Curriculum Vitae — Mingji Zhang

CONTACT INFORMATION

Department of Mathematics
New Mexico Tech
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EDUCATION

- Ph.D **with honors**, Applied Mathematics, 2013, University of Kansas, Lawrence, KS
  Advisor: **Dr. Weishi Liu**

- M.A. Mathematics, 2011, University of Kansas, Lawrence, Kansas
  Advisor: **Dr. Weishi Liu**

- M.A. College of Science, 2005, Kunming University of Science and Technology, China
  Advisor: **Prof. Jibin Li**

- B.S. School of Mathematics and Information, 2003, Yantai Normal University, China

ACADEMIC POSITIONS

- 2020 - present, Tenured Associated Professor, New Mexico Tech.

- 2015 - 2020, Tenure-Track Assistant Professor, New Mexico Tech.

- 2013 - 2015, Visiting Research Associate, Michigan State University.

RESEARCH

Research Interests

- Geometric singular perturbation theory

- Mathematical biology: Ion channel problems and Multi-analysis in developmental biology

- Bifurcation theory for planar polynomial vector field

- Nonlinear partial differential equations including stochastic ones

- Bifurcation analysis and traveling waves

Research Citations

- 722 citations in ISI Web of Science (Science Citation Index).

- 942 citations in Google Scholar.

Publications in Refereed Journals

Publications after Tenured at NMT

1. Y. Wang, J. Shen, L. Zhang and **M. Zhang** Studies on reversal potential via classical Poisson-Nernst-Planck systems. Part I: Multiple pieces of nonzero permanent charges having the same sign. Qualitative Theory of Dynamical Systems, (To appear)

2. Y. Qi, J. Song, Y. Tian and **M. Zhang**, Studies on zero-current ionic flows through membrane channels via Poisson-Nernst-Planck systems with nonuniform ion sizes under relaxed boundary conditions. Acta Mathematica Applicate Sincia, English Version, **2025**, https://doi.org/10.1007/s10255-025-0066-x

3. X. Deng, H. Li, Z. Li, J. Yu and **M. Zhang**, Numerical approach to Poisson-Nernst-Planck models with nonzero permanent charges and steric effects. Symmetry, **2025**, $17(9), 1479$

4. J. Chen, Z. Li, J. Song and **M. Zhang**, Mathematical analysis on Poisson-Nernst-Planck systems with large permanent charges under relaxed neutral boundary conditions. Mathematics, **2025**, $13, 2847$

5. X. Sun and **M. Zhang**, Dynamics of a quartic Korteweg-de Vries equation with multiple dissipations via an Abelian integral approach. Chaos, **2025**, 35, 083118. (Editor's Pick.)

6. J. Song, F. Li and **M. Zhang**, Bifurcations and Exact Solutions for the Coupled Nonlinear Generalized Zakharov Equations with Anti-cubic Nonlinearity: Dynamical system approach. Mathematics, **2025**, 13(2), 217.

7. X. Liu, J. Song, L. Zhang and **M. Zhang**, Roles played by critical potentials in the study of Poisson-Nernst-Planck models with steric effects under relaxed neutral boundary conditions. Axioms, **2025**, 14, 69.

8. H. Mofidi, F. Hadadifard and **M. Zhang**, Analysis of critical transitions in flux ratios in ionic flows via classical Poisson-Nernst-Planck models. Studies in Applied Mathematics, **2025**, $155(2), e70087$

9. X. Zhang, Y. Tian, **M. Zhang** and Y. Qi, Mathematical studies on generalized Burgers Huxley equation and its singularly perturbed form: Existence of traveling wave solutions. Nonlinear Dynamics, **2024**, 3, 2625-2634.

10. H. Li, Z. Li, C. Pan, J. Song and **M. Zhang**, Cubic-like features of I-V relations via classical Poisson-Nernst-Planck systems under relaxed electroneutrality boundary conditions. Axioms, **2024**, 13, 790.

11. Y. Jia, C. Lin and **M. Zhang**, Finite-time stability of discrete descriptor systems with time-varying delay and nonlinear uncertainties. Journal of Applied Analysis and Computation, **2024**, 14(5), 2977-2992.

