

Moody Ten-Chao Chu

Office:

- Department of Mathematics
North Carolina State University
Raleigh, NC 27695-8205
- Phone: (919)515-3265
- Fax: (919)515-3798
- E-mail: chu@math.ncsu.edu

Education:

- Ph.D., Mathematics, Michigan State University, May, 1982.
- M.S., Mathematics, Western Illinois University, May, 1978.
- B.S., Mathematics, National Taiwan University, May, 1975.

Professional Experience:

- Professor,
North Carolina State University, Raleigh, NC, 1993-present.
- Visiting Professor,
Doshisha University, Kyotanabe, Japan, 2017.
- Visiting Fellow,
Isaac Newton Institute for Mathematical Sciences, Cambridge, United Kingdom, 2007.
- Visiting Professor,
Istituto per Ricerche di Matematica Applicata, Bari, Italy, 2001, 2003.
- Visiting Fellow,
Australian National University, Canberra, Australia, 1996.
- Associate Professor,
North Carolina State University, Raleigh, NC, 1987-1993.
- Scientist-in-Residence,
Argonne National Laboratory, Argonne, IL, 1988-1989.
- Assistant Professor,
North Carolina State University, Raleigh, NC, 1982-1987.

Awards:

- Ralph R. Brown Award for distinguished Teaching Assistant,
Department of Mathematics, Michigan State University, 1980.
- Outstanding Teacher Award,
North Carolina State University, 1996.
- Student Government Cash Award for Outstanding Teacher,
North Carolina State University, 1996.
- Elected to Member of the N. C. State Academy of Outstanding Teachers, 1996.

- Alumni Distinguished Undergraduate Professor, North Carolina State University, 2006.
- College-level Board of Governors' Award for Excellence in Teaching, North Carolina State University, 2010-2011.
- College-level Board of Governors' Award for Excellence in Teaching, North Carolina State University, 2012-2013.
- College-level Board of Governors' Award for Excellence in Teaching, North Carolina State University, 2013-2014.

Research Fields:

- Numerical Linear Algebra
- Numerical Solution of Ordinary Differential Equations
- Numerical Methods for Nonlinear Algebraic Equations
- Inverse Eigenvalue Problems (see the book written)
- Structured Low Rank Approximation
- Tensor Analysis
- Numerical Algorithms as Dynamical Systems
- Quantum Computation

Grants:

- Parallel Solution of ODE's by Multi-block Methods, NSF, 1985, 20 CPU of CRAY X-MP at NCSA.
- Faculty Research Leave at Argonne, DOE, 1988, \$26,478.
- Matrix Differential Equations and Their Applications, NSF, 1990-1992, \$62,840.
- Matrix Differential Equations and Their Applications, NSF, 1993-1995, \$78,750.
- (with J. Brown, D. Ellison and R. Plemmons) Lanczos International Centenary Conference, NSF, 1993, \$15,000.
- (with J. Brown, D. Ellison and R. Plemmons) Lanczos International Centenary Conference, ARO, 1993, \$10,000.
- Inverse Eigenvalue Problems, NSF, 1996-1998, \$75,000.
- Adaptive Control Algorithms for Adaptive Optics Application, NSF, 1998-2000, \$63,885.
- Algorithms for the Inverse Problem of Matrix Construction, NSF, 2000-2003, \$116,000.

- (with Robert Funderlic) The Centroid Decomposition: Relationships between Discrete Variational Decompositions and SVD, NSF, 2002-2006, \$520,000.
- (with Biswa Datta) Collaborative Proposal: Quadratic Inverse Eigenvalue Problems for Model Updating in Science and Engineering: Theory and Computations, NSF, 2005-2009, \$411,874.
- (with Haesun Park) MSPA-MCS: Collaborative Proposal: Fast Nonnegative Matrix Factorizations: Theory, Algorithms, and Applications, NSF, 2007-2011, \$430,000.
- Automated Structure Generation, Error Correction, and Semi-Definite Programming Techniques for Constrained Quadratic Inverse Eigenvalue Problems: Theory, Algorithms and Applications, NSF, 2010-2014, \$194,999.
- Numerical Algorithms as Dynamical Systems - Structure Preservation, Convergence Theory, and Rediscrretization, NSF, 2013-2017, \$250,000.
- From Quantum Entanglement to Tensor Decomposition by Global Optimization, NSF, 2019-2024, \$470,788.
- Preparing Hamiltonians for Quantum Simulation: A Computational Framework for Cartan Decomposition via Lax Dynamics, NSF, 2023-2026, \$399,999.

