Curriculum Vitae

Zhuangyi Liu
Department of Mathematics and Statistics
University of Minnesota at Duluth
Duluth, MN 55812
Email: zliu@d.umn.edu Office Phone: (218) 726-7179

I. Education

1989 Ph.D, Mathematics, Virginia Polytechnic Institute and State University.

1986 M.S., Mathematics, Virginia Polytechnic Institute and State University.

1982 B.S., Mathematics, Fudan University, Shanghai, China.

II. Professional Experience

2012- Member of Advisory Board, China Center of the University of Minnesota

2016.9-12 Associate Head, Department of Mathematics and Statistics, University of Minnesota at Duluth

2009-2016 Head, Department of Mathematics and Statistics, University of Minnesota at Duluth

2009- Coordinator of University of Minnesota Duluth–Beijing High Education Teacher's Training Center Visiting Program.

2007-2012 Faculty leader of the Chinese Language and Culture program of the University of Minnesota Duluth at the Ocean University of China.

2005-present: Guest Professor, Beijing Institute of Technology, China.

2003-present: Visiting Professor, Ninbo Institute of Technology, Zhejiang University, China.

2000-present: Professor of Mathematics, University of Minnesota at Duluth.

1995-2000: Associate Professor of Mathematics, University of Minnesota at Duluth.

1989-1995: Assistant Professor of Mathematics , University of Minnesota at Duluth.

1984-1989: Teaching-Research Assistant, Department of Mathematics, Virginia Polytechnic Institute and State University.

1982-1984: Research Assistant, Shanghai Hydraulic and Pneumatic Technic Institute, Shanghai, China.

III. Research Interest

Optimal Control, Parameter Identification, Numerical Approximation, Functional and Partial Defferential Equations, Operations Research.

IV. Publications

Books

1. *Solution Manual/Linear Programming and Network Flows*, (with Joanna M. Leleno) 1990, John Wiley & Sons Inc.
2. *Semigroup Properties Associated with Dissipative Systems*, (with S. Zheng) Chapman & Hall/CRC Research notes in Mathematics, 1999.

Journal Papers

1. *Approximation of Thermoelastic and Viscoelastic Control Systems* (with J.A. Burns and R.E. Miller), Journal of Numerical Functional Analysis and Optimization, Vol. 12, No. 1& 2 (1991), pp. 79-136.
2. *Exponential Stability of Semigroup Associated with Thermoelastic System*, (with S. Zheng), Quarterly of Applied Mathematics, Vol. LI, No. 3 (1993), pp. 535-545.
3. *On the Energy Decay of a Linear Thermoelastic Bar*, (with J.A. Burns and S. Zheng), Journal of Mathematical Analysis and Applications, Vol. 179, No. 2 (1993), pp. 574-591.
4. *Uniform Exponential Stability and Approximation in Control of Thermoelastic System*, (with S. Zheng), SIAM J. on Control and Optimization, Vol. 32, No. 5 (1994), pp. 1226-1246.
5. *A Note on the Equation of a Thermoelastic Plate*, (with M. Renardy), Appl. Math. Letters, Vol. 8, No. 3 (1995), pp. 1-6.
6. *Exponential Energy Decay of the Euler-Bernoulli Beam with Shear/thermal Diffusion*, (with S. Zheng), Journal of Mathematical Analysis ans Applications, Vol. 196(1995), pp. 467-478.
7. *On the Type of C_0-Semigroup Associated with the Abstract Linear Viscoelastic System*, (with K. Liu), Z. agnew Math. Phys., 47 (1996), pp. 1-15.
8. *Exponential Energy Decay in Linear Viscoelasticity and Thermoviscoelasticity*, (with S. Zheng), Quarterly of Applied Mathematics, Vol. LIV, No. 1(1996), pp. 21-31.
9. *Exponential Stability and Analyticity of the abstract thermoelastic evolution equation*, (with K. Liu), Z. agnew Math. Phys., 48, (1997), pp. 885-904.
10. *Exponential Stability of the Kirchhoff Plate with Thermal or Viscoelastic Damping*, (with S. Zheng), Quarterly of Applied Mathematics, Vol. LV, No. 3(1997), pp. 551-564.
11. *Analyticity and differentiability of semigroups associated with elastic systems with damping and gyroscopic forces*, (with K. Liu), Journal of Differential Equations, Vol 141, No.2(1997), pp. 340-355.
12. *Uniformly Exponential stable Approximations of Linear Viscoelasticity*, (with S. Zheng), Journal of Mathematical Systems, Estimation, and Control, Vol. 8, No.2 (1998), pp. 177-180 (summary, electronic version, 17 pages).
13. *On the Energy Decay of Timoshenko Beam with Thermal/Viscoelastic damping*, (with Chang Peng), Advances in Mathematical Sciences and Applications,Tokyo, Vol. 8, No. 1(1998), pp. 373-381.