12. X. Liu, L. Zhang and **M. Zhang**, Studies on ionic flows via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potentials under relaxed neutral boundary conditions. Mathematics, **2024**, 12, 1182.

13. H. Lu, L. Wang and **M. Zhang**, Studies on invariant measures of fractional stochastic delay Ginzburg-Landau equations on $\mathbb{R}^n$. Mathematical Bioscience & Engineering, **2024**, 21(4), 5456-5498.

14. Y. Wang and **M. Zhang**, Finite ion size effects on I-V relations via Poisson-Nernst-Planck systems with two cations: A case study. Mathematical Bioscience & Engineering, **2024**, 21(2), 1899-1916.

15. H. Lu and **M. Zhang**, Upper semi-continuity and regularity of random attractors for stochastic fractional power dissipative equations. Journal of Applied Analysis and Computation, **2024**, 14(2), 816-846.

16. H. Lu and **M. Zhang**, Dynamics of stochastic Ginzburg-Landau equations driven by colored noise on thin domains. Journal of Nonlinear Modeling and Analysis, **2023**, 5(2), 288-310.

17. **M. Zhang**, Existence and local uniqueness of classical Poisson-Nernst-Planck systems with multi-component permanent charges and multiple cations. Discrete and Continuous Dynamical Systems, Series S, **2023**, 16(3&4), 725-752.   doi:10.3934/dcdss.2022134

18. Y. Wang, L. Zhang and **M. Zhang**, Mathematical analysis on current-voltage relations via classical Poisson-Nernst-Planck systems with nonzero permanent charges under relaxed electroneutrality boundary conditions. Membranes, **2023**, 13, 131.

19. Y. Fu, W. Liu, H. Mofidi and **M. Zhang**, Finite ion size effects on ionic flows via Poisson-Nernst-Planck systems: Higher order contributions. Journal of Dynamics and Differential Equations, 35 (**2023**), 1585-1609.

20. H. Lu, L. Wang and **M. Zhang**, Dynamics of Fractional Stochastic Ginzburg-Landau Equation Driven by Nonlinear Noise. Mathematics, 2022, 10(23), 4485

21. J. Chen and **M. Zhang**, Geometric singular perturbation approach to Poisson-Nernst-Planck systems with local hard-sphere potential: Studies on zero-current ionic flows with boundary layers. Qualitative Theory of Dynamical Systems, 2022 21 : 139.

22. X. Liu, L. Zhang and **M. Zhang**, Studies on pull-in instability of an electrostatic MEMS actuator: Dynamical system approach. Journal of Applied Analysis and Computation, 12(2), (2022), 850-861.

23. X. Deng, Y. Jia and **M. Zhang**, Studies on I-V relations via Poisson-Nernst-Planck systems with multiple cations and small permanent charges. Journal of Applied Analysis and Computation, 12(3) 2022, 932-951.

24. **M. Zhang**, Qualitative properties of zero-current ionic flows via Poisson-Nernst-Planck systems with nonuniform ion sizes. Discrete and Continuous Dynamical Systems, Series B, 27(12) (2022), 6989-7019

25. J. Chen and **M. Zhang**, Boundary layer effects on ionic flows via Poisson-Nernst-Planck systems with nonuniform ion sizes. Discrete and Continuous Dynamical Systems, Series B, 27(10) (2022), 6197-6216.

26. Y. Bao, J. Chen, L. Zhang and **M. Zhang**, Higher order expansions in finite ion size via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potential. Journal of Applied Analysis and Computation, 12(3) 2022, 907-931.

27. H. Lu, J. Li and **M. Zhang**, Stochastic dynamics of non-autonomous fractional Ginzburg-Landau equations on $\mathbb{R}^3$. Discrete and Continuous Dynamical Systems, Series B, 27(11), (2022), 6943-6968. doi: 10.3934/dcdsb.2022028.

28. Y. Wang, L. Zhang and **M. Zhang**, Studies on individual fluxes via Poisson-Nernst-Planck models with small permanent charges and partial electroneutrality conditions. Journal of Applied Analysis and Computation, **12**(1) (2022), 87-105.