Other Professional Activities:

- Editor for:
 - SIAM Journal on Matrix Analysis and Applications, 1995-2007.
- Books Written or Edited:
 - See List of Publications.
- Lecture Notes Developed (for upper-class and graduate students):
 - MA427: Introduction to Numerical Analysis, I.
 - MA428: Introduction to Numerical Analysis, II.
 - MA580: Numerical Analysis, I.
 - MA591: Mathematical Foundations for Quantum Computation
 - MA780: Numerical Analysis, II.
 - MA719: Optimization by Vector Space Methods,
 - MA786: Numerical Solution of ODEs.
 - See online at <https://mtchu.math.ncsu.edu>
- Referee/Reviewer (major journals):

Applied Numerical Mathematics; Applied Mathematics and Computation; ASME Journal of Mechanisms, Transmissions, and Automation in Design; BIT; Computational Economics; Electronic Journal of Linear Algebra; IEEE Transactions on Automatic Control; IEEE Transaction on Pattern Analysis and Machine Intelligence; IMA Journal of Numerical Analysis; IMACS Symposium on Iterative Methods in Linear Algebra; Inverse Problems; International Journal of Mathematics and Mathematical Science; Journal of Machine Learning Research; Linear Algebra and

Its Applications; Linear and Multilinear Algebra; Mathematics of Computation; Numerical Algorithms; Parallel Computing; Positivity; Psychometrika; SIAM Journal on Algebraic and Discrete Methods; SIAM Journal on Control and Optimization; SIAM Journal on Matrix Analysis and Applications; SIAM Journal on Numerical Analysis; SIAM Journal on Optimization; National Science Foundation;

- Conference Organized:
 - Lanczos International Centenary Conference, Dec. 1993, Raleigh. Served as
 - * Program Co-director of Computational Mathematics.
 - * Organizing and Advisory Committee of Computational Mathematics.
 - International Linear Algebra Society (ILAS) Workshop on Fast Algorithms for Control, Signals and Image Processing, June 1997, Winnipeg, Canada. Program Committee.

Publications:

- Book Written:
 - B1. (with G. H. Golub), Inverse Eigenvalue Problems: Theory, Algorithms, and Applications, 406 pages, Oxford University Press, 2005, ISBN 0-19-856664-6.
- Books Edited:
 - E1. (with J. Brown, D. Ellison and R. Plemmons) Proceedings of the Cornelius Lanczos International Centenary Conference, SIAM, 644 pages, 1994.
 - E2. (with W. David, et al.) Cornelius Lanczos Collected Published Papers with Commentaries, approx. 3,000 pages, OOK Press, Veszpr'ém, Hungary, 1999.
- Peer Reviewed Articles:
 - P1. An automatic multistep method for solving stiff initial value problems, J. Comput. Appl. Math., 9(1983), 229-238.
 - P2. On a numerical treatment for the curve tracing of the homotopy method, Numer. Math., 42(1983), 323-329.
 - P3. On the global convergence of the Toda lattice for real normal matrices and its applications to the eigenvalue problems, SIAM J. Math. Anal., 15(1984), 98-103.
 - P4. The generalized Toda flow, the QR algorithm and the center manifold theorem, SIAM J. Alg. Disc. Meth., 5(1984), 187-210.
 - P5. A simple application of the homotopy method to symmetric eigenvalue problems, Linear Alg. Appl., 59(1984), 85-90.
 - P6. Asymptotic analysis of the Toda lattice on diagonalizable matrices, Nonlinear Anal. TMA, 9(1985), 193-201.
 - P7. Symbolic calculation of the trace of the power of a tridiagonal matrix, Computing, 35(1985), 257-268.
 - P8. A continuous approximation to the generalized Schur decomposition, Linear Alg. Appl., 78(1986), 119-132.
 - P9. Curves on S^{n-1} that lead to eigenvalues or their means of a matrix, SIAM J. Alg. Disc. Meth., 7(1986), 425-432.
 - P10. On a differential equation approach to the singular value decomposition of bidiagonal matrices, Linear Alg. Appl., 80(1986), 71-79.