14. *Exponential decay of energy of the Euler-Bernoulli beam with locally distributed Kelvin-Voigt damping*, (with K. Liu), SIAM J. Control and Optimization, Vol. 36. No.3 (1998), pp. 1086-1098.
15. *Qualitative properties of certain C_0 semigroups arising in elastic systems with various dampings*, (with J. Yong), Advances in Differential Equations, Vol. 3, No.5(1998), pp. 643-686.
16. *Modeling and Analysis of a Laminated Beam*, (with S.A. Trogdon and J. Yong), Mathematical and Computer Modeling, Vol.30, 1/2(1999), pp.149-167.
17. *Spectrum and stability for the elastic systems with global/local Kelvin-Voigt damping*, (with S. Chen and K. Liu), SIAM J. Applied Mathematics, Vol. 59, No.2 (1999), pp. 651-668.
18. *Boundary stabilization of a nonhomogeneous hybrid systems* (with B. Rao), Pan American Math., 10(2000), No. 1, pp. 55-73.
19. *Boundary stabilization of a nonhomogeneous beam with rotatory inertia at the tip*, (with K. Liu), Comp. Appl. Math., 114(2000), pp. 1-10.
20. *On an abstract linear elastic system with indefinite damping*, (with K. Liu and B. Rao), ESAIM: Proceedings, Vol.8(2000), pp 107-117.
21. *Exponential stability of an abstract non-dissipative linear system*, (with K. Liu and B. Rao), SIAM J. Control and Optimization, Vol. 40(2001), No. 1, pp. 149-165.
22. *Exponential decay of energy of vibrating strings with local viscoelasticity*, (with K. Liu), Journal of Appl. Math. Phys. (ZAMP), 53(2002), pp. 265-280.
23. *Decay rates for a beam with pointwise force and moment feedback*, (with K Ammari and M. Tucsnak), Mathematics of Control, Signals, and Systems, 15(2002), No. 3, pp. 229-255.
24. *Boundary stabilization of nonhomogeneous beam by frequency domain multiplier method*, (with K. Liu), Journal of Computational and Applied Mathematics, 21(2002), No. 1, pp. 299-313.
25. *Exponential Decay of Energy of Euler-Bernoulli Beam with Local Viscoelasticity*, (with H. Zhao and K. Liu), J. Elasticity, 74(2004), 175-183.
26. *Model Structure and Boundary Stabilization of an Axially Moving Elastic Tape* (with D. Russell), Control Theory of Partial Differential Equations, Lecture Notes in Pure and Applied Mathematics, Vol 242(2005), Chapman & Hall/CRC, pp.183-194.
27. *Frequecy Domain Characterization of Rational Decay Rate for Solution of Linear Evolution Equations*, (with B. Rao), ZAMP, Vol 56, No. 4(2005), pp. 630-644.
28. *Frequency Domain Approach for the Polynomial Stability of Partially Damped Wave Equations*, (with B. Rao), JMAA 335 (2007), pp. 860-881.
29. *Minimum Angular-Impulse Control for a Large Flexible Spacecraft*, (with E.M. Cliff, T. Herdman), J. of Guidance, Control, and Dynamics, Vol 30, No 1, Jan-Feb 2007, pp. 87-99.
30. *Polynomial Stability of a Joint-Leg-Beam System with Local Damping*, (with J. Burns, E. Cliff and R. Spies), MCM 46 (2007), pp. 1236-1246.
31. *On Coupled Transversal and Axial Motions of Two Beams with a Joint*, (with J.A. Burns, E.M. Cliff and R.D. Spies), JMAA 339 (2008), pp. 182-196.

