI.
Katrina Palmer, 2004. Current position: Full Prof., Appalachian State University.
Julie Kamm, 1998. Current position: Software Engineer, Raytheon Systems.

- 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; S. Huang, 2019; F. Yin, 2019.

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):

- Co-Chair, University Research Committee (URC), 2016–present.
- Unconscious Bias Faculty Facilitator, 2018–2019.
- Member, University Research Advisory Board, 2018–present.
- 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.
  http://www.niu.edu/clas/aboutus/awards/past-CLAS-award-honorees.pdf

- Invited talk at 2008 SIAM Annual meeting recorded and made available at:
  https://www.pathlms.com/siam/courses/5156

- NCAA All American, Gymnastics. (3rd place on Still Rings at the 1986 NCAA National Championships, University of Nebraska).
  http://www.mathcs.emory.edu/~nagy/Nagy_gymnastics_1986a.jpg
  http://www.mathcs.emory.edu/~nagy/Nagy_gymnastics_1986b.jpg