29. H. Lu, L. Wang, L. Zhang and **M. Zhang**, Limiting dynamics of non-autonomous stochastic Ginzburg-Landau equations on thin domains. Journal of Applied Analysis and Computation, **11**(5) (2021), 2313-2333.

30. P. W. Bates, Z. Wen and **M. Zhang**, Small permanent charge effects on individual fluxes via Poisson-Nernst-Planck models with multiple cations. Journal of Nonlinear Science, **31**, 55 (2021).

31. Z. Wen, P. W. Bates and **M. Zhang**, Effects on I-V relations from small permanent charge and channel geometry via classical Poisson-Nernst-Planck equations with multiple cations. Nonlinearity, **34** (2021), 4464-4502.

32. J. Chen, Y. Wang, L. Zhang and **M. Zhang**, Mathematical analysis of Poisson-Nernst-Planck models with permanent charges and boundary layers: Studies on individual fluxes. Nonlinearity, **34** (2021), 3879-3906.

33. **M. Zhang**: Competition between cations via Poisson-Nernst-Planck systems with nonzero but small permanent charges. Membranes, **2021**, 11, 236.

34. K. Zhu, J. Li, Y. Xie and **M. Zhang**, Dynamics of non-autonomous fractional reaction-diffusion equations on $\mathbb{R}^N$ driven by multiplicative noise. Discrete and Continuous Dynamical Systems, Series B, **26**, 5681-5705, (2021).

35. Z. Wen, L. Zhang and **M. Zhang**: Dynamics of classical Poisson-Nernst-Planck systems with multiple cations and boundary layers. Journal of Dynamics and Differential Equations, **33**, 211-234, (2021).

36. L. Zhang, M. Han, **M. Zhang** and C. Khalique, A new type of solitary wave solution appearing for the mKdV equation under singular perturbations. International Journal of Bifurcation and Chaos, **30**(11), (2020) 2050162 (1-14).

37. P. W. Bates, J. Chen and **M. Zhang**, Dynamics of ionic flows via Poisson-Nernst-Planck systems with local hard-sphere potentials: Competition between cations. Mathematical Bioscience and Engineering, **17**(4), 3736-3766 (2020).

38. H. Lu and **M. Zhang**, Dynamics of non-autonomous fractional Ginzburg-Landau equations driven by colored noise. Discrete and Continuous Dynamical Systems, Series B, **25**(9), 3553-3576, (2020).

39. H. Lu, J. Li and **M. Zhang**, Spectral methods for two-dimensional space and time fractional Bloch-Torrey equations. Discrete and Continuous Dynamical Systems, Series B, **25**(9), 3357-3371, (2020).

Publications before Tenured at NMT (2015-2020**), totally** 16 **articles**

40. R. Aitbayev, P. W. Bates, H. Lu, L. Zhang and **M. Zhang**, Mathematical studies of Poisson-Nernst-Planck systems: dynamics of ionic flows without electroneutrality conditions. Journal of Computational and Applied Mathematics, **362**, 510 − 527 (2019).

41. H. Lu, J. Qi, B. Wang and **M. Zhang**, Pullback D-attractors for non-autonomous stochastic fractional power dissipative equations on $\mathbb{R}^n$. Discrete and Continuous Dynamical Systems, Series A, **39**(2), 683 − 706 (2019).

42. **M. Zhang**, Boundary layer effects on ionic flows via classical Poisson-Nernst-Planck systems. Computational and Mathematical Biophysics, **6**, 14 − 27 (2018).

43. H. Lu, P. W. Bates, W. Chen and **M. Zhang**, The spectral collocation method for efficiently solving PDEs with fractional Laplacian. Advances in Computational Mathematics, **44**(3), 861 − 878 (2018)

44. H. Lu and **M. Zhang**, The spectral method for long-time behavior of a fractional power dissipative system. Taiwanese Journal of Mathematics **22**(2), 453 − 483, (2018).

45. H. Lu, J. Li, J. Shackelford, J. Vorenberg and **M. Zhang**: Ion size effects on individual fluxes via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potential: Analysis without electroneutrality boundary conditions. Discrete and Continuous Dynamical Systems, Series B, **23**(4), 1623 − 1643 (2018).