32. *A model for the thermoelastic behavior of a joint-leg-beam system for space applications*, (with E. Cliff and R. Spies), Rev. Un. Mat. Argentina 49 (2009), No. 1, pp. 55-66.
33. *Energy Decay Rate of the Thermoelastic Bresse System*, (with B. Rao), ZAMP, 60 (2009), pp. 54-69.
34. *Wellposedness and Exponential Stability of a Thermoelastic Joint-Leg-Beam System with Robin Boundary Condition*, (with E. Cliff, B. Fulton, T. Herdman, and R. Spies), MCM 49 (2009) pp. 1097-1108.
35. *Spectral Approach to the Indirect Boundary Control of a System of Wave Equations* (with B. Rao), DCDS, Volume 23, No. 1-2 (2009), pp. 399-414.
36. *Approximation of a Joint-Leg-Beam System*, (with J.A. Burns, E.M. Cliff, and R. Spies), Computational Mechanics, submitted, 2008.
37. *Surface Heating and Three-dimensional Motion of a Thermoelastic Beam*, (with S. Trogdon), MCM 51 (2010), pp. 1051-1063.
38. *Analyticity of solutions in type III thermoelastic plates*, (with R. Quintanilla), IMA J. Applied Math. (2010) 75, pp. 637-646.
39. *Energy decay rate of mixed type II and type III thermoelastic system*, (with R. Quintanilla), DCDS-B, 14 (2010), no. 4, pp. 1433-1444.
40. *Stability of an abstract system of coupled hyperbolic and parabolic equations*, (with J. Hao), ZAMP, 64, No.4 (2013), pp. 1145-1159.
41. *Stabilization of a joint-leg-beam system by boundary damping*, (with Q. Zhang), JMAA, 420 (2014) no. 2, pp. 1455-1467.
42. *A Note on the Polynomial Stability of a Weakly Damping Elastic Abstract System*, (with Q. Zhang), ZAMP, 66, No.4 (2015), pp. 1799-1804.
43. *Regularity of an abstract system of coupled hyperbolic and parabolic equations*, (with J. Hao and J. Yong), JDE, 259 (2015), no. 9, 4763-4798.
44. *On the time decay of solutions for non-simple elasticity with voids*, (with A. Magaña and R. Quintanilla), ZAMM, Volume 96, No. 7 (2016), pp. 857-873.
45. *Stability of a string with local Kelvin-Voigt damping and nonsmooth coefficient at interface*, (with Q. Zhang), SIAM J. Control Optim, Vol. 54, No. 4 (2016), pp. 1859-1871.
46. *Eventual differentiability of wave equation with local Kelvin-Voigt damping*, (with K. Liu and Q. Zhang), ESAIM COCV, Volume 23, No. 2 (2017), 443-454.
47. *On the Time Decay for the Phase-lag Heat Equation with Spatial Dependent Lags*, (with R. Quintanilla, Y. Wang), JMAA, 455 (2017), No. 1, 422-438.
48. *Time Decay in Dual-phase-lag Thermoelasticity: Critical Case*, (with R. Quintanilla), Comm. Pure Appl. Analysis, Vol. 17, No. 1 (2018), 177-190.
49. *Stability and Regularity of Solution to the Timoshenko Beam Equation with Local Kelvin-Voigt Damping*, (with Q. Zhang), SIAM J. Control Optim, Vol. 56, No. 6 (2018), 3919-3947.
50. *Weak Stability of a laminated beam*, (with Y. Li and Y. Wang), Math. Control Related Fields, Volume 8, Number 3& 4, (2018), 789-808.
51. *Regularity and stability of coupled plate equations with indirect structural or Kelvin-Voigt damping*, (with Z. Han), ESAIM Control Optim. Calc. Var, Vol. 25, E51 (2019).

52. *Stability of degenerate heat equation in non-cylindrical/cylindrical domain*, (with H. Gao and L. Li), ZAMP, (2019) 70:120.
53.
54. *Stability of Thermoelastic Systems with inertial terms*, (with H. Fernandez Sare and R. Racke), J. Differential Equations, 267 (2019), pp. 7085-7134.
55. *On the regularity and stability of the dual-phase-lag equation*, (with R. Quintanilla and Y. Wang), Appl. Math. Lett. 100 (2020) 106038, 8 pp.
56. *Stability of wave equations on a tree with local Kelvin-Voigt damping*, (with K. Ammari and F. Shel), Semigroup Forum, 100 (2020), no. 2, 364-382.
57. *Polynomial stability of the Rao-Nakra beam with a single internal viscous damping*, (with B. Rao and Q. Zhang), J. Differential Equations, 269 (2020), no. 7, 6125-6162.
58. *Regularity Analysis for an abstract thermoelastic system with inertial term*, (with Z. Kuang and H. Fernandez Sare), ESAIM Control Optim. Calc. Var 27 (2021), suppl., Paper No. S24, 29pp.
59. *On the Regularity and Stability of Three-Phase-Lag Thermoelastic Plate*, (with R. Quintanilla and Y. Wang), Applicable Analysis, (2021), to appear.
60. *Gevrey class of locally dissipative Euler-Bernoulli beam equation*, (with J. E. Munoz Rivera and G. Gómez Àvalos), SIAM J. Control Optimization, (2021), to appear.
61. *Finer energy decay rate for an elastic string with localized Kelvin-Voigt damping*, (with Z. Han and J. Wang), DCDS-S, submitted, April, 2021.
62. *Dual-phase-lag heat conduction with microtemperature*, (with R. Quintanilla and Y. Wang), Z. Angew. Math. Mech, (2021), to appear.
63. *On the Regularity and Stability of Three-Phase-Lag Thermoelastic Plate*, (with R. Quintanilla), Computational and Applied Math., (2021), to appear.

