

# Michele Benzi

## Personal:

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- Electronic Mail: michele.benzi@sns.it
- Place of birth: Bologna, Italy
- Citizenships: Italian; United States

## Education:

- Ph.D. Mathematics, North Carolina State University, 1993. Advisor: Carl D. Meyer.
- M.S. Mathematics, North Carolina State University, 1991.
- Laurea Mathematics, University of Bologna, 1987 (*with highest honors*).

**Service:** Compulsory military service, Italian Air Force, 05/1988–04/1989.

## Research Interests:

Numerical Analysis and Scientific Computing, in particular: Large-Scale Numerical Linear Algebra (Sparse Matrix Computations, Iterative Methods, Preconditioning Techniques, Multilevel Methods for PDE-Constrained Optimization, Matrix Functions, Parallel Computing); Matrix Theory; Graph Theory; Applications to Fluid Mechanics, Quantum Chemistry, Chemical Physics, Complex Networks, Transport, Markov Chains.; History of Numerical Analysis.

## Positions Held:

- 9/18-present **Full Professor of Numerical Analysis**  
Scuola Normale Superiore  
Pisa, Italy
- 8/00-8/18 **Samuel Candler Dobbs Professor** (2012–2018);  
**Full Professor**, 2006–2018;  
**Winship Distinguished Research Professor**, 2003–2006;  
**Associate Professor**, 2000–2006;  
Department of Mathematics and Computer Science  
Emory University  
Atlanta, Georgia, USA
- 7/98-7/00 **Technical Staff Member**  
Computer Research and Applications Group (CIC-3)  
Los Alamos National Laboratory  
Los Alamos, New Mexico, USA
- 7/97-6/98 **Post-Doctoral Fellow (Director-Funded)**  
Scientific Computing Group (CIC-19)  
Los Alamos National Laboratory  
Los Alamos, New Mexico, USA

- 1/96-6/97      **Post-Doctoral Researcher**  
Parallel Algorithms Group  
Centre Européen de Recherche et de Formation Avancée  
en Calcul Scientifique (CERFACS)  
Toulouse, France
- 6/93-9/96      **Researcher (= Assistant Professor)**  
Department of Mathematics  
University of Bologna, Italy
- 8/92-4/93      **Research and Teaching Assistant**  
Supported by the U.S. National Science Foundation.  
Department of Mathematics,  
North Carolina State University, Raleigh, NC, USA

### Grants:

- Italian Ministry for University and Research, Finanziamento Congiunto Pro3 – Programmazione Triennale 2021–2023 (“Training Provably Stable Neural ODEs”), joint grant SNS-GSSI (co-PI, 60,000 Euros).
- Scuola Normale Superiore, Faculty Start-up Funds, 2018–2020 (30,000 Euros).
- National Science Foundation grant DMS-1719578 (“Generalized Matrix Functions: Theory, Algorithms, and Applications”), 08/01/2017-07/31/2020 (PI; US \$250,016).
- National Science Foundation grant DMS-1418889 (“Numerical Methods for Graph and Network Analysis”), 08/01/2014-07/31/2017 (PI; US \$180,000).
- Department of Energy (Office of Science) grant ERKJ247 (“MCREX: Using Monte Carlo Algorithms to Achieve Resiliency and Performance at Scale for Linear and Non-Linear Solver Applications”), 06/15/2013-06/14-2016 (co-PI; US \$900,000).
- National Science Foundation grant DMS-1115692 (“Numerical Linear Algebra Tools for the Analysis of Complex Networks”), 08/2011-07/2014 (PI; US \$303,046).
- National Science Foundation grant DMS-0810862 (“Approximation of Matrix Functions: Theory, Algorithms, and Software”), 08/2008-07/2011 (PI; US \$229,481).
- National Science Foundation grant DMS-0511336 (“Scalable Iterative Solution of Large Linear Systems with Applications in Fluid Dynamics, Radiation Transport and Markov Chains”), 08/2005-07/2008 (PI; US \$237,008).
- National Science Foundation grant DMS-0207599 (“Development, Analysis, and Implementation of Robust Algebraic Preconditioners for Sparse Linear Systems”), 8/2002-7/2005 (PI; US \$138,200 + 15,710 supplement, total amount = US \$153,910).
- National Science Foundation grant to support US-based PhD students attending the Gene Golub Summer School/ISSNLA 2013 in Shanghai, China, (US \$30,000), April 2013. Co-PI with Zhaojun Bai (UC Davis).
- Gene Golub SIAM Summer School grant in support of ISSNLA 2013 (US \$65,000), April 2012. Co-PI with Zhaojun Bai (UC Davis).

- University Research Committee grant (“New Algorithms for Solving the Incompressible Navier–Stokes Equations”), 2009-2010 (PI; US \$30,000).
- University Research Committee grant (“Parallel Algorithms and Software for Large-Scale Saddle Point Problems”), 2006-2007 (PI; US \$28,500).
- Two DOE grants in support of “The 2005 International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications”, totalling US \$14,000 (PI; Spring 2005).
- National Science Foundation grant DMS-0435964 (“The 2005 International Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications”), Emory University, Atlanta, GA, May 19–21 (PI; US \$11,300).
- Computing, Information, and Communication Division (LANL) grant in support of the Conference on Linear Algebra: Theory, Applications and Computation held at Wake Forest University, Winston–Salem, NC, January 8–9, 1999 (PI; US \$10,000).
- LDRD Exploratory Research grant on Multilevel Sparse Approximate Inverse Preconditioners (1998/99–2000/01), US \$175,000/year (co-PI with M. DeLong).
- Joint CNR - Czech Academy of Sciences grants to support exchanges with the Institute of Computer Science in Prague (1995).
- Travelling scholarships funded by the Italian National Research Council for the period 8/1989–7/1992 (net amount: US \$50,000).

### Honors and Awards:

- Member of Academia Europaea (elected July 2019).
- Fellow, American Mathematical Society (class of 2018).
- Fellow, Society for Industrial and Applied Mathematics (class of 2012).
- Awarded the Samuel Candler Dobbs Chair of Mathematics and Computer Science, Emory University (2012).
- IAM-PIMS Distinguished Colloquium, University of British Columbia, Vancouver, Canada, March 10, 2014.
- Recipient of the Winship Distinguished Research Professorship, Emory University, 2003–2006.
- Recipient with M. Tůma of the 2001 SIAM Outstanding Paper Prize for paper [16] (see publication list below).
- Recipient with B. Uçar of the “Best Paper Award” presented at the *2006 Markov Anniversary Meeting* (Charleston, SC, June 12-14, 2006) for paper [50] (see publication list below).
- Recipient with S. Hamilton of the “Best Summary & Presentation Award” presented at the *2011 American Nuclear Society Winter Meeting*, (Washington, DC, October 30 - November 3, 2011).

- Outstanding referee, SIAM (Society for Industrial and Applied Mathematics), 2009.
- SIAM Visiting Lecturer, September 2006–2018.
- SIAG/LA (SIAM Activity Group on Linear Algebra) speaker at the Tenth ILAS International Conference, Auburn, Alabama, June 10–13, 2002.
- Director-Funded Postdoctoral Fellow, Los Alamos National Laboratory (July 1997 – June 1998).
- Winner of the \$3300 Winton-Rose Award for best PhD student, Department of Mathematics, North Carolina State University (May 1993).

### Books:

- [1] M. Benzi, D. A. Bini, D. Kressner, H. Z. Munthe-Kaas, C. Van Loan, “Exploiting Hidden Structure in Matrix Computations: Algorithms and Applications (Cetraro, Italy 2015)”, Lecture Notes in Mathematics vol. 2173, Springer and Fondazione CIME, New York, 2016, ISBN 978-3-319-49887-4 (ix + 406 pp.).

### Research Papers:

- [1] M. Benzi, “Un Algoritmo Iterativo Parallelo per la Soluzione di Sistemi Lineari (A Parallel Iterative Algorithm for the Solution of Linear Systems),” *Atti Accad. Sc. Ist. Bologna*, XIV, 6 (1991), 35–41.
- [2] M. Benzi, “Solution of Equality-Constrained Quadratic Programming Problems by a Projection Iterative Method,” *Rend. Mat. Applic.*, VII, 13 (1993), 275–296.
- [3] M. Benzi and C. D. Meyer, “An Explicit Preconditioner for the Conjugate Gradient Method,” in J. D. Brown et al. (Eds.), *Proceedings of the Cornelius Lanczos International Centenary Conference*, SIAM, Philadelphia (1994), 294–296.
- [4] M. Benzi, F. Sgallari and G. Spaletta, “A Parallel Block Projection Method of the Cimmino Type for Finite Markov Chains,” in W. J. Stewart (Ed.), *Computations with Markov Chains: Proceedings of the Second International Workshop on the Numerical Solution of Markov Chains*, Kluwer Academic Publishers, Boston (1995), 65–80.
- [5] M. Benzi and T. Dayar, “The Arithmetic Mean Method for Finding the Stationary Vector of Markov Chains,” *Parallel Algorithms and Applications*, 6 (1995), 25–37.
- [6] M. Benzi and C. D. Meyer, “A Direct Projection Method for Sparse Linear Systems,” *SIAM Journal on Scientific Computing*, 16, 5 (1995), 1159–1176.
- [7] M. Benzi and M. Tũma, “A Comparison of Some Preconditioning Techniques for General Sparse Matrices,” in S. Margenov and P. Vassilevski (Eds.), *Iterative Methods in Linear Algebra, II*, IMACS Series in Computational and Applied Mathematics, Vol. 3, IMACS, New Brunswick, NJ (1996), 191–203.
- [8] M. Benzi, C. D. Meyer and M. Tũma, “A Sparse Approximate Inverse Preconditioner for the Conjugate Gradient Method,” *SIAM Journal on Scientific Computing*, 17, 5 (1996), 1135–1149.

- [9] M. Benzi and M. Tůma, “Preconditioning with Sparse Approximate Inverses,” in I. Marek (Ed.), *Proceedings of the XI Summer School on Software and Algorithms of Numerical Mathematics*, Železná Ruda, Czech Republic (1996), 5–16.
- [10] G. Spaletta, F. Sgallari, M. Benzi and R. Ansaloni, “A Block Cimmino Method for Finite Markov Chains on the Cray T3D,” in G. Erbacci and M. Voli (Eds.), *Science and Supercomputing at CINECA*, Bologna, Italy (1996), 512–518.
- [11] M. Benzi and M. Tůma, “Approximate Inverse Preconditioning for the Conjugate Gradient Method on a Vector Computer,” in K. Segeth (Ed.), *Proceedings of the Prague Mathematical Conference ‘96*, (1996), 29–34.
- [12] M. Benzi and D. B. Szyld, “Existence and Uniqueness of Splittings for Stationary Iterative Methods with Applications to Alternating Methods,” *Numerische Mathematik*, 76, 3 (1997), 309–321.
- [13] M. Benzi, “Remarks on the Numerical Solution of Certain Linear Complementarity Problems,” *Journal of Computational and Applied Mathematics*, 83 (1997), 137–143.
- [14] M. Benzi, H. Choi and D. B. Szyld, “Threshold Ordering for Preconditioning Nonsymmetric Problems,” in G. H. Golub, S. H. Lui, F. T. Luk, and R. J. Plemmons, *Proceedings of the Workshop on Scientific Computing, Hong Kong, 10–12 March, 1997*, Springer Verlag, Singapore (1997), 159–165.
- [15] G. Alléon, M. Benzi and L. Giraud, “Sparse Approximate Inverse Preconditioning for Dense Linear Systems Arising in Computational Electromagnetics,” *Numerical Algorithms*, 16, 1 (1997), 1–15.
- [16] M. Benzi and M. Tůma, “A Sparse Approximate Inverse Preconditioner for Nonsymmetric Linear Systems,” *SIAM Journal on Scientific Computing*, 19, 3 (1998), 968–994.
- [17] M. Benzi and M. Tůma, “Numerical Experiments with Two Approximate Inverse Preconditioners,” *BIT*, 38, 2 (1998), 234–241.
- [18] M. Benzi, D. B. Szyld and A. van Duin, “A Study of Different Orderings for Incomplete Factorization Preconditioning of Nonsymmetric Linear Systems,” *Proceedings of the World Congress on Computational Mechanics (Buenos Aires 1998)*, Centro Internac. Metodos Numer. Eng., Barcelona, 1998 [CD-ROM].
- [19] M. Benzi, R. Kouhia and M. Tůma, “An Assessment of Some Preconditioning Techniques in Shell Problems,” *Communications in Numerical Methods in Engineering*, 14 (1998), 897–906.
- [20] M. Benzi, J. Marín and M. Tůma, “Parallel Preconditioning with Factorized Sparse Approximate Inverses,” in B. Hendrickson et al., eds., *Proceedings of the Ninth SIAM Conference on Parallel Processing for Scientific Computing*, SIAM, Philadelphia, 1999 [CD-ROM, ISBN: 0-89871-435-4], 5 pages.
- [21] M. Benzi and M. Tůma, “A Comparative Study of Sparse Approximate Inverse Preconditioners,” *Applied Numerical Mathematics*, 30 (1999), 305–340.
- [22] M. Benzi, W. D. Joubert and G. Mateescu, “Numerical Experiments with Parallel Orderings for ILU Preconditioners,” *Electronic Transactions on Numerical Analysis*, 8 (1999), 88–114.

- [23] M. Benzi, D. B. Szyld and A. van Duin, “Orderings for Incomplete Factorization Preconditioning of Nonsymmetric Problems,” *SIAM Journal on Scientific Computing*, 20 (1999), 1652–1670.
- [24] M. Benzi and G. H. Golub, “Bounds for the Entries of Matrix Functions with Applications to Preconditioning,” *BIT*, 39 (1999), 417–438.
- [25] M. Benzi, W. D. Joubert and G. Mateescu, “Can Incomplete LU Factorizations Give Both Robust and Parallel Preconditioners?,” in D. R. Kincaid and A. C. Elster, eds., *Iterative Methods in Scientific Computation IV*, IMACS Series in Computational and Applied Mathematics vol. 5, IMACS, New Brunswick, NJ (1999), 155–166.
- [26] M. Benzi, J. Marín and M. Tũma, “A Two-Level Parallel Preconditioner Based on Sparse Approximate Inverses,” in D. R. Kincaid and A. C. Elster, eds., *Iterative Methods in Scientific Computation IV*, IMACS Series in Computational and Applied Mathematics vol. 5, IMACS, New Brunswick, NJ (1999), 167–178.
- [27] M. Benzi and M. Tũma, “Orderings for Factorized Sparse Approximate Inverse Preconditioners,” *SIAM Journal on Scientific Computing*, 21 (2000), 1851–1868.
- [28] M. Benzi and M. A. DeLong, “Approximate Schur Complement Multilevel Methods for General Sparse Systems,” in E. Dick, K. Rienslagh and J. Vierendeels, eds., *Multigrid Methods VI. Proceedings of the Sixth European Multigrid Conference Held in Gent, Belgium, September 27-30, 1999*, Lecture Notes in Computational Science and Engineering, Springer-Verlag, New York and Berlin (2000), 52–58.
- [29] M. Benzi, R. Kouhia and M. Tũma, “On Some New Developments in Approximate Inverse Preconditioning,” in E. Oñate, G. Bugeda and B. Suárez, eds., *Proceedings of the European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2000)*, Barcelona, Spain (2000) [CD-ROM, ISBN: 84-89925-70-4], 11 pages.
- [30] M. Benzi, J. K. Cullum and M. Tũma, “Robust Approximate Inverse Preconditioning for the Conjugate Gradient Method,” *SIAM Journal on Scientific Computing*, 22 (2000), 1318–1332.
- [31] M. Benzi, J. C. Haws and M. Tũma, “Preconditioning Highly Indefinite and Nonsymmetric Matrices,” *SIAM Journal on Scientific Computing*, 22 (2000), 1333–1353.
- [32] M. Benzi, R. Kouhia and M. Tũma, “Stabilized and Block Approximate Inverse Preconditioners for Problems in Solid and Structural Mechanics,” *Computer Methods in Applied Mechanics and Engineering*, 190 (2001), 6533–6554.
- [33] M. Benzi, A. Frommer, R. Nabben and D. B. Szyld, “Algebraic Theory of Multiplicative Schwarz Methods,” *Numerische Mathematik*, 89 (2001), 605–639.
- [34] M. Benzi and M. Tũma, “A Parallel Solver for Large-Scale Markov Chains,” *Applied Numerical Mathematics*, 41 (2002), 135–153.
- [35] M. Benzi, “Preconditioning Techniques for Large Linear Systems: A Survey,” *Journal of Computational Physics*, 182 (2002), 418–477 (invited survey paper).
- [36] J. S. Warsa, M. Benzi, T. Wareing and J. Morel, “Two-Level Preconditioning of a Discontinuous Galerkin Method for Radiation Diffusion,” in F. Brezzi, A. Buffa, S. Corsaro and A. Murli,

- eds., *Numerical Mathematics and Advanced Applications. Proceedings of ENUMATH 2001*, Springer-Verlag, New York and Berlin (2003), 967–978.
- [37] M. Benzi and M. Tũma, “A Robust Incomplete Factorization Preconditioner for Positive Definite Matrices,” *Numerical Linear Algebra with Applications*, 10 (2003), 385–400.
- [38] M. Benzi and D. Bertaccini, “Approximate Inverse Preconditioning for Shifted Linear Systems,” *BIT*, 43 (2003), 231–244.
- [39] M. Benzi and M. Tũma, “A Robust Preconditioner with Low Memory Requirements for Large Sparse Least Squares Problems,” *SIAM Journal on Scientific Computing*, 25 (2003), 499–512.
- [40] M. Benzi, M. J. Gander, and G. H. Golub, “Optimization of the Hermitian and Skew-Hermitian Splitting Iteration for Saddle-Point Problems,” *BIT*, 43 (2003), 881–900.
- [41] M. Benzi, “A Direct Projection Method for Markov Chains,” *Linear Algebra and its Applications*, 386 (2004), 27–49.
- [42] M. Benzi and G. H. Golub, “A Preconditioner for Generalized Saddle Point Problems,” *SIAM Journal on Matrix Analysis and Applications*, 26 (2004), 20–41.
- [43] M. Benzi, “HSS Preconditioning for the Oseen Problem,” in P. Neittaanmaki, T. Rossi, S. Korotov, E. Oñate, J. Périaux, and D. Knörzer, eds., *Proceedings of the European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2004)*, Jyväskylä, Finland (2004) [CD-ROM], 8 pages.
- [44] J. S. Warsa, M. Benzi, T. Wareing and J. Morel, “Preconditioning a Mixed Discontinuous Finite Element Method for Radiation Diffusion,” *Numerical Linear Algebra with Applications*, 11 (2004), 795–811.
- [45] V. Simoncini and M. Benzi, “Spectral Properties of the Hermitian and Skew-Hermitian Splitting Preconditioner for Saddle Point Problems,” *SIAM Journal on Matrix Analysis and Applications*, 26 (2004), 377–389.
- [46] J. S. Warsa, K. Thompson, J. Morel, J. Chang, K. Budge and M. Benzi, “Preconditioning a Parallel, Inexact Block-Jacobi Splitting of the  $S_N$  Algorithm,” in *Proceedings of the International Topical Meeting on Mathematics and Computation, Super Computing, Reactor Physics, and Nuclear Biological Applications*, Avignon, France, September 12–15, 2005, 1–13.
- [47] M. Benzi, G. H. Golub and J. Liesen, “Numerical Solution of Saddle Point Problems,” *Acta Numerica*, 14 (2005), 1–137 (invited survey paper).
- [48] M. Benzi, “Gianfranco Cimmino’s Contributions to Numerical Mathematics,” *Atti del Seminario di Analisi Matematica*, Dipartimento di Matematica dell’Università di Bologna. Volume Speciale: Ciclo di Conferenze in Ricordo di Gianfranco Cimmino, Marzo-Maggio 2004, Tecnoprint, Bologna (2005), 87–109.
- [49] M. Benzi and M. K. Ng, “Preconditioned Iterative Methods for Weighted Toeplitz Least Squares Problems,” *SIAM Journal on Matrix Analysis and Applications*, 27 (2006), 1106–1124.
- [50] M. Benzi and B. Uçar, “Product Preconditioning for Markov Chain Problems,” in A. N. Langville and W. J. Stewart, eds., *Proceedings of the 2006 Markov Anniversary Meeting (Charleston, SC, June 14–16, 2006)*, Boson Books, Raleigh, NC, 2006, 239–256.

- [51] M. Benzi and V. Simoncini, “On the Eigenvalues of a Class of Saddle Point Matrices,” *Numerische Mathematik*, 103 (2006), 173–196.
- [52] M. Benzi and M. A. Olshanskii, “An Augmented Lagrangian-Based Approach to the Oseen Problem,” *SIAM Journal on Scientific Computing*, 28 (2006), 2095–2113.
- [53] M. Noskov, M. Benzi, and M. D. Smooke, “An Implicit Compact Scheme Solver for Two-Dimensional Multicomponent Flows,” *Computers & Fluids*, 36 (2007), 376–397.
- [54] M. Benzi and N. Razouk, “On the Iwasawa Decomposition of a Symplectic Matrix,” *Applied Mathematics Letters*, 20 (2007), 260–265.
- [55] M. Benzi and B. Uçar, “Block Triangular Preconditioners for  $M$ -matrices and Markov Chains,” *Electronic Transactions on Numerical Analysis*, 26 (2007), 209–227.
- [56] M. Benzi and N. Razouk, “Decay Bounds and  $O(n)$  Algorithms for Approximating Functions of Sparse Matrices,” *Electronic Transactions on Numerical Analysis*, 28 (2007), 16–39. Special Volume in Honor of Gene H. Golub’s 75th Birthday.
- [57] M. Benzi and J. Liu, “Block Preconditioning for Saddle Point Systems with Indefinite (1,1) Block,” *International Journal of Computer Mathematics*, 84 (2007), 1117–1129. Special Issue on Fast Iterative and Preconditioning Methods for Linear and Non-Linear Systems.
- [58] M. Benzi and J. Liu, “An Efficient Solver for the Navier–Stokes Equations in Rotation Form,” *SIAM Journal on Scientific Computing*, 29 (2007), 1959–1981.
- [59] M. A. Olshanskii and M. Benzi, “An Augmented Lagrangian Approach to Linearized Problems in Hydrodynamic Stability,” *SIAM Journal on Scientific Computing*, 30 (2008), 1459–1473.
- [60] M. Benzi and D. Bertaccini, “Block Preconditioning of Real-valued Iterative Algorithms for Complex Linear Systems,” *IMA Journal of Numerical Analysis*, 28 (2008), 598–618.
- [61] M. Benzi and A. J. Wathen, “Some Preconditioning Techniques for Saddle Point Problems,” in W. Schilders, H. A. van der Vorst and J. Rommes, eds., *Model Order Reduction: Theory, Research Aspects and Applications*, Springer-Verlag (Series: Mathematics in Industry), 2008, 195–211.
- [62] M. Benzi, “Splittings of Symmetric Matrices and a Question of Ortega,” *Linear Algebra and its Applications*, 429 (2008), 2340–2343. Special Issue in Honor of Richard Varga.
- [63] S. P. Hamilton, M. Benzi, and J. Warsa, “Negative-Flux Fixups in Discontinuous Finite Element  $S_N$  Transport,” in *Proceedings of the International Conference on Mathematics, Computational Methods & Reactor Physics 2009 (M&C 2009)*, American Nuclear Society, Vol. 4 (2009), Saratoga Springs, NY, 2009, 2529–2538.
- [64] M. Benzi, “A Generalization of the Hermitian and Skew-Hermitian Splitting Iteration,” *SIAM Journal on Matrix Analysis and Applications*, 31 (2009), 360–374.
- [65] M. Benzi, E. Haber, and L. Taralli, “Multilevel Algorithms for Large-Scale Interior Point Methods,” *SIAM Journal on Scientific Computing*, 31 (2009), 4152–4175.
- [66] C. Zhang and M. Benzi, “ $P$ -regular Splitting Iterative Methods for Non-Hermitian Positive Definite Linear Systems,” *Electronic Transactions on Numerical Analysis*, 36 (2009–2010), 39–53. Special Volume in Honor of Richard Varga.



- [67] S. P. Hamilton, M. Benzi, and E. Haber, “New Multigrid Smoothers for the Oseen Problem,” *Numerical Linear Algebra with Applications*, 17 (2010), 557–576.
- [68] Z.-Z. Bai, M. Benzi, and F. Chen, “Modified HSS Iteration Methods for a Class of Complex Symmetric Linear Systems,” *Computing*, 87 (2010), 93–111.
- [69] M. Benzi and P. Boito, “Quadrature Rule-Based Bounds for Functions of Adjacency Matrices,” *Linear Algebra and its Applications*, 433 (2010), 637–652.
- [70] M. Benzi, L. Ferragut, M. Pennacchio, and V. Simoncini, “Solution of Linear Systems from an Optimal Control Problem Arising in Wind Simulation,” *Numerical Linear Algebra with Applications*, 17 (2010), 895–915.
- [71] M. Benzi and X. Guo, “A Dimensional Split Preconditioner for Stokes and Linearized Navier–Stokes Equations,” *Applied Numerical Mathematics*, 61 (2011), 66–76.
- [72] Z.-Z. Bai, M. Benzi, and F. Chen, “On Preconditioned Modified HSS Iteration Methods for Complex Symmetric Linear Systems,” *Numerical Algorithms*, 56 (2011), 297–317.
- [73] M. Benzi and M. A. Olshanskii, “Field-of-Values Convergence Analysis of Augmented Lagrangian Preconditioners for the Linearized Navier–Stokes Problem,” *SIAM Journal on Numerical Analysis*, 49 (2011), 770–788.
- [74] M. Benzi, M. A. Olshanskii, and Z. Wang, “Modified Augmented Lagrangian Preconditioners for the Incompressible Navier–Stokes Equations,” *International Journal for Numerical Methods in Fluids*, 66 (2011), 486–508.
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- [76] S. P. Hamilton and M. Benzi, “A Davidson method for the  $k$ -eigenvalue problem,” *Transactions of the American Nuclear Society*, 105 (2011), 432–434.
- [77] M. Benzi, E. Haber, and L. Taralli, “A Preconditioning Technique for a Class of PDE-Constrained Optimization Problems,” *Advances in Computational Mathematics*, 35 (2011), 149–173.
- [78] M. Benzi and Z. Wang, “Analysis of Augmented Lagrangian-Based Preconditioners for the Steady Incompressible Navier–Stokes Equations,” *SIAM Journal on Scientific Computing*, 33 (2011), 2761–2784.
- [79] M. Benzi and V. Kuhlemann, “Restricted Additive Schwarz Methods for Markov Chains,” *Numerical Linear Algebra with Applications*, 18 (2011), 1011–1029.
- [80] E. Estrada, N. Hatano, and M. Benzi, “The Physics of Communicability in Complex Networks,” *Physics Reports*, 514 (2012), 89–119.
- [81] Y. Wang, E. Agichtein, and M. Benzi, “TM-LDA: Efficient Online Modeling of the Latent Topic Transitions in Social Media,” in *Proceedings of the 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD’12)*, Association for Computing Machinery, New York, NY (2012), 123–131.

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- [83] M. Benzi, E. Estrada, and C. Klymko, “Ranking Hubs and Authorities Using Matrix Functions,” *Linear Algebra and its Applications*, 438 (2013), 2447–2474.
- [84] Z.-Z. Bai, M. Benzi, F. Chen, and Z.-Q. Wang, “Preconditioned MHSS Iteration Methods for a Class of Block Two-by-Two Linear Systems with Applications to Distributed Control Problems,” *IMA Journal of Numerical Analysis*, 33 (2013), 343–369.
- [85] M. Benzi, P. Boito, and N. Razouk, “Decay Properties of Spectral Projectors with Applications to Electronic Structure,” *SIAM Review*, 55 (2013), 3–64.
- [86] E. Estrada and M. Benzi, “Atomic Displacements Due to Spin-Spin Repulsion in Conjugated Alternant Hydrocarbons,” *Chemical Physics Letters*, 568–569 (2013), 184–189.
- [87] M. Benzi and Z. Wang, “A Parallel Implementation of the Modified Augmented Lagrangian Preconditioner for the Incompressible Navier–Stokes Equations,” *Numerical Algorithms*, 64 (2013), 73–84.
- [88] M. Benzi and V. Kuhlemann, “Chebyshev Acceleration of the GeneRank Algorithm,” *Electronic Transactions on Numerical Analysis*, 40 (2013), 311–320.
- [89] M. Benzi and C. Klymko, “Total Communicability as a Centrality Measure,” *Journal of Complex Networks*, 1 (2013), 124–149.
- [90] M. Benzi, “A Note on Walk Entropies in Graphs,” *Linear Algebra and its Applications*, 445 (2014), 395–399.
- [91] M. Benzi and E. Toscano, “Mauro Picone, Sandro Faedo, and the Numerical Solution of Partial Differential Equations in Italy (1928–1953),” *Numerical Algorithms*, 66 (2014), 105–145.
- [92] M. Benzi and P. Boito, “Decay Properties for Functions of Matrices over  $C^*$ -Algebras,” *Linear Algebra and its Applications*, 456 (2014), 174–198.
- [93] E. Estrada and M. Benzi, “A Walk-Based Measure of Balance in Signed Networks: Detecting Lack of Balance in Social Networks,” *Physical Review E*, 90 (042802), 2014 (10 pages).
- [94] M. Benzi and C. Klymko, “On the Limiting Behavior of Parameter-Dependent Network Centrality Measures,” *SIAM Journal on Matrix Analysis and Applications*, 36 (2015), 686–706. This paper includes Supplementary Materials (15 pp.).
- [95] M. Benzi and V. Simoncini, “Decay Bounds for functions of Hermitian Matrices with Banded and Kronecker Structure,” *SIAM Journal on Matrix Analysis and Applications*, 36 (2015), 1263–1282.
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- [123] F. A. P. Beik and M. Benzi, “Preconditioning Techniques for the Coupled Stokes–Darcy Problem: Spectral and Field-of-Values Analysis,” *Numerische Mathematik*, 150 (2022), 257–298.
- [124] C. Faccio, M. Benzi, L. Zanetti-Polzi, and I. Daidone, “Low- and High-Density Forms of Liquid Water Revealed by a New Medium-Range Order Descriptor,” *Journal of Molecular Liquids*. 335 (2022), Article 118922 (8 pages). (This paper includes supplementary materials.)
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- [127] M. Benzi and M. Viviani, “Solving Cubic Matrix Equations Arising in Conservative Dynamics,” *Vietnam Journal of Mathematics*, 51 (2023), 113–126. (Special volume in honor of Alfio Quarteroni.)

- [128] M. Benzi, I. Daidone, C. Faccio, and L. Zanetti-Polzi, “Structural Analysis of Water Networks,” *Journal of Complex Networks*, 11 (2023), cnad001 (25 pages).
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- [130] M. Benzi and C. Faccio, “Solving Linear Systems of the Form  $(A + \gamma UU^T) \mathbf{x} = \mathbf{b}$  by Preconditioned Iterative Methods,” arXiv:2206.10444 [math.NA], June 2022. Revised, October 2022 (20 pages). To appear in *SIAM Journal on Scientific Computing*.
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- [133] F. A. P. Beik, M. Benzi, and M. Najafi-Kalyani, “A Two-Dimensional Minimum Residual Technique for Accelerating Two-Step Iterative Solvers with Applications to Discrete Ill-Posed Problems,” arXiv:2303.12473 [math.NA], March 2023 (22 pages). Submitted.

### Other Published Work:

- M. Benzi, “Book Review: *The Story of Mathematics*, by L. Motz and J. H. Weaver,” *American Scientist*, 82 (1994), 490–491 .
- M. Benzi and C. C. Douglas, “ILAY Workshop on Iterative Methods,” *IEEE Computational Science and Engineering*, 3, 3 (1996), 84–86.
- M. Benzi and J. G. Nagy, “Dedication to Robert J. Plemmons,” *Linear Algebra and its Applications*, 316 (2000), 1–12.
- M. Benzi, “Computational Linear Algebra with Applications: Milovy, Czech Republic, 4–10 August 2002,” *IMAGE 29* (2002), 6–7.
- M. Benzi, L. Cvetković, and M. Neumann, “Preface,” *Numerical Algorithms*, 42 (2006), 205–206. Special issue in honor of Richard S. Varga.
- M. Benzi, “International Conference in Beijing Highlights Advances in Numerical Algebra and Scientific Computing,” *SIAM News*, 40(1), January-February 2007, 8.
- M. Benzi, “Book Review: *Numerical Methods for Structured Markov Chains*, by D. A. Bini, G. Latouche, and B. Meini,” *SIAM Review*, 49(1) (2007), 131–133.
- M. Benzi, M. Benzi and E. Seneta, “Francesco Paolo Cantelli”, *International Statistical Review*, 75(2) (2007), 127–130.
- M. Benzi, P. Boito and N. Razouk, “Decay estimates for spectral projectors with applications to electronic structure calculations”, *Oberwolfach Report No. 37/2009*, 38–41, Mathematisches Forschungsinstitut Oberwolfach. DOI: 10.4171/OWR/2009/37.

- Z. Z. Bai, M. Benzi, I. S. Duff, A. Frommer and Z.-C. Shi, “Preface”, *Linear Algebra and its Applications*, 434 (2011), 2223–2224. Special Issue for NASC 2008.
- Z. Bai, M. Benzi, H. Elman, N. Higham, M. Kilmer and V. Mehrmann, “Dedication to Pete Stewart on the occasion of his 70th birthday”, *Linear Algebra and its Applications*, 435 (2011), 421.
- M. Benzi, “Editorial: Numerical Solution of Markov Chains”, *Numerical Linear Algebra and its Applications*, 18 (2011), 897–900.
- M. Benzi, “Special Section: 2012 Copper Mountain Conference”, *SIAM Journal on Scientific Computing*, 35(5) (2013), S1-S2.
- M. Benzi, “Special Section: 2014 Copper Mountain Conference”, *SIAM Journal on Scientific Computing*, 37(5) (2015), S1-S2.
- M. Benzi and D. J. Higham, “Commentary on Dehmer and Mowshowitz”, *Complexity*, 21 (2016), S1, 19.
- M. Benzi and V. Simoncini, “Preface”, in M. Benzi and V. Simoncini (Eds.), *Exploiting Hidden Structure in Matrix Computations: Algorithms and Applications (Cetraro, Italy 2015)*, Lecture Notes in Mathematics vol. 2173, Springer, New York (2016), v–vi.
- M. Benzi, “Book Review: *Louis-Andr e Cholesky: Mathematician, Topographer and Army officer*,” by C. Brezinksi and D. Tournes, Springer-Birkh user, 2014. *The Mathematical Intelligencer*, 39 (2017), 99–101.
- M. Benzi, “Special Section: 2016 Copper Mountain Conference”, *SIAM Journal on Scientific Computing*, 39(5) (2017), S1-S2.
- M. Benzi, “Book Review: *Iterative Solution of Symmetric Quasi-Definite Linear Systems*,” by D. Orban and M. Arioli, Society for Industrial and Applied Mathematics, Philadelphia, 2017, *SIAM Review* 60 (2018), 757–759.

### Invited Research Presentations, Short Courses, Summer Schools:

1. *University of Bergamo, Department of Mathematics Seminar*, Bergamo, Italy, May 27, 1993.
2. *XII Householder Symposium on Numerical Algebra*, UCLA Conference Center, Lake Arrowhead, CA, June 13-18, 1993.
3. *Cornelius Lanczos International Centenary Conference*, NCSU, Raleigh, NC, December 12-17, 1993.
4. *University of Pavia, IAN-CNR Seminar*, Pavia, Italy, November 16, 1994.
5. *Second International Workshop on the Numerical Solution of Markov Chains*, Raleigh, NC, January 16-18, 1995.
6. *Oak Ridge National Laboratory, Mathematical Sciences Section Seminar*, Oak Ridge, TN, April 17, 1995.
7. *Czech Academy of Sciences, Institute of Computer Science, Applied Linear Algebra Seminar*, Prague, Czech Republic, May 16, 1995.

8. *Czech Academy of Sciences, Institute of Computer Science, Applied Linear Algebra Seminar*, Prague, Czech Republic, October 10, 1995.
9. *Bilkent University, Department of Computer Engineering and Information Science Seminar*, Ankara, Turkey, May 27, 1996.
10. *XIII Householder Symposium on Numerical Algebra*, Pontresina, Switzerland, June 17, 1996.
11. *Second ECCOMAS Conference on Numerical Methods in Engineering*, Paris, France, September 11, 1996.
12. *University of Tennessee, Department of Computer Science Seminar*, Knoxville, TN, October 4, 1996.
13. *Los Alamos National Laboratory, CIC Division Seminar*, Los Alamos, NM, October 7, 1996.
14. *Two-day Italian Meeting on Computational Linear Algebra*, Pavia, Italy, March 4, 1997.
15. *Oberwolfach Workshop on Numerical Linear Algebra and Scientific Computing*, Oberwolfach, Germany, April 18, 1997.
16. *Czech Academy of Sciences, Institute of Computer Science, Applied Linear Algebra Seminar*, Prague, Czech Republic, June 10, 1997.
17. *US–Czech Workshop on Iterative Methods and Parallel Computing*, Milovy, Czech Republic, June 17, 1997.
18. *Lectures on Preconditioning Methods for Sparse Linear Systems, Short Course on Iterative Methods and Preconditioners*, Swiss Center for Scientific Computing, ETH-Zentrum, Zürich, Switzerland, October 16-17, 1997.
19. *Sixth SIAM Conference on Applied Linear Algebra*, Snowbird, Utah, October 30, 1997.
20. *Stanford University, Computer Science Department, Scientific Computing and Computational Mathematics Seminar*, Palo Alto, CA, November 17, 1997.
21. *Southern Methodist University, Mathematics Department Research Colloquium*, Dallas, TX, February 4, 1998.
22. *Copper Mountain Conference on Iterative Methods, Workshop on Sparse Approximate Inverses*, Copper Mountain, CO, March 31, 1998.
23. *University of Tennessee, Department of Computer Science Seminar*, Knoxville, TN, April 13, 1998.
24. *Oak Ridge National Laboratory, Mathematical Sciences Section Seminar*, Oak Ridge, TN, April 15, 1998.
25. *Temple University, Mathematics Department Colloquium*, Philadelphia, PA, April 20, 1998.
26. *University of New Mexico, Department of Mathematics Seminar*, Albuquerque, NM, April 28, 1998.
27. *Oak Ridge National Laboratory, Mathematical Sciences Section Seminar*, Oak Ridge, TN, November 20, 1998.

28. *University of Bologna, Department of Nuclear Engineering Seminar*, December 9, 1998.
29. *Ninth SIAM Conference on Parallel Processing for Scientific Computing*, San Antonio, TX, March 22-24, 1999.
30. *XIV Householder Symposium on Numerical Algebra*, Whistler, BC, Canada, June 14–18, 1999.
31. *University of Pavia, IAN-CNR Seminar*, Pavia, Italy, January 25, 2000.
32. *Emory University, Department of Mathematics and Computer Science Colloquium*, Atlanta, GA, February 17, 2000.
33. *Old Dominion University, Department of Computer Science Colloquium*, Norfolk, VA, February 21, 2000.
34. *Copper Mountain Conference on Iterative Methods, Section on Preconditioning*, Copper Mountain, CO, April 3, 2000.
35. *Sandia National Laboratory, Applied and Numerical Mathematics Department Seminar*, Albuquerque, NM, July 6, 2000.
36. *University of Michigan, Department of Mathematics, Applied and Interdisciplinary Mathematics Seminar*, Ann Arbor, Michigan, January 5, 2001.
37. *Temple University, Department of Mathematics Colloquium*, Philadelphia, PA, March 26, 2001.
38. *2001 International Conference on Preconditioning Techniques for Large Sparse Matrix Problems*, Tahoe City, CA, April 29-May 1, 2001. Plenary speaker.
39. *2001 European Numerical Mathematics Conference (ENUMATH 2001)*, Ischia, Italy, July 23-28, 2001.
40. *University of Michigan, Department of Mathematics Special Colloquium*, Ann Arbor, Michigan, January 31, 2002.
41. *Meeting of the Southeastern Section of the Mathematical Association of America and the American Mathematical Society*, Special Session on Numerical Linear Algebra and its Applications, Atlanta, GA, March 8-10, 2002.
42. *Georgia Institute of Technology, Department of Mathematics CDSNS/ACE Lab Seminar*, Atlanta, GA, March 19, 2002.
43. *X International Linear Algebra Society (ILAS) Conference*, Auburn, Alabama, 10-13 June 2002. Special SIAG/LA plenary lecture.
44. *XV Householder Symposium on Numerical Algebra*, Peebles, Scotland, 17-21 June 2002. Plenary speaker.
45. *Sparse Days at CERFACS 2002: Workshop on Preconditioning Large, Sparse Systems of Linear Equations*, Toulouse, France, 24-25 June 2002. Plenary speaker.
46. *Computational Linear Algebra with Applications*, Milovy, Czech Republic, 4-10 August 2002. Plenary speaker.



47. *Georgia Southern University, Department of Mathematics and Computer Science Colloquium*, Statesboro, GA, January 24, 2003.
48. *Southern Methodist University, Mathematics Department Research Colloquium*, Dallas, TX, April 25, 2003.
49. *International Conference on Industrial and Applied Mathematics (ICIAM 2003)*, Sydney, Australia, July 7-12, 2003. Invited minisymposium speaker.
50. *Eight SIAM Conference on Applied Linear Algebra*, Williamsburg, Virginia, July 15-19, 2003. Invited minisymposium speaker.
51. *University of Illinois, Computer Science Department Seminar*, Urbana, IL, September 5, 2003.
52. *Theoretical and Computational Aspects of Matrix Algorithms*, Dagstuhl Seminar, Schloss Dagstuhl, Germany, October 13-17, 2003.
53. *Symposium on Scientific Computing*, University of Hong Kong, January 12, 2004. Keynote speaker.
54. *Il Contributo di Gianfranco Cimmino al Calcolo Numerico*. Ciclo di conferenze in memoria di Gianfranco Cimmino, University of Bologna, May 2004. Plenary speaker.
55. *2004 SIAM Annual Meeting*, Portland, Oregon, July 12-16, 2004. Invited topical speaker.
56. *Fourth European Congress on Computational Methods in the Applied Sciences and Engineering (ECCOMAS 2004)*, Jyväskylä, Finland, July 24-28, 2004. Invited minisymposium speaker.
57. *Workshop on Structured Numerical Linear Algebra Problems: Algorithms and Applications*, Cortona, Italy, September 19-24, 2004. Plenary speaker.
58. *Temple University, Mathematics Department Colloquium*, Philadelphia, PA, November 22, 2004.
59. *University of Cagliari, Mathematics Department Seminar*, Cagliari, Italy, February 16, 2005.
60. *Purdue University, Computing Research Institute Seminar Series*, West Lafayette, IN, March 4, 2005.
61. *Louisiana State University, Center for Computation and Technology, "Computing the Future" Lecture Series*, Baton Rouge, LA, April 1, 2005.
62. *Auburn University, Mathematics Department, SIAM Lecturer Series*, Auburn, AL, April 11, 2005.
63. *XVI Householder Symposium*, Seven Springs Resort, PA, 23–27 May, 2005. Plenary speaker.
64. *Centro di Ricerche e Studi Scientifici Superiori in Sardegna (CRS4)*, CFD Group Seminar, Pula, Italy, June 23, 2005.
65. *Short Course on Preconditioning Techniques for Large Linear Systems*, Università di Bari, Department of Mathematics, Bari, Italy, July 25-29, 2005. 12 hrs invited course sponsored by INdAM (Istituto Nazionale di Alta Matematica).

66. *Model Order Reduction: Coupled Problems and Optimization*, Workshop held at the Lorentz Center of Leiden University, Leiden, The Netherlands, September 19-23, 2005. Plenary speaker.
67. *McGill University, Computational Science and Engineering Seminar*, Montreal, Canada, 7 October 2005.
68. *University of Maryland, Numerical Analysis Seminar*, College Park, MD, February 14, 2006.
69. *Louisiana State University, Center for Computation and Technology, "Computing the Future" Lecture Series*, Baton Rouge, LA, March 13, 2006.
70. *Numerical Algebra and Scientific Computing 2006*, Beijing, China, October 22-25. Keynote speaker.
71. *Supercomputing Institute Seminar, Chinese Academy of Sciences*, Beijing, China, October 26, 2006.
72. *State Key Laboratory of Applied Physics and Computational Mathematics Seminar*, Beijing, China, October 26, 2006.
73. *University of Bologna, School of Engineering Seminar*, Bologna, Italy, December 5, 2006.
74. *Matrix Analysis and Applications*, CIRM, Luminy, France, October 15, 2007. Plenary speaker.
75. *Oak Ridge National Laboratory, Nuclear Science and Technology Division Seminar*, Oak Ridge, TN, January 10, 2008.
76. *XVII Householder Symposium*, Zeuthen, Germany, 3 June 2008. Plenary speaker.
77. *University of Bologna, Department of Mathematics, Mathematical Physics Seminar*, Bologna, Italy, June 30, 2008.
78. *Fifth ECCOMAS Conference*, Venice, Italy, July 3, 2008. Invited Minisymposium speaker.
79. *London Mathematical Society Durham Symposium on Computational Linear Algebra for Partial Differential Equations (CLAPDE 2008)*, Durham, UK, July 15, 2008. Plenary speaker.
80. *Structured Numerical Linear Algebra Problems: Algorithms and Applications*, Cortona, Italy, September 15–19, 2008. Plenary speaker.
81. *The Third International Conference on Scientific Computing and Partial Differential Equations*, Hong Kong Baptist University, Hong Kong, December 8–12, 2008. Plenary speaker.
82. *Texas Tech University, SIAM Student Chapter Seminar*, Lubbock, TX, March 19, 2009.
83. *Texas Tech University, Applied Mathematics Seminar*, Lubbock, TX, March 20, 2009.
84. *CEA-EDF-INRIA School on Robust Methods and Algorithms for Solving Large Algebraic Systems on Modern High Performance Computing Systems*, Sophia-Antipolis, France, March 30–April 3, 2009. Invited lecturer (3 hrs.).
85. *Advances and Perspective on Numerical Methods for Saddle Point Problems*, Banff International Research Station, Banff, Alberta, Canada, April 12–17, 2009. Invited speaker.

86. *Linear and Nonlinear Eigenvalue Problems for Partial Differential Equations*, Oberwolfach Workshop, Oberwolfach, Germany, August 9–15, 2009. Invited speaker.
87. *Louisiana State University, Department of Mathematics, SIAM Student Chapter Seminar*, Baton Rouge, LA, August 28, 2009.
88. *SIAM Applied Linear Algebra Conference*, Monterey, CA, October 26, 2009. Invited plenary lecture.
89. *SIAM Applied Linear Algebra Conference*, Monterey, CA, October 26, 2009. Invited minisymposium lecture (History session).
90. *Tufts University, Department of Mathematics Colloquium*, Medford, MA, November 20, 2009.
91. *Second Georgia Scientific Computing Symposium*, Georgia Institute of Technology, Atlanta, GA, February 20, 2010. Invited speaker.
92. *2010 AMS Spring Southeast Sectional Meeting, Special Session on Large Scale Matrix Computation*, Lexington, Kentucky, March 27, 2010. Invited speaker.
93. *2010 Sparse Days Workshop*, CERFACS, Toulouse, France, June 15–17, 2010. Invited speaker.
94. *XVI International Linear Algebra Society (ILAS) Conference*, Pisa, Italy, June 21–25, 2010. Minisymposium on Markov chains, invited speaker.
95. *XVI International Linear Algebra Society (ILAS) Conference*, Pisa, Italy, June 21–25, 2010. Minisymposium on matrix equations and matrix functions, invited speaker.
96. *Oak Ridge National Laboratory, Computer Science and Mathematics Division Seminar*, Oak Ridge, TN, June 29, 2010.
97. *XXXIII Congress of the Brazilian Society of Applied and Computational Mathematics (CN-MAC 2010)*, Águas de Lindóia (SP), Brazil, September 20–23, 2010. Invited speaker.
98. *Universidade Federal de Rio de Janeiro (COPPE)*, Numerical Analysis Seminar, Rio de Janeiro, Brazil, September 24, 2010.
99. *Brown University, Division of Applied Mathematics, Scientific Computing Seminar*, Providence, RI, October 22, 2010.
100. *University of Alabama, Department of Mathematics Colloquium*, Tuscaloosa, AL, October 25, 2010.
101. *University of Alabama, Department of Mathematics Numerical Analysis Seminar*, Tuscaloosa, AL, October 25, 2010.
102. *University of West Florida, Department of Mathematics and Statistics, MAA Florida Chapter Local Meeting*, Pensacola, FL, November 19, 2010. After dinner speaker.
103. *Brown University, Division of Applied Mathematics Seminar*, Providence, RI, February 8, 2011.
104. *University of Bologna, Department of Mathematics, Mathematical Physics seminar*, Bologna, Italy, March 7, 2011.

105. *Case Western Reserve University, Department of Mathematics Colloquium*, Cleveland, OH, April 1, 2011.
106. *XVIII Householder Symposium*, Tahoe City, CA, 14 June 2011. Plenary speaker.
107. *University of Cagliari, Department of Mathematics and Computer Science*, Numerical Analysis Seminar, 4 July 2011.
108. *ICIAM 2011*, Vancouver, BC, Canada, 21 July 2011. Invited minisymposium speaker.
109. *ICIAM 2011*, Vancouver, BC, Canada, 22 July 2011. Invited minisymposium speaker.
110. *University of Padova, Department of Pure and Applied Mathematics*. Short Course (12 hrs) on Preconditioning Techniques for Large Linear Systems. Padova, Italy, 3–7 October 2011.
111. *Scientific Computing 2011*, Santa Margherita di Pula, Cagliari, Italy, 10 October 2011. Invited talk, session on History of Computational Mathematics.
112. *Scientific Computing 2011*, Santa Margherita di Pula, Cagliari, Italy, 12 October 2011. Keynote address.
113. *University of Oxford, Mathematical Institute*, Oxford, England, UK, 8 December 2011. Numerical Analysis Seminar.
114. *Rutherford Appleton Laboratory*, Didcot, England, UK, 12 December 2011. Numerical Analysis Group Seminar.
115. *Georgia Scientific Computing Symposium*, Athens, GA, 25 February 2012. Invited speaker.
116. *Department of Mathematics. Temple University*, Philadelphia, PA, 29 February 2012. Applied Mathematics and Scientific Computing Seminar.
117. *Workshop on Recent Developments in the Solution of Indefinite Systems*, TU Eindhoven, 17 April 2012. Invited speaker.
118. *University of Bologna, Department of Mathematics*, Mathematical Physics Seminar, Bologna, Italy, May 14, 2012.
119. *University of Bologna, Department of Mathematics*, Numerical Analysis Seminar, Bologna, Italy, May 15, 2012.
120. *2012 Sparse Days Workshop*, CERFACS, Toulouse, France, June 25–26, 2012. Invited speaker.
121. *Federal University of Rio de Janeiro, Institute of Mathematics*. Short Course (12 hrs) on Preconditioning Techniques for Large Linear Systems. Rio de Janeiro, Brazil, 30 July–3 August, 2012.
122. *Federal University of the Rio Grande do Sul, Department of Mathematics*, three lectures (4.5 hrs) on preconditioned Krylov subspace methods with applications to radiation transport and incompressible fluid flow problems. Porto Alegre, Brazil, August 7–8, 2012.
123. *Purdue University, Department of Mathematics*, Applied and Computational Mathematics Colloquium, September 14, 2012.

124. *Thirty-Seventh Conference of the Dutch-Flemish Numerical Analysis Communities*, Woudschoten, Zeist, The Netherlands, October 3–5, 2012. Invited speaker (two 1hr lectures).
125. *Georgia State University, Department of Mathematics and Statistics*, Dynamical Systems and Mathematical Biology Seminar, Atlanta, GA, November 16, 2012.
126. *University of Houston, Department of Mathematics*, Colloquium, January 24, 2013.
127. *Virginia Tech, Department of Mathematics*, Colloquium, March 8, 2013.
128. *Workshop on Advances in Matrix Functions and Matrix Equations (FUN13)*, Manchester, UK, April 10–12, 2013. Invited speaker.
129. *International Spring School on Matrix Functions and their Applications*, University of Lille I, May 15–17, 2013. Invited lecturer (4 hrs).
130. *Preconditioning of Iterative Methods 2013: A Conference in Honor of Ivo Marek*, Prague, Czech Republic, July 1–5, 2013. Plenary speaker.
131. *Frank Uhlig Retirement Colloquium/Workshop*, Department of Mathematics and Statistics, Auburn University, Auburn, AL, 23 August 2013. Invited speaker.
132. *Nonlinear Evolution Equations and Linear Algebra. A Conference to Celebrate the 60th Birthday of Cornelis van der Mee*, Cagliari, Italy, September 2–5, 2013. Invited speaker.
133. *Aspects of Fluid Dynamics*, Red Raider Mini-Symposium, Texas Tech University, Lubbock, TX, October 25–26, 2013. Distinguished speaker.
134. *Numerical Solution of PDE Eigenvalue Problems*, Oberwolfach Workshop, Oberwolfach, Germany, November 17–23, 2013.
135. *University of Oxford, Atomic and Laser Physics Special Seminar*, Clarendon Laboratory, Oxford, UK, January 7, 2014.
136. *Accademia delle Scienze dell'Istituto di Bologna*, Sezione di Scienze Matematiche, Bologna, Italy, February 3, 2014. Invited lecture.
137. *University of Bologna, Department of Mathematics*, joint History of Mathematics and Numerical Analysis Seminar, Bologna, Italy, February 4, 2014.
138. *North Carolina State University, Department of Mathematics*, Colloquium, February 24, 2014.
139. *University of Chicago*, Scientific and Statistical Computing Seminar, Chicago, IL, March 6, 2014.
140. *IAM-PIMS Distinguished Colloquium*, Institute for Applied Mathematics and Pacific Institute of Mathematical Sciences, University of British Columbia, Vancouver, Canada, March 10, 2014.
141. *XIX Householder Symposium*, Spa, Belgium, 10 June 2014. Plenary speaker.
142. *Dobbiaco Summer School on Matrix Theory and Computation*, Dobbiaco, Italy, June 15–20, 2014. Invited lecturer (9 hrs).

143. *International Summer School on Complex Networks*, Bertinoro, Italy, July 14–18, 2014. Invited lecturer (3 hrs).
144. *Institute of Mathematics, Federal University of Rio de Janeiro, Minicourse on Functions of Matrices*, Rio de Janeiro, Brazil, 6 August 2014 (3 hrs).
145. *Institute of Mathematics, Federal University of Rio de Janeiro*, Rio de Janeiro, Brazil, 8 August 2014. Invited “Mathematical Fridays” speaker.
146. *4th IMA Conference on Numerical Linear Algebra and Optimisation*, Birmingham, UK, September 3–5, 2014. Plenary speaker.
147. *Department of Mathematics, University of California, Irvine*, Applied and Computational Mathematics Seminar, 15 October 2014.
148. *2015 SIAM Conference on Computational Science and Engineering*, Minisymposium on Preconditioning and Iterative Methods for Linear Systems, Salt Lake City, UT, March 14–18, 2015. Invited speaker.
149. *Scientific Computing Around Louisiana (SCALA 2015)*, Tulane University, New Orleans, LA, March 20–21, 2015. Invited plenary speaker.
150. *University of Alabama at Birmingham, Department of Mathematics Colloquium*, Birmingham, AL, April 3, 2015.
151. *2015 SIAM Network Science Workshop*, Snowbird, UT, May 16, 2015.
152. *CIME Course on Exploiting Hidden Structure in Matrix Computations: Algorithms and Applications*, Cetraro (Cosenza), Italy, June 21–26, 2015 (4 hours).
153. *Workshop on Innovative Clustering Methods for Large Graphs and Block Methods*, Toulouse, France, July 6–8, 2015. Invited speaker.
154. *GAMM Workshop on Numerical and Applied Linear Algebra*, Max-Planck-Institut, Magdeburg, Germany, July 10–11, 2015. Invited speaker.
155. *28th Annual Pacific Northwest Numerical Analysis Seminar*, Western Washington University, Bellingham, WA, October 18, 2015. Invited speaker.
156. *2015 SIAM Conference on Applied Linear Algebra*, Minisymposium on Recent Advances in Matrix Functions, Atlanta, GA, October 26–30, 2015. Invited speaker.
157. *University of Bologna, Department of Mathematics, Numerical Analysis Seminar*, January 11, 2016.
158. *University of Bologna, Department of Mathematics, “Topics in Mathematics” Seminar (2hrs.)*, January 15, 2016.
159. *Seventh Georgia Scientific Computing Symposium*, Emory University, Atlanta, GA, February 20, 2016. Invited speaker.
160. *Department of Mathematics, Temple University*, Applied Mathematics and Scientific Computing Seminar, Philadelphia, PA, February 24, 2016.

161. *Center for Nonlinear Studies, Los Alamos National Laboratory*, CNLS Colloquium, Los Alamos, NM, February 29, 2016.
162. *Spring Southeastern Sectional Meeting of the American Mathematical Society*, Athens, GA, March 6, 2016. Invited address.
163. *Institute for Advanced Computational Science, Stony Brook University*, Applied Mathematics Seminar, Stony Brook, NY, March 8, 2016.
164. *Mathematical Models and Computational Methods for Complex Networks*, Pisa, June 6-7, 2016. Invited speaker.
165. *International Summer School on Complex Networks*, Bertinoro, Italy, July 11–15, 2016. Invited lecturer (3 hrs).
166. *Numerical Linear Algebra with Applications (NLA2)*, Luminy, France, October 24–28, 2016. Invited speaker.
167. *University of Maryland, Numerical Analysis Seminar*, College Park, MD, November 29, 2016.
168. *University of Bologna, Numerical Analysis Seminar*, Bologna, Italy, December 16, 2016.
169. *2017 SIAM Conference on Computational Science and Engineering*, Atlanta, GA, February 27–March 3, 2017. Invited minisymposium speaker (topic: *Modeling and Computational Methods in Network Science and Applications*).
170. *Scuola Normale Superiore, Mathematics Seminar*, Pisa, Italy, March 23, 2017.
171. *Scuola Normale Superiore, Lecture series (20 hours) on “Numerical Methods for Quantum Mechanical Applications”*, Pisa, Italy, May–June 2017.
172. *Scuola Normale Superiore, Mathematics Seminar*, Pisa, Italy, June 8, 2017.
173. *XX Householder Symposium*, Blacksburg, VA, 18–23 June 2017.
174. *2017 International Conference on Preconditioning Techniques for Large Sparse Matrix Problems*, Vancouver, BC, Canada, July 31 – August 2, 2017. Plenary speaker.
175. *Structured Matrices in Numerical Linear Algebra: Algorithms and Applications*, Cortona, Italy, September 4–8, 2017. Invited speaker.
176. *University of North Georgia, SIAM Student Chapter Seminar*, Gainesville, GA, March 7, 2018.
177. *Midwest Numerical Analysis Days*, University of Kansas, Lawrence, KS, April 14–15, 2018. Invited speaker.
178. *University of West Florida, Department of Mathematics and Statistics Colloquium*, Pensacola, FL, April 20, 2018.
179. *Scuola Normale Superiore, Lecture series (12 hours) on “Functions of Matrices: Theory, Algorithms and Applications”*, Pisa, Italy, May–June 2018.
180. *Third Conference on Numerical Analysis and Applications (NASC'18)*, Kalamata, Greece, July 2–6, 2018. Plenary speaker.

181. *Dipartimento di Matematica, Università di Bari*, Numerical Linear Algebra Seminar, October 12, 2018.
182. *Dipartimento di Matematica, Politecnico di Milano*, MOX Seminar, November 22, 2018.
183. *MTU60: A Workshop in Honor of Miroslav Tůma for his 60th Birthday*, Charles University, Prague, January 31 – February 2, 2019. Plenary speaker.
184. *University of Trento, Department of Mathematics*, Inauguration of the Doctoral Academic Year in Mathematics, 12 February 2019. Keynote speaker.
185. *Dipartimento di Matematica, Politecnico di Torino*, Mathematics Colloquium, 28 March, 2019.
186. *International Workshop on Matrix Computations – Gene Golub Memorial Day*, Lanzhou University, Lanzhou, China, April 20 – 22, 2019. Plenary speaker.
187. *Dipartimento di Matematica, Università di Roma “Tor Vergata”*, seminar, May 2, 2019.
188. *Recent Advances in Scientific Computation (ETNA25)*, Santa Margherita di Pula (Cagliari), Italy, May 26–29, 2019. Plenary speaker.
189. *ICIAM 2019*, Valencia, Spain, 15 July 2019. Invited minisymposium speaker.
190. *ICIAM 2019*, Valencia, Spain, 16 July 2019. Invited minisymposium speaker.
191. *Scuola Matematica Interuniversitaria*, Perugia, 22 July – 16 August, 2019. Coordinator and teacher for the *Numerical Analysis* course (33 hrs.).
192. *XXI Congresso dell’Unione Matematica Italiana*, Pavia, September 1–6, 2019. Plenary speaker.
193. *2019 European Numerical Mathematics Conference (ENUMATH 2019)*, Egmond aan Zee, The Netherlands, September 30 – October 4, 2019. Keynote speaker.
194. *Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma*, Colloquium, 17 October 2019.
195. *F4E Scientific Seminar*, Fusion for Energy, Barcelona, 24 October 2019.
196. *Gran Sasso Science Institute*, Mathematics Colloquium, 14 November 2019.
197. *School on Numerical Methods for Parallel CFD*, Università “La Sapienza”, Rome, December 2–6, 2019. Invited lecturer (2 hrs).
198. *Workshop on Numerical Linear Algebra for PDEs and Large-Scale Optimization*, Università di Padova, February 17–18, 2020. Invited speaker.
199. *Department of Mathematics, University of Zagreb*, Zagreb, Croatia, Colloquium, 27 February 2020.
200. *E-NLA On-line Seminar*, May 7, 2020. Invited speaker.
201. *Innovative Computing Laboratory, University of Tennessee*, Seminar, August 6, 2021.
202. *Hong Kong Baptist University Mathematics Conference (60th Anniversary Meeting)*, December 7, 2021 (online). Invited speaker.



203. *Due Giorni di Algebra Lineare Numerica e Applicazioni*, Napoli, February 14–15, 2022. Keynote speaker.
204. *Latest Trends and Insights in Matrix Theory, Iterative Methods, and Preconditioning: A Conference in Honor of Daniel Szyld's 65th Birthday*, Temple University, Philadelphia, March 24–26, 2022. Invited speaker.
205. *The Third International Workshop on Matrix Computations*, Lanzhou, China, April 15-19, 2022. Invited speaker, two 45 min. lectures.
206. *SMI Course on Iterative Methods for Large-Scale Saddle-Point Problems*, Cortona (AR), Italy, May 9–20, 2022. Principal lecturer (20 hrs.).
207. *Ninth Seminar on Numerical Analysis and its Applications*, Guilan University, Iran, May 10, 2022 (online). Invited speaker.
208. *XXI Householder Symposium*, Selva di Fasano, Italy, 16 June 2022.
209. *Inaugural Lecture of the Doctoral Year in Mathematics*, Universities of Pavia and Milano-Bicocca, Pavia, 18 November 2022.
210. *Winter School on Domain Decomposition and Krylov Subspace Methods for PDEs and Ill-Posed Problems*, Mohammed VI Polytechnic University, Benguerir, Morocco, 27 February – 2 March 2023. Invited lecturer (2.5 hours).
211. *International Congress on Industrial and Applied Mathematics (ICIAM 2023)*, Tokyo, Japan, August 20-25, 2023. Invited speaker (45 min. lecture).

### Other Presentations:

- Numerous contributed talks at various meetings.
- *Autarchici Teoremi: Aspects of Italian Mathematics During the Fascist Period*. Invited talk, Department of French and Italian, Emory University, 22 March 2001.
- *Autarchici Teoremi: Aspects of Italian Mathematics During the Fascist Period*. Invited “Research Horizons” talk, School of Mathematics, Georgia Institute of Technology, 16 April 2003.
- *Perron, Frobenius and Google*. An expository talk on eigenvector methods in web-based information retrieval given at Emory, Georgia Tech, the University of Hong Kong, and the University of Bologna (2003-2004).
- *Science and Fascism. Scientific Research Under a Totalitarian Regime*. Invited talk, Italian Studies Program and Department of French and Italian, Emory University, 20 October 2010.
- *La Matematica per i Sistemi Complessi: I Social Network*. An expository talk for high-school teachers given at the University of Cagliari, Italy, 20 December 2016.
- *Matrici, Grafi, Catene di Markov: Nuove Applicazioni di Strumenti Matematici Classici*, three lectures (2 hrs. each) for High School teachers for the series “Lincei e Normale per la Scuola”, Pisa, Scuola Normale Superiore, 28 February, March 1, and March 8, 2019.
- *A Taste of Network Science*, an expository lecture given at Cui-Ying Honors College of Lanzhou University, Lanzhou, China, April 21, 2019.

- *Numerical Linear Algebra Techniques for Data Analysis*, School on Scientific Data Analysis, Pisa, Italy, November 25-28, 2019.
- *La Matematica delle Reti*, an expository online lecture presented at the “110mo Corso di Orientamento della Scuola Normale Superiore,” 21 July, 2020.

### Editorial Work:

- Member of the Advisory Board of the *Edizioni della Normale*, January 2022–present.
- Editor-in-Chief, *SIAM Journal on Matrix Analysis and Applications*, January 2021–present.
- Member of the Editorial Board of *Annali della Scuola Normale Superiore (Classe di Scienze)*, January 2019–present.
- Member of the Editorial Board of *SIAM Journal on Matrix Analysis and Applications*, Nov. 2004–Dec. 2019.
- Member of the Editorial Board of *SIAM Journal on Scientific Computing*, Jan. 2002–Dec. 2007; Copper Mountain Special Section Editor, 2010–present; Guest Editor-in-Charge, 2012–2016.
- Member of the Editorial Board of *SIAM Journal on Numerical Analysis*, Nov. 2002–Dec. 2011.
- Member of the Editorial Board of *SIAM Review* (Book Reviews Section), Nov. 2014–Dec. 2017.
- Member of the Editorial Board of *Springer Briefs in Mathematics*, Dec. 2011–present.
- Member of the Advisory Board of *Open Mathematics* (De Gruyter), Oct. 2015–present.
- Editor of *Calcolo*, 2013–present.
- Member of the Editorial Board of *Electronic Research Announcements in Mathematical Sciences (ERA-MS)*, January 2017–June 2019 (resigned).
- Member of the Editorial Board of *Mathematics Research Reports*, 2019–present.
- Member of the Editorial Board of *Numerical Algorithms*, May 2009–July 2020.
- Member of the Editorial Board of *Numerical Linear Algebra with Applications*, February 2008–December 2020.
- Member of the Editorial Board of *Linear Algebra and its Applications*, 2012–present. Senior Editor since 2018.
- Member of the Editorial Board of *Journal of Complex Networks*, 2013–present.
- Member of the Editorial Board of *Electronic Transactions on Numerical Analysis*, May 2003–present.
- Member of the Editorial Board of *Journal of Numerical Mathematics*, September 2014–present.
- Member of the Editorial Board of *Computational and Applied Mathematics*, 2015–present.
- Member of the Editorial Board of *Advances in Numerical Analysis*, September 2008–August 2013.

- Member of the Editorial Board of *Communications in Applied and Industrial Mathematics*, January 2010–present.
- Member of the Editorial Board of *Computational Methods in Applied Mathematics*, Jan. 2011–Dec. 2020.
- Member of the Editorial Board of *Mathematical Modelling and Applied Computing*, 2006–2016.
- Member of the Editorial Board of *International Journal of Computing Science and Mathematics*, August 2006–present.
- Member of the Editorial Board of *Journal of Scientific Computing*, Jan. 2011–May 2011 (resigned).
- Guest Editor-in-Chief, special issue of *Numerical Linear Algebra with Applications* on the Numerical Solution of Markov Chains, vol. 18(6), November 2011.
- Guest editor of special issue of *Linear Algebra and its Applications* in occasion of Pete Stewart’s 70th Birthday, 2009–2011.
- Guest editor of special issue of *Linear Algebra and its Applications* in occasion of the NASC08 Conference, 2009–2011.
- Co-editor of special issue of *Electronic Transactions on Numerical Analysis* on Saddle Point Problems, vol. 22 (2006).
- Guest editor of special issue of *Numerical Algorithms* in honor of Richard Varga (vol. 42, no. 3-4, July 2006).
- Guest editor of special issue of *SIAM Journal on Matrix Analysis and Applications* dedicated to the 2003 Preconditioning Conference, Fall 2004.
- Guest editor of special issue of *Linear Algebra and its Applications* in honor of Bob Plemmons (LAA 316, 2000).
- Reviewed book chapters and book proposals for SIAM, Springer, CRC, Cambridge University Press, Oxford University Press, Princeton University Press and Addison–Wesley.
- Reviewed new journal proposal for Oxford University Press (April 2012).
- Reviewer for *Zentralblatt für Mathematik* and *Mathematical Reviews*.
- Refereed over 500 papers for the following journals: *Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society A*, *Rendiconti Lincei: Matematica e Applicazioni*, *Annali della Scuola Normale Superiore*, *Notices of the American Mathematical Society*, *American Mathematical Monthly*, *Research in the Mathematical Sciences*, *SIAM Review*, *SIAM Journal on Scientific Computing*, *SIAM Journal on Numerical Analysis*, *SIAM Journal on Matrix Analysis and Applications*, *SIAM Journal on Optimization*, *Mathematics of Computation*, *Numerische Mathematik*, *IMA Journal of Numerical Analysis*, *Foundations of Computational Mathematics*, *Numerical Linear Algebra with Applications*, *BIT*, *Applied Numerical Mathematics*, *Linear Algebra and its Applications*, *Operators and Matrices*, *Journal of Mathematical Physics*, *Journal of Computational Physics*, *Journal of Computational Mathematics*,

*Journal of Scientific Computing, Calcolo, Communications in Applied Numerical Methods, Numerical Algorithms, Numerical Methods for Partial Differential Equations, International Journal for Numerical Methods in Engineering, International Journal for Numerical Methods in Fluids, Journal of Computational and Applied Mathematics, European Journal of Applied Mathematics, Computational Methods in Applied Mathematics, Electronic Transactions on Numerical Analysis, Electronic Journal of Linear Algebra, Electronic Research Announcements – Mathematical Sciences, Journal of Pure and Applied Algebra, Journal of Inequalities in Pure and Applied Mathematics, Rendiconti del Circolo Matematico di Palermo, Advances in Applied Mathematics, Advances in Computational Mathematics, Advances in Mathematical Physics, Advances in Numerical Analysis, Communications on Numerical Methods in Engineering, Computers & Mathematics with Applications, Computers & Fluids, Mathematics & Computers in Simulation, Physica A, Computer Physics Communications, Europhysics Letters, Chemical Physics Letters, Entropy, Network Science, Stochastic Models, Mathematical Problems in Engineering, Journal of Electrical and Computer Engineering, Inverse Problems, Shock & Vibration, Journal of Zhejiang University (Science), Applied Mathematics (A Journal of Chinese Universities), Advances in Mathematics (China), Hokkaido Mathematical Journal, Glasgow Mathematical Journal, Mediterranean Journal of Mathematics, Indian Journal of Pure and Applied Mathematics, Filomat, Australian and New Zealand Industrial and Applied Mathematics Journal, Bulletin of the Iranian Mathematical Society, Applied Mathematics and Computation, Applied Mathematics Letters, Optimization Methods and Software, Computational Optimization and Applications, ACM Transactions on Mathematical Software, Journal of Parallel and Distributed Computing, Parallel Computing, IEEE Transactions on Parallel and Distributed Systems, IEICE Transactions, Journal of Applied Mathematics, Methods and Applications of Analysis, Mathematical Modelling and Analysis, International Journal of Computer Mathematics, International Journal of Mathematics and Mathematical Sciences, Journal of Applied Mathematics and Computing.*

- Refereed numerous papers for various conference proceedings.

### Conferences Organized, Program/Scientific Committees:

- Member of the organizing committee of *Linear Algebra: Theory, Applications, and Computations (a conference in honor of Professor Robert J. Plemmons on the occasion of his 60th birthday)*, held in Winston-Salem, NC, January 8–9, 1999.
- Member of the organizing committee of the *Third Annual ASCI Tri-Lab Workshop on Solvers*, Los Alamos, NM, December 1–2, 1999.
- Invited minisymposium organizer, SIAM Conference on Applied Linear Algebra, Raleigh, NC, October 23–26, 2000 (topic: *Sparse Approximate Inverses*).
- Co-organizer with Steve Damelin and Jim Nagy of a special session on *Numerical Linear Algebra and Its Applications* at the Meeting of the Southeastern Section of the Mathematical Association of America and the American Mathematical Society, Atlanta, GA, March 8-10, 2002.
- Member of the program committee of the conference *Computational Linear Algebra with Applications*, Milovy, Czech Republic, August 4-10, 2002.
- Co-organizer with Steve Campbell and Amy Langville of the conference *Matrix Analysis and Applied Linear Algebra: A meeting in honor of Carl Meyer on the occasion of his 60th birthday*, Raleigh, NC, 15 May 2003.

- Co-organizer with Martin Gutknecht (from ETH Zürich) of a session on *Krylov Subspace Methods and Preconditioning* at the International Conference on Industrial and Applied Mathematics, Sydney, Australia, July 7-11, 2003.
- Member of the program committee of the *International Conference on the Numerical Solution of Markov Chains (NSMC'03)*, Urbana-Champaign, IL, September 3-5, 2003.
- Member of the program committee of the *2003 International Conference on Preconditioning Techniques (PRECON-03)*, Napa Valley, CA, October 26-28, 2003.
- Co-chair of the *2005 International Conference on Preconditioning Techniques (PRECON-05)*, Atlanta, GA, May 19-21, 2005.
- Member of the program committee, *International Conference on Computational Science (ICCS 2005)*, Atlanta, GA, May 2005.
- Member of the scientific committee, *International Conference on Computational Science and Engineering (ICCSE 2005)*, Ankara, Turkey, June 2005.
- Minisymposium organizer, 2005 SIAM Annual Meeting, New Orleans, LA, July 11-15, 2005 (topic: *Historical Aspects of Numerical Linear Algebra*).
- Member of the scientific committee, *Applied Linear Algebra: A Conference in Honor of Professor Richard S. Varga*, Pali'c, Yugoslavia, October 2005.
- Member of the program committee, *The A. A. Markov Anniversary Conference*, Charleston, SC, June 14-16, 2006.
- Member of the program committee, *GAMM-SIAM Conference on Applied Linear Algebra*, Düsseldorf, Germany, July 2006.
- Member of the program committee, *2006 International Conference on Computational Science (ICCSE 2006)*, Rochester, NY, August 7-10, 2006.
- Member of the scientific committee, *The First International Conference on Numerical Algebra and Scientific Computing*, Beijing, China, October 2006.
- Member of the program committee, *2007 International Conference on Preconditioning Techniques (PRECON-07)*, Toulouse, France, July 2007.
- Member of the scientific committee, *Computational Methods and Applications*, Harrachov, Czech Republic, August 2007.
- Minisymposium organizer, *ECCOMAS 2008*, Venice, Italy, June 30-July 5, 2008 (topic: *Iterative Solvers for the Incompressible Navier-Stokes Equations*).
- Member of the scientific committee, *The Second International Conference on Numerical Algebra and Scientific Computing*, Nanjing, China, November 2008.
- Member of the program committee, *Copper Mountain Conference on Iterative Methods*, since 2008.
- Member of the program committee, *2009 International Conference on Preconditioning Techniques (PRECON-09)*, Hong Kong, China, August 2009.

- Minisymposium organizer, ECCOMAS Conference on Computational Fluid Dynamics, Lisboa, Portugal, June 14-17, 2010 (topic: *Iterative Solvers for Incompressible Flows*), jointly with K. Vuik, University of Delft, The Netherlands.
- Member of the scientific committee, *16th ILAS Conference*, Pisa, Italy, June 21-25, 2010.
- Program co-chair of the *International Conference on the Numerical Solution of Markov Chains (NSMC'10)*, Williamsburg, VA, September 2010.
- Member of the program committee, *The Computer Aspects of Numerical Algorithms Workshop*, Wisla, Poland, October 2010.
- Minisymposium organizer, ICIAM 2011, Vancouver, BC, Canada, July 18-22, 2011 (topic: *Numerical Linear Algebra: Beyond Linear Systems and Eigenvalue Problems*), jointly with P. Benner, Max Planck Institute, Magdeburg, Germany.
- Member of the scientific committee, *The 7th International Workshop on Parallel Matrix Algorithms and Applications (PMAA'12)*, 28–30 June, 2012, Birkbeck University of London, UK.
- Co-chair, *SIAM Conference on Applied Linear Algebra*, Valencia, Spain, June 18-22, 2012.
- Co-chair, *2012 SIAM Annual Meeting*, Minneapolis, MN, July 9-13, 2012.
- Minisymposium organizer, *2013 SIAM Conference on Computational Science and Engineering (CSE13)*, Boston, MA, February 25 – March 1, 2013 (topic: *Preconditioners for Incompressible Flow Problems*), jointly with K. Vuik, Delft University of Technology, Delft, The Netherlands.
- Member of the program committee, *2013 International Conference on Preconditioning Techniques (PRECON-13)*, Oxford, UK, June 19-21, 2013.
- Member of the organizing committee, *SIAM Workshop on Network Science*, San Diego, CA, July 7-8, 2013.
- Member of the program committee, *VIII International Conference on Matrix Analytic Methods in Stochastic Models (MAM8)*, National Institute of Technology Calicut, India, January 6-10, 2014.
- Co-chair, *2014 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, April 6-11, 2014.
- Member of the Program Committee, *2014 SIAM International Conference on Data Mining*, Philadelphia, PA, April 24–26, 2014.
- Member of the organizing committee, *SIAM Workshop on Network Science*, Chicago, IL, July 6-7, 2014.
- Scientific Co-Director, CIME Summer School (“Exploiting Hidden Structure in Matrix Computations: Algorithms and Applications”). Cetraro, Italy, June 2015.
- Co-organizer (with Christine Klymko) of minisymposium on “Complex Networks” at the *2015 SIAM Conference on Applied Linear Algebra*, Atlanta, GA, October 26–30, 2015.

- Co-organizer (with Edmond Chow) of special session of “Numerical Methods and Scientific Computing” at the Spring Southeastern Sectional Meeting of the American Mathematical Society, Athens, GA, March 5-6, 2016.
- Co-chair, *2016 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, March 20-25, 2016.
- Member of the Program Committee, *2017 SIAM Conference on Computational Science and Engineering*, Atlanta, GA, February 27–March 3, 2017.
- Co-chair, *2018 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, March 25-30, 2018.
- Member of the program committee, *2019 International Conference on Preconditioning Techniques (PRECON-19)*, Minneapolis, MN, July 1–3, 2019.
- Member of the Scientific Committee, *School on Mathematical and Computational Aspects of Machine Learning*, Centro di Ricerche Matematiche “Ennio De Giorgi”, Pisa, October 7-11, 2019.
- Co-chair, *2020 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, March 20-25, 2020. [Canceled due to COVID-19 pandemic.]
- Member of the Scientific Committee, *Mathematical Methods and Models in Machine Learning*, Dipartimento di Matematica, Università degli Studi di Bologna, April 27-28, 2020 [Canceled due to COVID-19 pandemic.]
- Member of the Program Committee, *2022 Copper Mountain Conference on Iterative Methods*, Online, April 4–8, 2022.
- Member of the Scientific Committee, *The Third International Workshop on Matrix Computations*, Lanzhou, China, April 15–19, 2022.
- Member of the Program Committee, *2022 International Conference on Preconditioning Techniques (PRECON-22)*, Chemnitz, Germany, June 8–10, 2022.
- Member of the Scientific Committee, *XXII Congresso dell’Unione Matematica Italiana*, Pisa, Italy, September 2023.
- Member of the Program Committee, *2024 International Conference on Preconditioning Techniques (PRECON-24)*, Atlanta, GA, June 10-12, 2024.

### Students and post-docs supervised:

- Currently supervising 6 students (4 PhD, 1 MSc, 1 BSc) at Scuola Normale Superiore.
- Past PhD students:
  1. Jia Liu, Emory University (“Preconditioned Krylov Subspace Methods for Incompressible Flow Problems,” June 2006).
  2. Lauren R. Hanson, Emory University (“Techniques in Constrained Optimization Involving Partial Differential Equations,” July 2007). Co-advisor: Eldad Haber.

3. Nader Razouk, Emory University (“Localization Phenomena in Matrix Functions: Theory and Algorithms,” May 2008).
  4. Steven P. Hamilton, Emory University (“Numerical Solution of the  $k$ -Eigenvalue Problem,” March 2011).
  5. Zhen Wang, Emory University (“Preconditioning Techniques for the Incompressible Navier–Stokes Equations,” June 2011).
  6. Verena Kuhlemann, Emory University (“Iterative Methods and Partitioning Techniques for Large Sparse Problems in Network Analysis,” November 2012).
  7. Christine Klymko, Emory University (“Centrality and Communicability Measures in Complex Networks: Analysis and Algorithms,” December 2013).
  8. Francesca Arrigo, Università dell’Insubria (“Edge Manipulation Techniques in Complex Networks with Applications to Communicability and Triadic Closure,” February 2016).
  9. Isabel Chen, Emory University (“Centrality Measures and Contagion on Temporal Networks,” October 2016).
  10. Massimiliano Lupo Pasini, Emory University (“Deterministic and Stochastic Acceleration Techniques for Richardson-Type Iterations,” April 2018).
- Past MSc students at Emory: Mili Shah (M.Sc., March 2002), Aruna Talapatra (M.Sc., March 2002).
  - Past MSc students at Scuola Normale Superiore: Igor Simunec (Laurea Magistrale, September 2020); Francesco Zigliotto (Laurea Magistrale, May 2022).
  - Honors students supervised, Emory University: Brian Breeden (2014); Yiwen Guo (2017). Scuola Normale Superiore: Nikita Deniskin (2020); Giacomo Gallina (2022).
  - Post-docs supervised: Bora Uçar (2005–2006) and Paola Boito (2009–2010) at Emory University; Paraskevi Fika (2019–2020), Enrico Facca (2019–2021), Milo Viviani (2020–present) and Santolo Leveque (2022–present) at Scuola Normale Superiore.
  - Long-term visitors supervised: Cheng-yi Zhang (October 2008–May 2010), Caterina Fenu (January – March, 2015), Fatemeh Panjeh Ali Beik (September 2016–May 2017), Paraskevi Fika (January – March, 2018).

### Other Professional Activities:

- Adjunct Professor of Mathematics (courtesy appointment), Emory University, 2020–present.
- Member, John von Neumann Prize Committee, Society for Industrial and Applied Mathematics, 2021–2022.
- Member, Federico Tonielli Award Committee, 2022.
- Member of the Academic Senate, Scuola Normale Superiore, October 2020 – June 2022.
- Member, Committee on Committees and Appointments, Society for Industrial and Applied Mathematics, 2020–2022.
- Associate Dean, Faculty of Science, Scuola Normale Superiore, since December 2018.



- Coordinator of PhD program in Computational Methods and Mathematical Models for the Sciences and Finance, Scuola Normale Superiore (since 2019).
- Member, PhD program committee in Mathematics, Scuola Normale Superiore (since 2018).
- Member, PhD program committee in Methods and Models for the Molecular Sciences, Scuola Normale Superiore (2019)-2022.
- Member of “Commissione giudicatrice di procedura comparativa di Ricercatore a Tempo Determinato di Tipo A”, Università di Pisa, June-September 2020.
- Member of “Commissione giudicatrice di procedura comparativa di Professore di I Fascia”, Università degli Studi di Padova, March-July 2020.
- Member of “Commissione giudicatrice di procedura valutativa di Professore di I Fascia”, Università degli Studi di Cagliari, March 2020.
- Member of “Commissione giudicatrice di procedura valutativa di Professore di II Fascia”, Università di Torino, June 2019.
- Member of the External Review Committee for the Doctoral Program in Mathematics and Statistics at Texas Tech, Spring 2016.
- Member of the External Review Committee for the Department of Mathematics at Virginia Tech, Fall 2015.
- Member of the SIAM Fellows Selection Committee (2014–2016).
- Member of the SIAM Council (01/2009–12/2014).
- Chair, SIAM Activity Group for Linear Algebra (2010–2012).
- Vice Chair, SIAM Activity Group for Linear Algebra (2007–2009).
- Program Director, SIAM Activity Group for Linear Algebra (2004–2006).
- Chair of the Steering Committee, International Summer School on Numerical Linear Algebra, 2010-2012.
- Member of the Advisory Committee, International Summer School on Numerical Linear Algebra, 2012-2016.
- 2016/2018/2020 Copper Mountain Student Paper Competition, committee member.
- Member of the SIAM Outstanding Paper Prize Committee (2013).
- Member of the Householder Prize Committee (2008-2017).
- Member of the Gene Golub Memorial Day Best Presentation Award Committee, Lanzhou, China, April 2019.
- Member of the Enrico Magenes Prize Committee of the Unione Matematica Italiana (Spring 2019).
- Member of the ILAS Taussky-Todd Lecturer Selection Committee (2019).

- Member of the Doctoral College of the University of Insubria, Como, Italy (2013–2016).
- Affiliated faculty, Institute for Quantitative Theory and Methods (QuanTM), Emory University (11/2014–2018).
- Affiliate, Los Alamos National Laboratory, Los Alamos, NM (01/2001–12/31/2010).
- Adjunct professor, Computer Science Department, Old Dominion University, Norfolk, VA (02/2000–01/2010).
- Co-developer of Emory’s PhD track in Computational Mathematics (2002) and of Applied Mathematics undergraduate minor (2006).
- Emory Fellows Hiring Committee (2011-2012).
- Emory University Math/CS Graduate studies committee (2003-2010).
- Emory University Hiring Committee, Computational Mathematics (2002-2003, 2006-2007, 2013-2014).
- Emory University Hiring Committee, Cluster Hire in Computational Number Theory, 2008-present.
- Emory University Emerson Center Lectureship Award Selection Committee (2003-2005).
- Emory University Research Committee (2004-2005).
- Faculty Adviser, Emory University SIAM Student Chapter (2003-present).
- Supervised the following PhD students in LANL’s GRA program: Gabriel Mateescu (Virginia Tech), José Marín (Polytechnic University of Valencia, Spain) and John C. Haws (North Carolina State University).
- Member of PhD committee of David Hysom, Computer Science Department, Old Dominion University (thesis defended in June 2001).
- Member of PhD committee of Eugene Vecharinsky, Department of Mathematics, University of Colorado at Denver (thesis defended in 2010).
- Member (External Examiner) of D.Phil. Committee of Jennifer Pestana, Brasenose College (Mathematics), University of Oxford, UK (thesis defended in December 2011).
- Member (External Examiner) of PhD committee of Gwenol Grandperrin, Ecole Polytechnique Federale de Lausanne, Switzerland (thesis defended in September 2013).
- Member (External Examiner) of D.Phil. Committee of Pierre-Louis Giscard, Keble College (Physics), University of Oxford, UK (thesis defended in January 2014).
- Member (External Examiner) of D.Phil. Committee of Eleanor McDonald, New College (Mathematics), University of Oxford, UK (thesis defended in August 2016).
- Member (External Examiner) of PhD Committee of Stefano Massei, Scuola Normale Superiore, Pisa, Italy (thesis defended in March 2017).

- Member (External Examiner) of PhD Committee of Antoine Kornprobst, Université Paris I - Panthéon Sorbonne (thesis defended in October 2017).
- Member (External Examiner) of D.Phil. Committee of Massimiliano Fasi, University of Manchester, UK (thesis defended in May 2019).
- Member of M.Sc. committee of Shaariah Sulaiman (Emory University, 2001), Ryan Wright (Emory University, 2002), Adam Sherwood (Emory University, 2004), Jonathan Toebbe (Emory University, 2005), Ilya Shats (Emory University, 2016).
- Member of PhD committee of the following students at Emory University: Katrina Palmer (2004), Lisa Perrone (2004), Julianne Chung (2009), Piotr Wendykier (2009), Ying Wai (Daniel) Fan (2010), Zhuojun Magnant (2011), Sarah Knepper (2011), Marta D'Elia (2011), Alexis Aposporidis (2012), Umberto Villa (2012), Veronica Mejia Bustamante (2013), Qing Chu (2013), Yu Wang (2014), Pascal Philipp (2014), Luca Bertagna (2014), Huanhuan Yang (2015), Shanshan Li (2017, Physics Dept.), Alex Viguerie (2018).
- Member of selection committee for the Student and Recent Ph.D. Paper Competition for the Conference on Computational Linear Algebra with Applications, August 4-10, 2002, Milovy, Czech Republic (funded by the NSF).
- Member of review committee for DOE's Applied Mathematical Sciences Program, Los Alamos National Laboratory, 1999.
- Member of LANL's review committee for Laboratory-Directed Research and Development (Exploratory Research), in the Mathematics, Simulation, and Modeling category, 1999-2000.
- External member of LANL's review committee for Laboratory-Directed Research and Development (Exploratory Research) in the Mathematics, Simulation, and Modeling category, Spring 2002.
- External member of LANL's review committee for Laboratory-Directed Research and Development (Exploratory Research) in the Information Science and Technology Category, May 2004.
- External reviewer for Italy's *Ministerial Committee for the Evaluation of Research* (CIVR), May 2005.
- External reviewer for Italy's *Agency for the Evaluation of the University System and Research* (ANVUR), 2012–2013.
- Evaluator for the Research and Professional Activities of the Czech Academy of Sciences for 2010–2014; 2015–2019.
- Grant proposal reviewer for the Dutch National Science Foundation, 2002 and 2009.
- Grant proposal reviewer for ETH Zürich (internal proposals), October 2002.
- Grant proposal reviewer for NSF (Division of Mathematical Sciences), 2003-present.
- Grant proposal reviewer for DoE (ASCR), 2003-present.
- Grant proposal reviewer for Air Force Office of Scientific Research, 2012.

- Grant proposal reviewer for the Cooperative Grants Program of the U.S. Civilian Research and Development Foundation (CRDF), September 2004.
- Grant proposal reviewer for the Swiss National Science Foundation, 2004 and 2006.
- Grant proposal reviewer for the Israeli National Science Foundation, 2008.
- NSF Panelist, January 2006 and March 2013.
- DoE Panelist, March 2009.
- Grant proposal reviewer for the Louisiana Board of Regents, December 2009.
- Grant proposal reviewer for the Hong Kong Research Grants Council, March 2011.
- Italian Supercomputing Center Resource Allocation Reviewer, June 2010–present.
- Grant proposal reviewer for the Engineering and Physical Sciences Research Council (UK), 2013.
- Grant proposal reviewer for ERC (European Research Council), May 2017.
- Grant proposal reviewer for PRIN, 2018.
- Reviewer for Leverhulme Fund Fellowship Applications (UK), 2013 and 2014.
- Grant proposal reviewer for Hong Kong Baptist University, 2022.
- External reviewer for tenure and promotion cases (since 2001): Ecole Polytechnique Fédérale de Lausanne (three times), University of British Columbia (twice), Rice University (twice), Virginia Tech (twice), Texas Tech University (twice), Clemson University (three times), Tufts University (twice), University of Alabama (twice), Georgia Institute of Technology (twice), North Carolina State University, University of Iowa, College of William & Mary, University of Colorado at Denver, Tennessee Technical University, University of Minnesota at Duluth, Santa Clara University, Baylor University, Ball State University, University of Waterloo, University of Regina, University of Strathclyde, University College Dublin, University of Birmingham, University of Hong Kong, National University of Singapore, Bilkent University, Aalto University, University of Oxford.
- Referee for Royal Society Medal (“The Queen’s Medal”) nomination, January 2011.

**Professional Memberships:** AMS, SIAM, SIAGLA, SIAGCSE, ILAS, UMI (Unione Matematica Italiana), GAMM (Numerical and Applied Linear Algebra).