46. J. Zhang, D. Acheampong and **M. Zhang**, Effects on ionic flows from finite ion sizes via Poisson-Nernst-Planck models with non-local excess chemical potentials. Molecular Based Mathematical Biology, **5**(1), $58 - 77$ (2017).

47. P. W. Bates, Y. Jia, G. Lin, H. Lu and **M. Zhang**, Individual flux study via steady-state Poisson-Nernst-Planck systems: Effects from boundary conditions. SIAM Journal on Applied Dynamical Systems, **16**(1), $410 - 430$ (2017).

48. H. Lu, S. Lü and **M. Zhang**, *Fourier spectral approximation to the dynamical behavior of 3D fractional Ginzburg-Landau equation.* Discrete and Continuous Dynamical Systems, Series A, **37**(5), $2539 - 2564$ (2017)

49. P. W. Bates, W. Liu, H. Lu and **M. Zhang**, *Ion size and valence effects on ionic flows via Poisson-Nernst-Planck systems.* Communications in Mathematical Sciences, **15**(4), $881 - 901$ (2017)

50. P. W. Bates, J. Li and **M. Zhang**, *Singular fold with real noise.* Discrete and Continuous Dynamical Systems, Series B, **21**(7), $2091 - 2107$ (2016).

51. Y. Jia, W. Liu and **M. Zhang**, *Poisson-Nernst-Planck systems for ion flow with Bikerman's local hard-sphere potential: Ion size and valence effects.* Discrete and Continuous Dynamical Systems, Series B, **21**(6), $1775 - 1802$ (2016)

52. H. Lu, P. W. Bates, S. Lü and **M. Zhang**, *Stochastic Dynamics of the 3D fractional complex Ginzburg-Landau equation with multiplicative noise on an unbounded domain.* Communications in Mathematical Sciences, **14**(1), $273 - 295$ (2016)

53. **M. Zhang**, *Asymptotic expansions and numerical simulations on I-V relations via a Poisson-Nernst-Planck system with zero permanent charge function.* Rocky Mountain Journal of Mathematics **45**(5), $1681 - 1708$ (2015).

54. H. Lu, P. W. Bates, J. Xin and **M. Zhang**, *Asymptotic behavior of stochastic fractional power dissipative equations on $\mathbb{R}^n$.* Nonlinear Analysis, TMA **128**, $176 - 198$ (2015)

55. H. Lu, P. W. Bates, S. Lü and **M. Zhang**, *Dynamics of 3D fractional complex Ginzburg-Landau equation.* Journal of Differential Equations, **259**, $5276 - 5301$ (2015)

Publications before Joining NMT

56. S. Ji, W. Liu and **M. Zhang**, *Effects of (small) permanent charges and channel geometry on ionic flows via classical Poisson-Nernst-Planck models.* SIAM Journal on Applied Mathematics, **75**(1), 114-135 (2015).

57. G. Lin, W. Liu, Y. Yi and **M. Zhang**, *Poisson-Nernst-Planck systems for ion flow with density functional theory for local hard-sphere potential.* SIAM Journal on Applied Dynamical Systems, **12**(3), 1613-1648 (2013).

58. W. Liu, X. Tu and **M. Zhang**, *Poisson-Nernst-Planck type models for ionic flow with hard sphere ion species: I-V relations and critical potentials. Part II: Numerics.* Journal of Dynamics and Differential Equations, **24**(4), 985-1004 (2012).

59. J. Li, **M. Zhang** and S. Li, *Bifurcations of Limit Cycles in a Z_2-Equivariant Planar Polynomial Vector Field of Degree 7.* International Journal of Bifurcation and Chaos, **16**(4) : 925-943 (2006).

60. **M. Zhang** and S. Li: *Distribution of Limit Cycles in Z_2-Equivariant Planar Polynomial Vector Field of Degree 7.* J. Kunming Univ. of Sci. Tech. (Sci. Tech.) **31**(6) : 111-113 (2006).

61. D. Kong, H. Guo and **M. Zhang**: *Classification of Z_2-equivariant planar Hamilton phase portrait.* J. Sci. Info., **4** : 139-140 (2006).