Proceeding Papers

1. *Control of a Thermoviscoelastic System* (with J.A. Burns, E.M. Cliff, R.E. Miller) Proceedings of the 27th IEEE Conference On Decision and Control, 1988, Austin, Texas. P1249-1252.
2. *Approximation of Thermoviscoelastic Control System* (with J.A. Burns and R.E. Miller), Proceedings of Second Conference in Control and Computation, 1990, Bozeman, Montana, P31-44, Birkhauser.
3. *Uniform Exponential Approximation of the LQR Problem*, Proceedings of the First Conference of World Congress of Nonlinear Analysis, Tampa, FL, 1992.
4. *Boundary stabilization of a hybrid system*, (with K. Liu), Proceeding of the IFIP conference on Control of Distributed Parameter and Stochastic Systems, June, 1998, Hangzhou, China, pp. 95-102, Kluwer Academic Publisher.
5. *Analyticity of semigroup associated with a laminated composite beam*, (with S. Hansen), Proceeding of the IFIP conference on Control of Distributed Parameter and Stochastic Systems, June, 1998, Hangzhou, China, pp. 47-54, Kluwer Academic Publisher.
6. *Exponential stabilization of string equation by local viscoelasticity*, (with K. Liu), Proceeding of the 19th Chinese Control Conference, December, 2000, Hong Kong, China, pp. 228-230.

7. *On Minimum Angular-Impulse Control for ISAT*, (with E.M. Cliff, T.L. Herdman) AIAA 2006 annual conference.
8. *Results on Transversal and Axial Motion of a System of Two beams Coupled to a Joint Through Two Legs*, (with J.A. Burns, E.M. Cliff, T.L. Herdman and R.D. Spies), Sixth International Conference on Mathematical problems in Engineering and Aerospace Sciences, Camb. Sci. Publ., Cambridge, 2007, pp. 85-98.
9. *On the Dynamics of a Thermoelastic Joint-Leg-Beam System*, (with J.A. Burns, E.M. Cliff, T.L. Herdman and R.D. Spies), ICNPAA-2006 Mathematical problems in Engineering and Aerospace Sciences, June 2006, Budapest, Hungary.

Preprints

1. *Stabilization of an acoustic-structure system by local control.*

V. Invited Conference Lectures

1. *Semigroup Theory of the Functional-Partial Differential Equation from Thermoviscoelasticity*, SIAM Anual Meeting, Chicago, IL, July 1990.
2. *Approximation of Thermovicoelastic Control System*, Second Conference in Control and Computation, Bozeman, MT, August 1990.
3. *Uniformly Exponential Stable Approximation of the LQR Problem*, First World Congress of Nonlinear Analysis, Tampa, FL, August 1992.
4. *On the Abstract Linear Viscoelastic System*, SIAM Conference on Control, St. Louis, MS, March 1995.
5. *Modeling and Analysis of a Laminated Beam*, AMS-SIAM Summer Conference, Mt. Holyoke, MA, July 1996.
6. *Semigroup properties of dissipative systems*, Workshop on Thermo and Viscoelasticity, Petropolis, Brazil, March 1998.
7. *Boundary stabilization of a nonhomogeneous beam by the frequency domain multiplier method*, SIAM Conference on Control, Jacksonsville, FL, May 1998.
8. *Exponential stabilization of a hybrid system*, IFIP Conference on Control of Distributed and Stochastic systems, Hangzhou, China, June 1998.
9. *On an abstract linear elastic system with indefinite damping*, Conference on Control of Systems Governed by PDE, Nancy, France, March 1999.
10. *Frequency domain characterization of rational energy decay rate*, CBMS Conference on Mathematical Control Theory of Coupled PDE's, Lincoln, NE, August 1999.
11. *Optimal damping rate for certain elastic systems*, Conference on Advances in Control of Nonlinear Distributed Parameter System, College Station, TX, October 1999.
12. *On elastic systems with local viscoelastic damping*, International Conferrence on Partial Differential Equations: Thermo and Viscoelasticity, Konstanz, Germany, August 2000.

13. *Optimization of Damping Coefficients*, Conference on Frontier of Control for Distributed Parameter Systems, Raleigh, NC, October 2000.

14. *Energy decay rates of viscoelastic systems*, Conference on Semigroup Methods for Distributed Parameter Systems, Hangzhou, China, August 2001.

15. *Frequency domain characterization of polynomial decay rate of solutions to linear evolution equations*, Second Internatinoal Congress of Chinese Mathematisians, Taibei, Taiwan, December 2001.