- P11. (with H. Hamilton), Parallel solution of ODE's by multiblock methods, *SIAM J. Sci. Stat. Comput.*, 8(1987), 342-353.
- P12. A note on the homotopy method for linear algebraic eigenvalue problems, *Linear Alg. Appl.*, 105(1988), 225-236.
- P13. **On the continuous realization of iterative processes, *SIAM Review*, 30(1988), 375-387.**
- P14. (with L. K. Norris), Isospectral flows and abstract matrix factorizations, *SIAM J. Numer. Anal.*, 25(1988), 1383-1391.
- P15. (with T. Y. Li and T. Sauer), Homotopy method for general λ -matrix problems, *SIAM J. Matrix Anal. Appl.*, 9(1988), 528-536.
- P16. (with G. H. Guirguis), A numerical method for the interface problem arising in the two-point boundary value problems, *Computer methods in Applied Mechanics and Engineering*, 74(1989), 99-113.
- P17. A derivative-free iterative method for locating the hand position of a robot manipulator, MCS-P48-0189, Argonne National Laboratory.
- P18. Solving additive inverse eigenvalue problems for symmetric matrices by the homotopy method, *IMA J. Numer. Anal.*, 9(1990), 331-342.
- P19. (with K. R. Driessel), The projected gradient method for least squares matrix approximations with spectral constraints, *SIAM J. Numer. Anal.*, 27(1990), 1050-1060.
- P20. A continuous Jacobi-like approach to the simultaneous reduction of real matrices, *Linear Alg. Appl.*, 147(1991), 75-96.
- P21. Least squares approximation by real normal matrices with specified spectrum, *SIAM J. Matrix Anal. Appl.*, 12(1991), 115-127.
- P22. (with K. R. Driessel), Constructing symmetric nonnegative matrices with prescribed eigenvalues by differential equations, *SIAM J. Math. Anal.*, 22(1991), 1372-1387.
- P23. Matrix differential equations: A continuous realization process for linear algebra problems, *Non-linear Anal.*, TMA, 18(1992), 1125-1146.
- P24. Numerical methods for inverse singular value problems, *SIAM J. Numer. Anal.*, 29(1992), 885-903.
- P25. (with J. L. Watterson), On a multivariate eigenvalue problem: I. Algebraic Theory and Power method, *SIAM J. Sci. Comput.*, 14(1993), 1089-1106.
- P26. The stability group of symmetric Toeplitz matrices, *Linear Alg. Appl.*, 185(1993), 119-123.
- P27. (with M. A. Erbrecht), Symmetric Toeplitz matrices with two prescribed eigenpairs, *SIAM J. Matrix Anal. Appl.*, 15(1994), 623-635.
- P28. A list of matrix flows with applications, *Proceedings of Workshop on Hamiltonian and Gradient Flows, Algorithms and Control*, Fields Institute, Canada, 1992, Fields Institute Communications, 3(1994), 87-97.
- P29. Scaled Toda-like flows, *Linear Alg. Appl.*, 215(1995), 261-273.
- P30. (with J. W. Wright), Educational testing problem and non-smooth optimization, *IMA J. Numer. Anal.*, 15(1995), 141-160.
- P31. Constructing a Hermitian Matrix from Its Diagonal Entries and Eigenvalues, *SIAM J. Matrix Appl.*, 16(1995), 207-217.
- P32. (with R. E. Funderlic and G. H. Golub), **A rank-one reduction formula and its relations to other matrix factorizations, *SIAM Review*, 37(1995), 512-530.**
- P33. (with X. Chen), On the least squares solution of inverse eigenvalue problems, *SIAM J. Numer. Anal.*, 33(1996), 2417-2430.
- P34. (with R. E. Funderlic and G. H. Golub), On a variational formulation of the generalized singular value decomposition, *SIAM J. Matrix Anal. Appl.*, 18(1997), 1082-1092.