Manuscripts Submitted

1. X. Liu, H. Ndaya, A. Nguyen, Z. Wen and **M. Zhang**, Relaxed boundary conditions in Poisson-Nernst-Planck models: Identifying critical potentials for multiple cations. Revised version has been submitted to Membranes (*X. Liu , H. Ndaya and A. Nguyen are graduate students*)

2. H. Mofidi, Jie Song and **M. Zhang**, Finite Ion Size and Permanent Charge in a Poisson-Nernst-Planck Ion Channel Model: Existence and a Critical Potential Phenomenon. Submitted to Studies in Applied Mathematics

3. X. Sun, P. Yu and **M. Zhang**, Quasi-periodic waves in the complex cubic-quintic Ginzburg–Landau equation with weak dissipation and higher-order weak dispersion. Submitted to Physics D: Nonlinear Phenomena

4. J. Chen, P. Bates, J. Song and **M. Zhang**, Highly charged ion channels: A Poisson-Nernst-Planck model study of flux suppression and selectivity. Submitted to Science China Mathematics

5. Q. Wu, Z. Wen and **M. Zhang**, Dynamics of a modified Holling–Tanner model with constant-yield prey harvesting. Submitted to Journal of Mathematical Analysis and Application

AWARDS, GRANTS AND FELLOWSHIPS

Fellowship

- Summer Research Fellowship (June 2025, No. YS305023007), Zhejiang Normal University, China ($32,000$ CNY, approximately $4450.00)

- Summer Research Fellowship (June 2018, No. $Z16X0109$), Huaqiao University, China ($14,000.00)

- Summer Research Fellowship (June 2019, No. $Z16X0109$), Huaqiao University, China ($14,000.00)

- Summer Research Fellowship, University of Kansas, 2013. ($5,000.00)

Grants Funded

1. MPS Simons Foundation, Title: Channel geometry and permanent charge effects on ionic flows through membrane channels (No. 628308), 2019-2024 ($42,000.00).

2. AMS-Simons Travel Grant, 2017-2019. ($4,800.00)

3. Start-up Fund from NMT (No. 103319), 2015-2017. ($10,000.00)

Conference Grants

- The 20th Annual Conference of *Chinese Society of Singular Perturbation*, Hefei, China, June 20-23, 2025.

- Conference on *Theory of Differential Equations and Its Application*, Kunming, China, June 21-24, 2024.

- The 13th International Conference on *Recent Advances in Applied Dynamical Systems*, Hangzhou, China, June 7-10, 2019.

- The 12th International Conference on *Recent Advances in Applied Dynamical Systems*, Chongqing, China, June 8-10, 2018.

Honors & Awards

1. NSF travel awards, KI-Net summer school on "Dynamics and Numerics for Non-local PDEs and Related Equations in the Physical and Biological Sciences" at Iowa State University, Ames, Iowa, May, 2014.

2. Paul F. Conrad Graduate Scholarship, Department of Math., Univ. of Kansas, 2013.

3. NSF travel awards, First International Conference on Dynamics of Differential Equations, Georgia Institute of Technology, Atlanta, 2013.

4. Graduate Scholarly Presentation Travel Fund, Research and Graduate Studies, Univ. of Kansas, 2013.

5. NSF travel awards, NW12 conference, University of Washington, Seattle, June 2012

6. U.G. Mitchell Honor Scholarship, Department of Mathematics, Univ. of Kansas, 2010 and 2011.

7. Outstanding thesis for Bachelor's Degree, Yantai Normal Univ. (Ludong Univ.), June 2003.

Grants Proposed but Not Funded

1. Simons Foundation (No. MPS-TSM-00014217, $42,000$), *submitted in Dec.* 2024

2. NSF Collaborative Research Proposal (No. 2508595, $412,250$) *with P. Yin and B. Wang submitted to NSF Applied Mathematics in Nov.* 2024.

3. NSF Research Proposal (No. 2406708, $172,424$) *Submitted to NSF Applied Mathematics in Nov.* 2023.

4. Simons Foundation, (No. MPS-TSM-00007428, $42,000$), *Submitted in Dec.* 2023

5. AMS Centennial Fellowship, ($49,000$), *Submitted in Aug.* 2022.

6. NSF Research Proposal (No. 2006743, $166,026$) *Submitted to NSF Applied Mathematics in Nov.* 2020.

7. Department of Defense (No. 12901136, $141,616.58$): Basic Research Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI), W911NF-19-S-0009, *Submitted in July* 2019.

8. NSF Research Proposal (No. 1907402, $117,203$) *Submitted to NSF Applied Mathematics in Nov.* 2018.

9. NSF Collaborative Research Proposal (No. 1812696, $159,089$) *with P. W. Bates and A. Dickson submitted to NSF Mathematical Biology in Nov.* 2017.

10. Simons Foundation (No. 560657): Mathematics and Physical Sciences-Collaboration Grants for Mathematicians *submitted in Sep.* 2017.

11. NSF Collaborative Research Proposal (No. 1715423, $227,731$) *with P. W. Bates and A. Dickson submitted to NSF Mathematical Biology in Nov.* 2016.

12. NSF Collaborative Research Proposal (No. 1613841, $235,511$) *with P. W. Bates submitted to NSF Applied Mathematics in Nov.* 2015.

Grants on Pending

1. NSF Collaborative Research Proposal (No. 284929, $206,564.0$) *with Co-PI P. Yin submitted to NSF Applied Mathematics on Nov. 6, 2025*

PRESENTATIONS

Invited Keynote/Plenary Speaker

- Conference on *Theory of Differential Equations and Its Application*, Kunming, China, June 21-24, 2024.
  Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

- Workshop on *Nonlinear Analysis*, Xining, China, June 21-23, 2019.
  Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

Invited Conference Speaker

Invited talks between 2020 and 2025

1. The 20th Annual Conference of *Chinese Society of Singular Perturbation*, Hefei, China, June 20-23, 2025.
   Title: Mathematical understanding of dynamics of ionic flows through membrane channels via Poisson-Nernst-Planck type models

2. International Conference on *Multiple Scales Dynamical Systems Theory and Applications*, Fuzhou, China, November 22-25, 2024.
   Title: Effects on ionic flows from permanent charges via Poisson-Nernst-Planck models

3. Mini-symposium on *Ionic Flow through Membrane Channels* at the Virtual Annual Meeting of Society for Mathematical Biology, University of California, Riverside, June 13-17, 2021.
   Title: Dynamics of ionic flows via classical Poisson-Nernst-Planck models with multiple cations and small permanent charges

4. AMS 2021 Fall Central Sectional Meeting, special session on *Recent Advances in Studies of Electrodiffusion Phenomena*, Univ. of New Mexico, Oct. 23-24, 2021.
   Title: Effects on I-V relations from small permanent charge and channel geometry via classical Poisson-Nernst-Planck equations with multiple cations

5. AMS 2020 Fall Central Sectional Meeting, special session on *Stochastic modeling in Mathematical Biology*, Univ. of Texas, El Paso, TX, Sep. 12-13, 2020.
   Title: Effects on I-V relations from small permanent charge and channel geometry via classical Poisson-Nernst-Planck equations with multiple cations

Invited talks before 2020

6. The 13th International Conference on *Recent Advances in Applied Dynamical Systems*, Hangzhou, China, June 7-10, 2019.
   Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

7. Workshop on *Nonlinear Differential Equations, Dynamical Systems, and Applications*, Univ. of Kansas, Lawrence, Kansas, Oct. 20-21, 2018.
   Title: Qualitative Properties of Ionic Flows via Poisson-Nernst-Planck Systems with Local Electrochemical Potentials

8. A mini-symposium on *Recent Advances in Modeling, Numerics, and Analysis of Electrodiffusion Phenomena* at the 4th Annual meeting of SIAM Central States Section, Univ. of Oklahoma, Norman, Oct. 5-7, 2018.
   Title: Effects of (small) permanent charge and channel geometry on ionic flows via classical Poisson-Nernst-Planck systems

9. The 12th AIMS Conference on *Dynamical Systems, Differential Equations and Applications*, Taipei, