

Curriculum Vitae

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Personal:

- Born September 28, 1953
- Married, Three Children
- U.S. Citizen

Education:

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

Professional Experience:

- Professor,
North Carolina State University, Raleigh, NC, 1993-present.
- Visiting Professor,
Istituto per Ricerche di Matematica Applicata, Bari, Italy, 2001, 2003.
- Visiting Fellow,
Australian National University, Canberra, Australia, 1996.
- Research Fellow,
Academia Sinica, Taipei, Taiwan, 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.

Award:

- 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.

Research Interests:

- Numerical Linear Algebra
- Numerical Solution of Ordinary Differential Equations
- Numerical Methods for Nonlinear Algebraic Equations

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, 2005-2008, \$411,874.
- (with Haesun Park) MSPA-MCS: Collaborative proposal: Fast Nonnegative Matrix Factorizations: Theory, Algorithms, and Applications, NSF, 2007-2010, \$430,000.

Invited Talks:

- 1986 ODE Conference, Albuquerque, June, 1986.
- SIAM Applied Linear Algebra Conference, Madison, May, 1988.
- Numerical Algorithm Seminars, Argonne National Laboratory, September, October 1988, April 1989.
- Colloquium, Dept. Math., Western Illinois University, Macomb, April, 1989.
- Sigma Xi Club, Western Illinois University, April, 1989.
- Applied Mathematics Seminar, Dept. Math., E. Lansing, Michigan State University, April, 1989.
- 1990 Numerical ODE's Conference, Helsinki, Finland, June, 1990.
- Workshop on Hamiltonian and Gradient Flows, Algorithms and Control, The Field Institute for Research in Mathematical Sciences, Waterloo, Canada, March, 1992.
- NATO Advanced Study Institute, Leuven, Belgium, August, 1992.
- Third SIAM Conference on Linear Algebra, Signals, Systems and Control, Seattle, 1993.
- 1995 AMS-SIAM Summer Seminars, Park City, August, 1995.
- Colloquium, Dept. Computer Sci., Pennsylvania State University, University Park, December, 1995.
- Lecture Series (12 talks), Inst. Math., Academia Sinica, Taipei, Taiwan, January, 1996.
- Lecture Series (4 talks), Dept. Math., National Taiwan University, Taipei, Taiwan, January, 1996.
- Colloquium, Dept. Math., National Normal University, Taipei, Taiwan, January, 1996.
- Colloquium, Dept. Applied Math., National Tsing-Hua University, Hsin-Chu, Taiwan, January, 1996.
- Lecture Series (12 talks), Dept. Sys. Engi., Australia National University, Canberra, Australia March 1996.
- Colloquium, Dept. Computer Sci., Australia National University, Canberra, Australia, March 1996.
- Colloquium, Dept. Math., Monash University, Clayton, Australia, Mar, 1996.
- Colloquium, Dept. Mech. Engi., University of Adelaide, Adelaide, Australia, March, 1996.
- Colloquium, Dept. of Math. Stat., Flinder University, Adelaide, Australia, March, 1996.
- Plenary speaker, The XXIX Symposium on Mathematical Physics, Torun, Poland, December, 1996.
- Applied Mathematics Colloquium, Dept. of Math., University of Notre Dame, Notre Dame, March, 1998.
- SIAM Mathematics in Industry Workshop, Raleigh, October, 1999.
- Colloquium, Dept. of Applied Math., University of Waterloo, Waterloo, Canada, May, 2000.
- Main speaker, LMS Durham Symposium on Geometric Integration, London, July, 2000.
- Invited speaker, Workshop on Structured Matrices: Analysis, Algorithms, and Applications, Cortona, Italy, September, 2000.
- Invited Minisymposium talk, SIAM Conference on Applied Linear Algebra, Raleigh, NC, October, 2000.
- Colloquium, Center for Dynamical Systems and Nonlinear Studies, Georgia Tech., Atlanta, GA, November, 2000.
- Colloquium, SCCM, Stanford University, January, 2001.
- Structural Dynamical System Workshop (3 talks), Monopoli, Italy, July, 2001.
- Lecture Series (12 talks), Istituto per Ricerche di Matematica Applicata, CNR, Bari, Italy, July, 2001.
- Lecture Series (12 talks), National Center for Theoretical Sciences, October, 2001.
- Invited paper, Acta Numerica, 2002.
- Invited speaker, International Conference on Structrued Matrices, Hong Kong, 2002.

- Colloquium, Inst. of Math., Peking University, Beijing, China, March, 2001.
- Invited speaker, Symposium on Geometric Integration, Beijing, China, March, 2001.
- Invited talk, ILAS 2002, Auburn, AL, June, 2002.
- Colloquia (2 talks), National Center of Theoretical Sciences, January, 2003.
- Invited lecture series (20 hours), Dept. of Math., University of Bari, Bari, Italy, February, 2003.
- Colloquium, Dept. of Math., Nanjing University of Aeronautics and Astronautics, Nanjing, China, April, 2003.
- Colloquium, Dept. of Math., Nanjing University, Nanjing, China, April, 2003.
- Invited minisymposium talk, SIAM Conference on Applied Linear Algebra, Williamsburg, VA, July, 2003.
- Structural Dynamical System Workshop (2 talks), Monopoli, Italy, June, 2003.
- Invited lecture (2 talks), Chinese Academy of Science, Beijing, China, March, 2004.
- Plenary speaker, Workshop on Scientific Computation, Peking University, Beijing, China, March, 2004.
- Colloquium talk, Tsinghua University, Beijing, China, March, 2004.
- Colloquium talk, Northern Illinois University, DeKalb, IL, March, 2004.
- Colloquia (2 talks), University of Hong Kong, Hong Kong, April, 2004.
- Colloquium talk, National University of Singapore, Singapore, April, 2004.
- Plenary speaker, ICMS Workshop on Lie Group Methods and Control Theory, Edinburgh, UK, June, 2004.
- Plenary lecture (5 talks), XXII School of Computational Mathematics, Monopoli, Italy, September, 2004.
- Colloquium talk, Dept. of Math., Auburn University, January, 2005.
- Invited minisymposium talk, SciCADE05, Nagoya, Japan, May, 2005.
- Invited speaker, Workshop on Model Reduction, Coupled Problems and Optimization, Leiden, Netherlands, September, 2005.
- Colloquia (4 talks), Fudan University, Zhejiang University and Chinese Academy of Science, March, 2006.
- Colloquia (2 talks), Northern Illinois University, DeKalb, October, 2006.
- Colloquia (2 talks), Kyoto University, Kyoto, Japan, March, 2007.
- Colloquium talk, ZTH, Zürich, Switzerland, July, 2007.
- Colloquia (2 talks), Kyoto University, Kyoto, Japan, January, 2008.
- Invited speaker, International Conference on Informatics Education and Research for Knowledge-circulating Society (ICKS'08), Kyoto, Japan, January, 2008.
- Invited speaker, Gene Golub Memorial Conference, Dartmouth, Massachusetts, February, 2008.
- Invited papers, Acta Numerica, 2008.
- Colloquia (5 talks on 4 subjects), Chinese Academy of Sciences, Tsing-Hua University, Nanjing University of Aeronautics and Astronautics, Nanjing Normal University, Fudan University, China, March, 2009.
- Plenary speaker, Workshop on Numerical Algebra and Applications, Shanghai, China, March, 2009.

Other Professional Activities:

- Editor for:
SIAM Journal on Matrix Analysis and Applications, 1995-2007.
- Referee/Reviewer for:
Applied Numerical Mathematics; ASME Journal of Mechanisms, Transmissions, and Automation in Design; BIT; IEEE Transactions on Automatic Control; 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; 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; Mathematical Reviews; National Science Foundation;
- Books Edited:
 - (with J. Brown, D. Ellison and R. Plemmons), Proceedings of the Cornelius Lanczos International Centenary Conference, 644 pages, SIAM, Philadelphia, PA, 1994, ISBN 0-89871-339-0.
 - (with W. R. Davis et al.), Cornelius Lanczos Collected Published Papers with Commentaries, 6 volumes, 3,200 pages, OOK Press, Veszprém, Hungary, 1999, ISBN 0-929493-00-3.
- Book Written:
 - (with G. H. Golub), Inverse Eigenvalue Problems: Theory, Algorithms, and Applications, 406 pages, Oxford University Press, 2005, ISBN 0-19-856664-6.
- 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.
 - MA780: Numerical Analysis, II.
 - MA719: Optimization by Vector Space Methods,
 - MA786: Numerical Solution of ODEs.
 - See online at <http://www4.ncsu.edu/~mtchu>
- Conferences Organized:
 - Lanczos International Centenary Conference, Dec. 1993, Raleigh. Served as Program Co-director of Computational Mathematics.
 - International Linear Algebra Society (ILAS) Workshop on Fast Algorithms for Control, Signals and Image Processing, June 1997, Winnipeg, Canada. Program Committee.

Students Directed:

- Hans Hamilton, M.S.(1986),
Parallel Solution of ODE's by Multiblock Methods.
(Thesis appeared in Publication #12.)
- Diane M. Wang, M.S.(1987),
Computer Aided Group Theory.
- Melissa A. Erbrecht, M.S.(1992),
Symmetric Toeplitz Matrices with Prescribed Eigenpairs.
(Thesis appeared in Publication #34.)
- James L. Watterson, M.S. (1992),
Multivariate Eigenvalue Problems.
(Thesis appeared in Publication #32.)
- Joel W. Wright, M.S. (1993),
Educational Testing Problem and Non-smooth Optimization.
(Thesis appeared in Publication #37.)
- Tienjiao Liu, M.S. (1995),
Pseudospectra of Jordan Blocks.
- Matthew M. Lin, Ph.D. (expected 2010),
Inverse problems of matrix data reconstruction.

Publications:

1. An automatic multistep method for solving stiff initial value problems, *J. Comput. Appl. Math.*, 9(1983), 229-238.
2. On a numerical treatment for the curve tracing of the homotopy method, *Numer. Math.*, 42(1983), 323-329.
3. 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.
4. The generalized Toda flow, the QR algorithm and the center manifold theorem, *SIAM J. Alg. Disc. Meth.*, 5(1984), 187-210.
5. A simple application of the homotopy method to symmetric eigenvalue problems, *Linear Alg. Appl.*, 59(1984), 85-90.
6. Asymptotic analysis of the Toda lattice on diagonalizable matrices, *Nonlinear Anal. TMA*, 9(1985), 193-201.
7. Symbolic calculation of the trace of the power of a tridiagonal matrix, *Computing*, 35(1985), 257-268.
8. A continuous approximation to the generalized Schur decomposition, *Linear Alg. Appl.*, 78(1986), 119-132.
9. Continuous power method, preprint, 1986.
10. Curves on S^{n-1} that lead to eigenvalues or their means of a matrix, *SIAM J. Alg. Disc. Meth.*, 7(1986), 425-432.
11. On a differential equation approach to the singular value decomposition of bidiagonal matrices, *Linear Alg. Appl.*, 80(1986), 71-79.
12. (with H. Hamilton), Parallel solution of ODE's by multiblock methods, *SIAM J. Sci. Stat. Comput.*, 8(1987), 342-353.
13. (with H. Hamilton), Some remarks on the zero-stability of multiblock methods, preprint, 1987.
14. On a differential equation approach to the additive inverse eigenvalue problems, preprint, 1987.
15. A note on the homotopy method for linear algebraic eigenvalue problems, *Linear Alg. Appl.*, 105(1988), 225-236.
16. On the continuous realization of iterative processes, *SIAM Review*, 30(1988), 375-387.
17. (with L. K. Norris), Isospectral flows and abstract matrix factorizations, *SIAM J. Numer. Anal.*, 25(1988), 1383-1391.
18. (with T. Y. Li and T. Sauer), Homotopy method for general λ -matrix problems, *SIAM J. Matrix Anal. Appl.*, 9(1988), 528-536.
19. (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.
20. A derivative-free iterative method for locating the hand position of a robot manipulator, MCS-P48-0189, Argonne National Laboratory.
21. (with K. R. Driessel), Can real symmetric Toeplitz matrices have arbitrary real spectra?, preprint, 1989.
22. (with K. R. Driessel), Some numerical experiments with isospectral flows, Technical Report 90-01, Idaho State University, 1990.
23. Solving additive inverse eigenvalue problems for symmetric matrices by the homotopy method, *IMA J. Numer. Anal.*, 9(1990), 331-342.
24. (with K. R. Driessel), The projected gradient method for least squares matrix approximations with spectral constraints, *SIAM J. Numer. Anal.*, 27(1990), 1050-1060.
25. A continuous Jacobi-like approach to the simultaneous reduction of real matrices, *Linear Alg. Appl.*, 147(1991), 75-96.
26. Least squares approximation by real normal matrices with specified spectrum, *SIAM J. Matrix*

- Anal. Appl., 12(1991), 115-127.
27. (with K. R. Driessel), Constructing symmetric nonnegative matrices with prescribed eigenvalues by differential equations, *SIAM J. Math. Anal.*, 22(1991), 1372-1387.
 28. Matrix differential equations: A continuous realization process for linear algebra problems, *Non-linear Anal., TMA*, 18(1992), 1125-1146.
 29. Numerical methods for inverse singular value problems, *SIAM J. Numer. Anal.*, 29(1992), 885-903.
 30. On the inverse eigenvalue problem for real circulant matrices, preprint, 1992.
 31. On the differential equation $\frac{dX}{dt} = [X, k(X)]$ where k is a Toeplitz annihilator, preprint, 1993.
 32. (with J. L. Watterson), On a multivariate eigenvalue problem: I. Algebraic Theory and Power method, *SIAM J. Sci. Comput.*, 14(1993), 1089-1106.
 33. The stability group of symmetric Toeplitz matrices, *Linear Alg. Appl.*, 185(1993), 119-123.
 34. (with M. A. Erbrecht), Symmetric Toeplitz matrices with two prescribed eigenpairs, *SIAM J. Matrix Anal. Appl.*, 15(1994), 623-635.
 35. 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.
 36. Scaled Toda-like flows, *Linear Alg. Appl.*, 215(1995), 261-273.
 37. (with J. W. Wright), Educational testing problem and non-smooth optimization, *IMA J. Numer. Anal.*, 15(1995), 141-160.
 38. Constructing a Hermitian Matrix from Its Diagonal Entries and Eigenvalues, *SIAM J. Matrix Appl.*, 16(1995), 207-217.
 39. (with R. E. Funderlic and G. H. Golub), A rank-one reduction formula and its relations to other matrix factorizations, *Manuscript SCCM-94-07*, Stanford University, 1994; also *SIAM Review*, 37(1995), 512-530.
 40. (with X. Chen), On the least squares solution of inverse eigenvalue problems, *SIAM J. Numer. Anal.*, 33(1996), 2417-2430.
 41. (with R. E. Funderlic and G. H. Golub), On a new geometric meaning of the BFGS update, preprint, 1995.
 42. On the refinement of a Newton method for the inverse Toeplitz eigenvalue Problem, preprint, 1995.
 43. (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.
 44. (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.
 45. Inverse eigenvalue problems, *SIAM Review*, 40(1998), 1-39.
 46. (with Q. Guo), A numerical method for the inverse stochastic spectrum problem, *SIAM J. Matrix Anal. Appl.*, 19(1998), 1027-1039.
 47. (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.
 48. (with R. Plemmons), Numerical methods for adaptive-optics systems, preprint, 1995.
 49. (with N. T. Trendafilov), The orthogonally constrained regression revisited, *J. Comput. Graph. Stat.*, 10(2001), 746-771.
 50. (with N. T. Trendafilov), On a differential equation approach to the weighted orthogonal Procrustes problem, *Statistics & Computing*, 8(1998), 125-133.
 51. (with N. T. Trendafilov), ORTHOMAX rotation problem: a differential equation approach, *Behaviormetrika*, 25(1998), 13-23.
 52. On the optimal consistent approximation to pairwise comparison matrices, *Linear Alg. Appl.*, 272(1998), 155-168.

53. (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.
54. On constructing matrices with prescribed singular values and diagonal elements, LAA, 288(1999), 11-22.
55. (with N. T. Trendafilov), A continuous-time approach to the oblique Procrustes problem, Behaviormetrika, 26(1999), 167-181.
56. A fast recursive algorithm for constructing matrices with prescribed eigenvalues and singular values, SIAM J. Numer. Anal., 37(2000), 1004-1020.
57. (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.
58. On an adaptive control algorithm for the adaptive optics problems, preprint, 1999.
59. (with R. E. Funderlic), The centroid decomposition: Relationships between discrete variational decompositions and SVD, SIAM J. Mat. Anal. Appl., 23(2001), 1025-1044.
60. (with G. Golub), Structured Inverse Eigenvalue Problems, Acta Numerica, invited paper, 2002, 1-71.
61. (with R. E. Funderlic and R. J. Plemmons), Structured low rank approximation, Linear Alg. Appl., 366(2003), 157-172.
62. (with R. J. Plemmons) Real-valued, low rank circulant approximation, SIAM J. Mat. Anal. Appl., 24(2003), 645-659.
63. On the statistical meaning of truncated singular value decomposition, preprint, 2001.
64. (with F. Diele and I. Sgura) Gradient flow methods for matrix completion with prescribed eigenvalues, Linear Alg. Appl., 379(2004), 85-112.
65. (with F. Diele and I. Sgura) On the robust matrix completion with prescribed eigenvalues, Future Generation Computing Systems, 19(2003), 1139-1153.
66. (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.
67. (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.
68. (with D. I. Chu and H. Brown) On the least squares Euclidean distance matrix approximation and completion, preprint, 2004.
69. (with S. F. Xu) On computing minimal realizable spectral radii of nonnegative matrices, J. Numer. Linear Alg. Appl., 12(2005), 77-86.
70. (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.
71. (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.
72. Group theory, linear transformations, and flows: Dynamical systems on manifolds, preprint, 2004.
73. (with N. Orłowski, 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.
74. (with F. Diele, R. Plemmons, and S. Ragni), Optimality, Computation and Interpretation of nonnegative matrix factorizations, Preprint, 2005.
75. (with R. Plemmons), Nonnegative matrix factorization and applications, IMAGE, 34(2005), 1-5.
76. (with D. Chu), Singular value reassignment with low rank matrices, Math. Comput., 75(2006) 1351-1366.
77. (with D. Chu), Reachable set by the QR iteration with shifts, SIAM J. Applied Dynamical Systems, 5(2006), 91-107.
78. (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.
79. (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.
 80. (with N. Del Buono), Total decoupling of general quadratic pencils, Part I: Theory, *J. Sound Vibration*, 309(2008), 96-111.
 81. (with N. Del Buono), Total decoupling of general quadratic pencils, Part II: Structure preserving isospectral flows, *J. Sound Vibration*, 309(2008), 112-128.
 82. (with B. Datta, W.-W. Lin, and S.-F. Xu), The spill-over phenomenon in quadratic model updating, *AIAA J.* 46(2008), 420-428.
 83. (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.
 84. Quadratic inverse eigenvalue problem and its applications to model updating - an overview, in *Model Order Reduction: Theory, Research Aspects and Applications*, (Eds.) Wilhemus Schilders, Henk van der Vorst, Joost Rommes, Springer, 271-290, 2008.
 85. (with N. Del Buono and B. Yu), Structured quadratic inverse eigenvalue problem, I. Serially linked connectivity, *SIAM J. Sci. Comput.*, 29(2007), 2668-2685.
 86. (with M. M. Lin), Low dimensional polytope approximation and its applications to nonnegative matrix factorization, *SIAM J. Sci. Comput.*, 30(2008), 1131-1151.
 87. (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.
 88. Numerical linear algebra algorithms as dynamical systems, *Acta Numerica*, 17(2008), 1-86.
 89. Data mining and applied linear algebra, *International Conference on Informatics Education and Research for Knowledge-Circulating Society, ICKS 2008*, 20-25.
 90. (with S.-F. Xu) Spectral decomposition of real symmetric quadratic λ -matrices and its applications, *Math. Comp.* 78(2009) 293-313.
 91. (with D. Chu and W.-W. Lin) Quadratic model updating with symmetry, positive definiteness, and no spill-over, *SIAM J. Matrix. Anal. Appl.*, to appear.
 92. (with B. Dong and M. Lin) Parameter reconstruction of vibration systems from partial eigeninformation, *Journal of Sound and Vibration*, 327(2009), 391-401.
 93. (with B. Dong and M. Lin) Nonnegative rank factorization via rank reduction, Submitted, 2008.
 94. (with L.-H. Zhang) On a multivariate eigenvalue problem: II. Global solutions and the Gauss-Seidel method, Submitted, 2008.
 95. (with M. Lin and B. Dong) Inverse mode problem for real symmetric quadratic, Submitted, 2009.
 96. (with M. Lin and B. Dong), Semi-definite programming techniques for structured quadratic inverse eigenvalue problems, *Numerical Algorithms*, to appear, 2009.
 97. (with M. Lin and B. Dong) Integer matrix factorization and its applications, Preprint, 2009.
 98. (with M. Lin) On the nonnegative rank of Euclidean distance matrices, Preprint, 2009.