- P35. (with Q. Guo), On the least squares approximation of symmetric-definite pencils subject to generalized spectral constraints, *SIAM J. Matrix Anal. Appl.*, 19(1998), 1-20.
- P36. **Inverse eigenvalue problems, *SIAM Review*, 40(1998), 1-39.**
- P37. (with Q. Guo), A numerical method for the inverse stochastic spectrum problem, *SIAM J. Matrix Anal. Appl.*, 19(1998), 1027-1039.
- P38. (with R. E. Funderlic and G. H. Golub), Rank modifications of semi-definite matrices with applications to secant updates, *SIAM J. Matrix Anal. Appl.*, 20(1998), 428-436.
- P39. (with N. T. Trendafilov), On a differential equation approach to the weighted orthogonal Procrustes problem, *Statistics & Computing*, 8(1998), 125-133.
- P40. (with N. T. Trendafilov), ORTHOMAX rotation problem: a differential equation approach, *Behaviormetrika*, 25(1998), 13-23.
- P41. On the optimal consistent approximation to pairwise comparison matrices, *Linear Alg. Appl.*, 272(1998), 155-168.
- P42. (with R. E. Funderlic and R. J. Plemmons) Approximation by structured lower rank matrices, *Proceedings of SPIE, in Advanced Signal Processing, Algorithm, Architectures, and Implementations, VIII*, 3461(1998), 268-279.
- P43. On constructing matrices with prescribed singular values and diagonal elements, *LAA*, 288(1999), 11-22.
- P44. (with N. T. Trendafilov), A continuous-time approach to the oblique Procrustes problem, *Behaviormetrika*, 26(1999), 167-181.
- P45. A fast recursive algorithm for constructing matrices with prescribed eigenvalues and singular values, *SIAM J. Numer. Anal.*, 37(2000), 1004-1020.
- P46. (with V. P. Pauca, R. J. Plemmons, and X. Sun), A mathematical framework for the linear reconstructor problem in adaptive optics, *Linear Alg. Appl.*, 316(2000), 113-135.
- P47. (with N. T. Trendafilov), The orthogonally constrained regression revisited, *J. Comput. Graph. Stat.*, 10(2001), 746-771.
- P48. (with R. E. Funderlic), The centroid decomposition: Relationships between discrete variational decompositions and SVD, *SIAM J. Mat. Anal. Appl.*, 23(2001), 1025-1044.
- P49. (with G. Golub), **Structured Inverse Eigenvalue Problems, *Acta Numerica*, 2002, 1-71.**
- P50. (with R. E. Funderlic and R. J. Plemmons), Structured low rank approximation, *Linear Alg. Appl.*, 366(2003), 157-172.
- P51. (with R. J. Plemmons) Real-valued, low rank circulant approximation, *SIAM J. Mat. Anal. Appl.*, 24(2003), 645-659.
- P52. (with F. Diele and I. Sgura) On the robust matrix completion with prescribed eigenvalues, *Future Generation Computing Systems*, 19(2003), 1139-1153.
- P53. (with F. Diele and I. Sgura) Gradient flow methods for matrix completion with prescribed eigenvalues, *Linear Alg. Appl.*, 379(2004), 85-112.
- P54. (with Y. C. Kuo and W. W. Lin) On inverse quadratic eigenvalue problems with partially prescribed eigenstructure, *SIAM J. Mat. Anal. Appl.*, 25(2004), 995-1020.
- P55. (with Y. C. Kuo and W. W. Lin) On the existence and uniqueness of a solution to the inverse monic quadratic eigenvalue problem, *SIAM J. Mat. Anal. Appl.*, 25(2004), 995-1020.
- P56. (with N. Del Buono, F. Diele, T. Politi, and S. Ragni) On the semigroup of standard symplectic matrices and its applications, *Linear Alg. Appl.*, 389(2004), 215-225.
- P57. (with S. F. Xu) On computing minimal realizable spectral radii of nonnegative matrices, *J. Numer. Linear Alg. Appl.*, 12(2005), 77-86.
- P58. (with N. Del Buono, L. Lopez, and T. Politi) On the low rank approximation of data on the unit sphere, *SIAM J. Mat. Anal. Appl.*, 27(2005), 46-60.

- P59. (with R. Plemmons), Nonnegative matrix factorization and applications, *IMAGE*, 34(2005), 1-5.
- P60. (with F. Diele, S. Ragni), On the inverse problem of constructing symmetric pentadiagonal Toeplitz matrices from three largest eigenvalues, *Inverse Problems*, 21(2005), 1879-1894.
- P61. (with D. Chu), Singular value reassignment with low rank matrices, *Math. Comput.*, 75(2006) 1351-1366.
- P62. (with D. Chu), Reachable set by the QR iteration with shifts, *SIAM J. Applied Dynamical Systems*, 5(2006), 91-107.
- P63. (with S. Ragni, C. Marangi, F. Diele) Estimating the consumption matrix from inexact data in the Leontief model, *J. Numer. Anal. Indus. Appl. Math.*, 2(2007), 139-156.
- P64. (with W.-W. Lin and S.-F. Xu), Updating quadratic models with no spill-over effect on unmeasured spectral data, *Inverse Problems*, 23(2007), 243-256.
- P65. (with N. Del Buono), Total decoupling of general quadratic pencils, Part I: Theory, *J. Sound Vibration*, 309(2008), 96-111.
- P66. (with N. Del Buono), Total decoupling of general quadratic pencils, Part II: Structure preserving isospectral flows, *J. Sound Vibration*, 309(2008), 112-128.
- P67. (with B. Datta, W.-W. Lin, and S.-F. Xu), The spill-over phenomenon in quadratic model updating, *AIAA J.* 46(2008), 420-428.
- P68. Quadratic inverse eigenvalue problem and its applications to model updating - an overview, in *Model Order Reduction: Theory, Research Aspects and Applications*, (Eds.) Wilhemlus Schilders, Henk van der Vorst, Joost Rommes, Springer, 271-290, 2008.
- P69. (with N. Del Buono and B. Yu), Structured quadratic inverse eigenvalue problem, I. Serially linked connectivity, *SIAM J. Sci. Comput.*, 29(2007), 2668-2685.
- P70. (with M. M. Lin), Low dimensional polytope approximation and its applications to nonnegative matrix factorization, *SIAM J. Sci. Comput.*, 30(2008), 1131-1151.
- P71. (with C. T. Kelley, L.-Z. Liao, L.-Q. Qi, J. P. Reese and C. Winton) Projected pseudo-transient continuation, *SIAM J. Numer. Ana.*, 46(2008), 3071-3083.
- P72. **Numerical linear algebra algorithms as dynamical systems, *Acta Numerica*, 17(2008), 1-86.**
- P73. Data mining and applied linear algebra, International Conference on Informatics Education and Research for Knowledge-Circulating Society, ICKS 2008, 20-25.
- P74. (with S.-F. Xu) Spectral decomposition of real symmetric quadratic λ -matrices and its applications, *Math. Comp.* 78(2009) 293-313.
- P75. (with D. Chu and W.-W. Lin) Quadratic model updating with symmetry, positive definiteness, and no spill-over, *SIAM J. Matrix. Anal. Appl.*, 31(2009), 546-564.
- P76. (with B. Dong and M. Lin) Parameter reconstruction of vibration systems from partial eigeninformation, *Journal of Sound and Vibration*, 327(2009), 391-401.
- P77. (with M. Lin and B. Dong) Inverse mode problem for real symmetric quadratic, *Inverse Problems*, 26(2010), 065003, (doi: 10.1088/0266-5611/26/6/065003).
- P78. (with M. Lin and B. Dong), Semi-definite programming techniques for structured quadratic inverse eigenvalue problems, *Numer. Algorithms*, 53(2010), 419-437.
- P79. (with M. Lin) On the nonnegative rank of Euclidean distance matrices, *Linear Alg. Appl.*, 433(2010), 681-689.
- P80. (with M. Lin), Dynamical System Characterization of the Central Path and Its Variants — A Revisit, *SIAM. J. Appl. Dyn. Syst.* 10(2011), 887-905.
- P81. (with L.-H. Zhang), Computing absolute maximum correlation, *IMA J. Numer. Anal.*, 32(2012), 163-184.

- P82. (with J. Hughes-Oliver, A. D. Brooks, W. J. Welch, M. G. Khaledi, D. Hawkins, S. S. Young, K. Patil, G. W. Howell, R. T. Ng), ChemModLab: A web-based cheminformatics modeling laboratory. *In Silico Biology*, 11(2012), 61-81.
- P83. (with C.-H. Kuo and M. Lin), Tensor spline Approximation of policy functions in Economics with Uncertainties, *Computational Economics*, 42(2013), 175-198, (doi: 10.1007/s10614-012 9331-1).
- P84. (with S.-J. Wu and C.-R. Hwang), Attaining the optimal Gaussian diffusion acceleration, *J. Stat. Phys.*, 155(2014), 571-590.
- P85. (with M. Lin and B. Dong), Nonnegative rank factorization — a heuristic approach via rank reduction, *Numer. Algorithms*, 65(2014), 251-274, (doi: 10.1007/s11075-013-9704-0).
- P86. (with L. Wang), On the global convergence of the alternating least method for rank-one approximation to generic tensors, *SIAM J. Matrix Ana. Appl.*, 35(2014), 1058-1072.
- P87. (with M. Lin and L. Wang), A study of the singular spectrum analysis with the global optimization techniques, *J. Global Optimization*, (doi:10.1007/s10898-013-0117-3), 60(2014), 551-574.
- P88. (with L. Wang and B. Yu), A computational framework of gradient flows for general linear matrix equations, *Numerical Algorithms*, 68(2015), 121-141, (doi:10.1007/s11075-014-9885-1).
- P89. (with L. Wang and B. Yu), Orthogonal low-rank tensor approximation: Alternating least square method and its global convergence, *SIAM J. Matrix Ana. Appl.*, 36(2015), 1-19.
- P90. (with S.-J. Wu), Constructing optimal transition matrix for Markov Chain Monte Carlo, *Linear Alg. Appl.*, 487(2015), 184-202.
- P91. (with M. Lin), On the finite rank and finite dimensional representation of bounded semi-infinite Hankel operators, *IMA J. Numer. Anal.*, 35(2015), 1256-1276, (doi: 10.1093/imanum/dru001).
- P92. On the First Degree Fejér-Riesz Factorization and Its Applications to $X + A^* X^{-1} A = Q$, *Linear Alg. Appl.*, 489(2016), 123-143.
- P93. (with S.-J. Wu), Markov Chains with Memory, Tensor Formulation, and the Dynamics of Power Iteration, *Applied Mathematics and Computation*, 303(2017), 226-239.
- P94. (with S.-J. Wu), Solving an inverse eigenvalue problem subject to triple constraints on diagonal elements, eigenvalues, and singular values, *Inverse Problems*, 33(2017), Paper No. 085003, 21 pp.
- P95. (with Y. Guan and D. Chu), SVD-based algorithms for the best rank-1 approximation of a symmetric tensor, *SIAM J. Matrix Anal. Appl.*, 39(2018), 1095-1115.
- P96. (with Y. Guan and D. Chu), Convergence analysis of an SVD-based algorithm for the best rank-1 tensor approximation, *Linear Alg. Appl.*, 555(2018), 53-69.
- P97. (with N. Jiang and J.-H. Shen), Structure preserving isospectral transformation for total or partial decoupling of self-adjoint quadratic pencils, *J. Sound Vibration*, 488(2019), 157-171.
- P98. (with B. Dong and N. Jiang), Nonlinear power-like iteration by polar decomposition and its application to tensor approximation, *Numer. Math.*, 144(2020), 729-749.
- P99. (with M. Lin), Nonlinear power-like and SVD-like iterative schemes with applications to entangled bipartite rank-1 approximation, *SIAM J. Sci. Comput.*, 43(2021), S448-S474.
- P100. (with M. Lin), A complex-valued gradient flow for the entangled bipartite low rank approximation, *Comput. Phys. Commun.*, 271(2022), Paper No. 108185, 17 pp.
- P101. (with M. Lin), Rank-1 approximation for entangled multipartite real systems, *J. Sci. Comput.*, 91 (2022), Paper No. 24, 20 pp.
- P102. (with M. Lin), Low rank approximation to entangled multipartite quantum systems, *Quantum Inform. Process.*, 21(2022), Paper No. 120, 28 pp.
- P103. Lax dynamics for Cartan decomposition with applications to Hamiltonian simulation, *IMA J. Numer. Anal.*, 2023, drad018, <https://doi.org/10.1093/imanum/drad018>.