16. *Model Structure and Boundary Stabilization of an Axially Moving Elastic Tape*, Conference on Control of Distributed Parameter Systems, Washington DC, May 2003.

17. *On the Bresse Beam Equation with Thermal Damping*, Third Conference of International Congress of Chinese Mathematisians, Hong Kong, December 2004.

18. *Analysis and Approximation of Bresse Beam with Thermal Damping*, International Conference on Approximation Methods for Design and Control, Buenos Aires, Argentina, March 2005.

19. *Modelling and Analysis of Large, Inflatable Space Structures*, Hot Topics in Industrial Mathematics, Guizhou, China, July 2005.

20. *On the Inflatable Truss Space Structure with Solar Heat Source*, Control of Distributed Parameter Systems, Changchun, China, August 2005.

21. *On a Thermoelastic Equation with Radiation Effect*, ICNPAA-2006 Mathematical problems in Engineering and Aerospace Sciences, Budapest, Hungary, June 2006.

22. *Polynomial Energy Decay Rate of Some Weakly Damped System*, Workshop on Partial Differential Equations, Rio de Janeiro, Brazil, September 2006.

23. *Mathematical Problems Arising from Integrated Space Antenna Technology*, First World Congress of Applied Mathematics, Lima, Peru, January 2007.

24. *Polynomial Energy Decay Rate of a Partially Damped Joint-Leg-Beam System*, Control of Distributed Parameter Systems, Taiyuan, China, July 2007.

25. *On the exponential stability of porous system with thermal damping*, International Conference on Nonlinear Hyperbolic Equations and Applications, Shanghai, China, September 2008.

26. *On the Energy Decay Rate of Type III Thermoelasticity with Local Damping*, International Conference on Control Theory, Beijing, China, May 2009.

27. International Conference on Applied Analysis, Donghua University, Shanghai, China, June 2010.

28. Conference on Control of Distributed Parameter System, Fudan University, Shanghai, China, July 2010.

29. IX Workshop on Partial Difference Equations, Rio de Janeiro, Brazil, August 2010.

30. PDE and its Application workshop, Fudan University, Shanghai, China, March 2012.

31. XI Workshop on Partial Difference Equations, Rio de Janeiro, Brazil, August 2012.

32. AMS Spring Conference, Ames, Iowa, April 2013.

33. International Conference on Inverse Problems and partial Differential Equations, Orlando, May 2013

34. XII Workshop on Partial Differential Equations, Petropolis, Brazil, September 2013.

35. *Stability and Regularity of Abstract System of Coupled Equations*, Conference on Inverse Problems and Control, Yantai, China, August 2014.

36. *On the Elastic System with Local Kelvin-Voigt Damping*, XIII Workshop on Partial Differential Equations, Petropolis, Brazil, September 2014.

37. *Optimal Damping for Some Elastic Systems*, 9th Workshop on Control of Distributed System, Beijing, China, June, 2015.

38. *On the dual phase-lag heat equation with spatial dependent lag*, VX Workshop on Partial Differential Equations, Petropolis, Brazil, September 2016.

39. *Stability and regularity of Timoshenko beam equation with local Kelvin-Voigt damping*, LICMA'17, Beirut, Lebanon, May 2017.

40. *Stability and regularity of Timoshenko beam equation with local Kelvin-Voigt damping*, 7th International Symposium of Applied Mathematics, Lima, Peru, July 2017.

41. *Weak stability of a laminated beam*, International Symposium on Control, Fudan University, Shanghai, China, June 5-9, 2018.

42. *Stability of thermoelastic systems with Inertial term*, 2018 American Mathematical Society-Chinese Mathematical Society Joint Meeting", Fudan University, Shanghai, China, June 11-14, 2018.

43. *Finer and sharp decay rate of wave equation with local Kelvin-Voigt damping*, XVII WPDE, Petropolis, Brazil, September 11-15, 2018.

44. *Finer and sharp decay rate of wave equation with local Kelvin-Voigt damping*, Conference on PDEs, SDEs, Control Theory, and Application to Finance and Life Science, University of Central Florida, Olando, December 18, 2018.

45. *Regularity Analysis for an Abstract System of Coupled Hyperbolic and Parabolic Equations with Inertia Term*, Workshop on Partial Differential Equations, University of Konstanz, Germany, Konstanz, Germany. April 9-11, 2019.

46. *Stability of degenerate heat equation in non-cylindrical/cylindrical domain*, XVIII Workshop on Partial Differential Equations, Petropolis, Brazil, September 10-14, 2019.

47. *Regularity Analysis for an Abstract System of Coupled Hyperbolic and Parabolic Equations with Inertia Term*, Workshop on Control Theory, Beijing Institute of Technology, Beijing, China, December 20-21, 2019.

V. Colloquium Speaker and Short Term Visit

Colloquium

1. Virginia Polytechnic Institute and State University, Blacksburg, VA, August 1991.
2. Fudan University, Shanghai, China, January 1992.
3. Fudan University, Shanghai, China, March-April 1994.
4. ShiChuan University, Chendu, China, May 1994.
5. ZheJiang University, Hangzhou, China, June 1994.
6. Virginia Polytechnic Institute and State University, Blacksburg, VA. August 1994.
7. North Carolina State University, Raleigh, NC. August, 1994.
8. Virginia Polytechnic Institute and State University, Blacksburg, VA. February, 1995.
9. Fudan University, Shanghai, China, June 1995.
10. University of Tennessee, Knoxville, January 1996.
11. Virginia Polytechnic Institute and State University, Blacksburg, VA, November 1996.
12. Iowa State University, Ames, IW, March 1997.
13. Virginia Polytechnic Institute and State University, Blacksburg, VA, April 1997.
14. Institute of Applied Physics and Computational Mathematics, Beijing, China, May 1998.
15. Xiang Tan University, Xiangtan, China, June 1998.
16. Université de Franche Comté, Besancon, France, July 1998.
17. University of Minnesota, Minneapolis, May 1999.
18. Université Louis Pasteur, Strasbourg, France, June 1999.
19. Université de Franche Comté, Besancon, France, June 1999.
20. University of Southern Florida, Tampa, April 2001.
21. Université Louis Pasteur, Strasbourg, France, June 2002.
22. Northeast Normal University, Changchun, China, August 2002.
23. University of Texas, Dallas, November 2002.
24. Zhejiang University, Hangzhou, China, December 2003.
25. Guizhou University, Guiyang, China, January 2004.
26. Institute of System Science, Chinese Academy of Science, Beijing, China, July 2004.
27. Beijing Institute of Technology, Bejing, China, November 2005.
28. Xian Jiao Tong University, Xian, China, November 2005.
29. Université Louis Pasteur, Strasbourg, France, March 2007.
30. Beijing Institute of Technology, Bejing, China, August 2007.
31. Rice University, Huston, February 2008.
32. Ocean University of China, Qingdao, China, June 2008.
33. Beijing Institute of Technology, Beijing, China, October 2008.
34. Beijing Institute of Technology, Beijing, China, January 2009.
35. Shanxi University, Taiyuan, China, January 2009.
36. Donghua University, Shanghai, China, May 2009.
37. University of Electronic Science and Technology of China, Chengdu, June 2009.
38. University of Electronic Science and Technology of China, Chengdu, October 2010.

39. Donghua University, Shanghai, China, March 2012.
40. Institute of System Science, Chinese Academy of Science, Beijing, China, March 2012.
41. School of Mathematics, Shanxi University, Taiyuan, China, May 2013.
42. Donghua University, Shanghai, China, June 2013.
43. Beijing Institute of Technology, Beijing, China, November 2014.
44. Tianjing University, Tianjin, China, November 2014. (two talks)
45. Institute of System Science, Chinese Academy of Science, Beijing, China, November 2014.
46. Donghua University, Shanghai, China, January 2015.
47. Donghua University, Shanghai, China, June 2015.
48. Shanxi University, Taiyuan, China, June 2015.
49. University of Monastir, Tunisia, May 2016.
50. University of Bresia, Italy, May 2016.
51. Shanxi University, Taiyuan, China, April 2017.
52. Tianjin University, Tianjin, China, April 2017.
53. Northeast Normal University, Changchun, April 2017. (three talks)
54. Beijing Institute of Technology, Beijing, China, November 2017.
55. University of Jordan, Aman, Jordan, April 5, 2018.
56. Jordan University of Science and Technology, Ar-Ramtha, Jordan, April 9, 2018
57. University of Libanaise, Beirut, Lebanon, April 12, 2018.
58. Donghua University, Shanghai, China, May 18, 2018.
59. Zhejiang University, Hangzhou, China, May 21, 2018.
60. University of Concepcion, Concepcion, Chile, October 24, 2018.
61. Beijing Institute of Technology, Beijing, China, November 17, 2018.
62. University of Minnesota Duluth, January 22, 2019.
63. University Lyon 1, Lyon, France, April 12, 2019.
64. Sichuan University, Chengdu, China, June 28, 2019.
65. Shanghai University of International Business and Economics, Shanghai, China, December 27, 2019.

Short Term Visit

1. Fudan University, Shanghai, China, March-April 1994.
2. Zhejiang University, Hangzhou, China, June 1995.
3. Fudan University, Shanghai, China, June 1997.
4. Zhejiang University, Hangzhou, China, June 1998.
5. Université Louis Pasteur, Strasbourg, France, July 1998.
6. Université of Nancy, Nancy, France, March and May 1999.
7. Université Louis Pasteur, Strasbourg, France, June 1999.