- P104. (with Z. Zhang), An Innate moving frame on parametric surfaces: The dynamics of principal singular curves, *Mathematics*, 2023, 11(15), 3306, <https://doi.org/10.3390/math11153306>.
- P105. (with M. Lin), On the enumeration of subcells within hypercubes and its application to the Borsuk-Ulam theorem, *Numerical Algorithms*, 2024, <https://doi.org/10.1007/s11075-023-01716-5>

- Submitted Articles:

- S1. On the commutative substructure within Cartan pairs of subalgebras in $\mathfrak{su}(2^n)$, 2024.
- S2. On the dynamics of maximin flows, 2024.
- S3. Preparing Hamiltonians for quantum simulation: A computational framework for Cartan decomposition via Lax dynamics, 2024.

- Technical Reports:

- T1. Continuous power method, preprint, 1986.
- T2. (with H. Hamilton), Some remarks on the zero-stability of multiblock methods, preprint, 1987.
- T3. On a differential equation approach to the additive inverse eigenvalue problems, preprint, 1987.
- T4. (with K. R. Driessel), Can real symmetric Toeplitz matrices have arbitrary real spectra? preprint, 1989.
- T5. (with K. R. Driessel), Some numerical experiments with isospectral flows, Technical Report 90-01, Idaho State University, 1990.
- T6. On the inverse eigenvalue problem for real circulant matrices, preprint, 1992.
- T7. On the differential equation $\frac{dX}{dt} = [X, k(X)]$ where k is a Toeplitz annihilator, preprint, 1993.
- T8. (with R. Plemmons), Numerical methods for adaptive-optics systems, preprint, 1995.
- T9. (with R. E. Funderlic and G. H. Golub), On a new geometric meaning of the BFGS update, preprint, 1995.
- T10. On the refinement of a Newton method for the inverse Toeplitz eigenvalue Problem, preprint, 1995, included in Publication B1.
- T11. On an adaptive control algorithm for the adaptive optics problems, preprint, 1999.
- T12. On the statistical meaning of truncated singular value decomposition, preprint, 2001.
- T13. Group theory, linear transformations, and flows: Dynamical systems on manifolds, preprint, 2004, included in Publication P72.
- T14. (with D. I. Chu and H. Brown) On the least squares Euclidean distance matrix approximation and completion, preprint, 2004, included in Publication B1.
- T15. (with N. Orlowski, D. Schlorff, J. Blevins, D. Cañas, and R. Funderlic), The effect of ties on convergence in the k -modes variants for clustering categorical data, preprint, 2004.
- T16. (with F. Diele, R. Plemmons, and S. Ragni), Optimality, Computation and Interpretation of non-negative matrix factorizations, preprint, 2005.
- T17. (with M. Lin and B. Dong) Integer matrix factorization and its applications, Preprint, 2009.
- T18. On the nonnegative rank of Euclidean distance matrices, II, preprint, 2010.
- T19. On the adjoint of tensors, preprint, 2016.
- T20. A Comment on the best rank-1 approximation of a symmetric tensor, preprint, 2016.
- T21. (with L.Z. Liao) Numerical Methods for Gradient Dynamics, preprint, 2016.
- T22. (with N. Jiang and B. Dong), Global rank-1 approximation for order-3 tensors, preprint, 2018.
- T23. (with Y. Guan, N. Jiang, and B. Dong), A theoretical consideration of matrix-operative alternating least squares methods for orthogonal CP tensor approximation, preprint, 2018.
- T24. (with N. Jiang), Decoupling of Lattice Vibration, preprint, 2018.
- T25. (with Y. Guan, B. Dong, and N. Jiang), Convergence analysis of alternating direction methods: A general framework and its applications to tensor approximations, preprint, 2018.