8. Zhejiang University, Hangzhou, China, December 2000.
9. Université Louis Pasteur, Strasbourg, France, May-June 2002.
10. Virginia Polytechnic Institute and State University, January-May 2003.
11. Virginia Polytechnic Institute and State University, July-August 2004.
12. Virginia Polytechnic Institute and State University, May and August 2005.
13. Virginia Polytechnic Institute of State University, January 2006.
14. University of Rio de Janeiro, Brazil, September 2006.
15. Université Louis Pasteur, Strasbourg, France, March 2007.
16. Ocean University of China, Qingdao, China, May-June 2007.
17. Beijing Institute of Technology, Beijing, China, August 2007.
18. Virginia Polytechnic Institute of State University, December 2007.
19. University of Polytechnic at Catalunia, Terrassa, Spain, May 2008.
20. Ocean University of China, Qingdao, China, May-June 2008.
21. Beijing Institute of Technology, Beijing, China, October 2008.
22. Beijing Institute of Technology, Beijing, China, January 2009.
23. Shanxi University, Taiyuan, China, January 2009.
24. University of Polytechnic at Catalunia, Terrassa, Spain, March 2009.
25. Ocean University of China, Qingdao, China, May-June 2009.
26. Ocean University of China, Qingdao, China, May-June 2010.
27. Shanxi University, Taiyuan, China, October 2010.
28. University of Electronic Science and Technology of China, Chengdu, October 2010.
29. Ocean University of China, Qingdao, China, November 2010.
30. Ocean University of China, Qingdao, China, May-June 2011.
31. Donghua University, Shanghai, China, March 2012.
32. Ocean University of China, Qingdao, China, May-June 2012.
33. University of Polytechnic at Catalunia, Terrassa, Spain, March 2013.
34. Beijing Institute of Technology, Beijing, China, October-November 2014.
35. Tianjin University, Tianjin, China, November 2014.
36. Donghua University, Shanghai, China, January 2015.
37. Beijing Institute of Technology, Beijing, China, October 2015.
38. University of Monastir, Tunisia, May 2016.
39. University of Bresia, Italy, May 2016.
40. University of Polytechnic at Catalunia, Terrassa, Spain, February 2017.
41. Northeast Normal University, April-May 2017.
42. Lebanese University, Beirut, Lebanon, May 2017.
43. Beijing Institute of Technology, Beijing, China, August 2017.
44. University of Jordan, Aman, Jordan, April 5-8, 2018.
45. Jordan University of Science and Technology, Jordan, April 8-10, 2018.

46. University of Libanaise, Lebanon, April 11-16, 2018.
47. Tianjin University, Tianjin, China, May 2018.
48. Zhejiang University, Hangzhou, China, May 2018.
49. Donghua University, Shanghai, China, May 2018.
50. University of Bio Bio, Concepcion, Chile, October 23 - November 2, 2018.
51. Beijing Institute of Technology, Beijing, China, November 8-24, 2018.
52. University of Konstanz, Germany, April 8-11, 2019.
53. University of Lyon 1, France, April 12-17, 2019.
54. University of Polytechnic at Catalunia, Terrassa, Spain, May 4-11, 2019.
55. Sichuan University, China, June 13-30, 2019.
56. Beijing Institute of Technology, Beijing, China, December 11-26, 2019.

VI. Service to Profession

Refereed papers for professional journals including:

JDE, SIAM Journal on Control and Optimization; SIAM Journal on Mathematical Analysis, SIAM Review, SIAM Applied Math., J. of Math. Analysis and Applications, Journal of Mathematical systems, Estimation, and Control, IEEE Transaction Automatic Control, International Journal of Solid Structure, Discrete and Continuous Dynamical Systems, J. of Applied Math. and Physics (ZAMP), ACAP, Optimal Control–Appl. and meth., China Science, J. of Elasticity, Applied Math. Letter, J. of Wave Motion, Australian & New Zealand Industrial & Applied Mathematics Journal, Rocky Mountain Journal of Mathematics, IMA Appl. Math, J. Evolution Equations, Acta Applicanda Mathematicae, Math Nachrichten, Applicable Analysis, Advance in Differential Equations, Applied Math and Computation, J. of BVP, Journal of Mathematical Physics, J. of Mathematical Problems in Engineering, Diff and Int Eqns, J. of Math. Phys., International J. of Control, J. of Applied Math and Mech (ZAMM), International J. of Control

Reviewed proposals for National Science Foundation of USA.

Reviewed proposals for National Science Foundation of South Africa.

Reviewer of *Mathematical Review*

Organizing *IFIP 1998 Conference on Control of Distributed Parameter and Stochastic Systems.*

VII. Service to UMD

Department

Department Head, 2009–

Graduate Program Committee, 1990-1993, 1997-2002, 2003–2009 (Director)

Undergraduate Program Committee, 1993-1996

Graduate Colloquium Organizer, 1990-1991, 1992-1993, 1994-1995, 1997-1999 2000-2002, 2003–2009

Faculty Search Committee, 1990, 1998, 1999-2001, 2004-2005

Undergraduate Activities Committee, 1991-1992, 1994-1997,

P& T review committee, 1992-1993

College

Student Appeal Committee, 1994-1997

UROP Committee, 2001-2002

University

Strategic Planning and Budget Committee, 2013 -

LibEd subcommittee, 2011-2012

Campus Assembly Executive Committee, 2008-2011

Campus Budget Committee, 2003-2007

P& R Review Committee 2003-2005

IX. Teaching Experience

1. Undergraduate courses: Calculus, Differential Equations, Numerical methods, Vector and Matrices, Introduction of Probability and Statistics, Operational Mathematics, Linear Algebra

2. Graduate courses: Linear Programming, Partial Differential Equations, Calculus of Variations, Numerical Analysis, Real Analysis, Graduate Seminar on Special Topics

3. M.S. graduate students supervised:

    1. Yongli Yang. 1992
    2. Chang Peng, 1994
    3. Hui Cheng, 1995
    4. Tong Chen, 1997
    5. Xing Li (co-advisor Kewen Yin), 1997
    6. Miata White, 1998
    7. Jose Rodriguez, 1999
    8. Hongchuan Yang (co-advisor Kewen Ying), 2000
    9. Ruinan Lu, 2002
    10. Yanhua Li, 2003
    11. Nan Shao, (co-advisor Steve Sternberg), 2004
    12. Basu Preetam, 2005

13. Ran Wei, 2008
14. Fenghuan Wang (co-advisor Guihua Fei), 2006
15. Wei Lin, (co-advisor Froncek Dalibor), 2006
16. Andrew Larson (co-advisor Steve Trogdon), 2007
17. Riitta Shaunblin, 2008
18. Junyan Shen (co-advisor Kang James), 2008
19. Shanshan Ding (co-advisor Kang James), 2008
20. Ronghua Zhu, 2009
21. Jingrui Li (co-advisor Hongyi Chen), 2010
22. Fang Chen (co-advisor Hongyi Chen), 2010
23. Hao Han, 2011
24. Tyler Kjorstat (co-advisor Barry James), 2012
25. Zhengfei Rui (co-advisor Steve Trogdon), 2013
26. Zhaobin Kuang, 2014
27. Xiao Li (co-advisor Barry James), 2014
28. Tsungai Chibanga (co-advisor Desineni Naidu) 2015
29. Neng Wan, 2017
30. Jiaxing Wang, 2018
31. Aaron Crenshaw, 2019

4. UROP students supervised:

    1. Kathleen McTavish, 1991
    2. Boris Abramovich, 1993
    3. Steve Law, 1999
    4. Gemechu Gelgelu (co-advisor Harlan Stech), 2003
    5. Shane Ellis, (co-advisor Harlan Stech), 2005
    6. Xixi, 2008
    7. Zirui Zhao, 2015

5. Ph.D. student committee:

    1. Hongliang Zhao, Zhejiang University, China, 2002
    2. Brian Fulton, Virginia Tech, 2006
    3. Hugo Danilo Fernandez Sare, University Rio de Janeiro, Brazil, 2006
    4. Caihong Zhang, Ocean University of China, 2011
    5. Guodong Zhang, University of the Witwatersrand, " Johannesburg, South Africa, 2011
    6. Mohamad AKIL, Universite Libanaise, Lebanon, 2017
    7. Yang Wang, Donghua University, China, 2018
    8. Mouhammad CHADER, Universite Libanaise, Lebanon, 2018
    9. Juan Carlos Vega Sanhueza, University of Bio Bio, Chile, 2018.

6. Served on over 28 M.S. graduate students' committee.
7. Organized UMD team for National Mathematical Modeling contest in 1996-1998.
8. Lead UMD's Study in China summer program, 2007-2012

X. Professional Societies

AMS, SIAM, MAA

XI. Honor and Award

1. Recipient of the 2011 University of Minnesota Award for Global Engagement and the title of Distinguished International Professor.
2. Recipient of the 2014 the Dennis and Sabra Anderson Teaching and Scholar Award, Swenson College of Science Engineering, University of Minnesota Duluth.
3. Recipient of the 2017-2018 Outstanding Graduate Advisor Award, University of Minnesota Duluth.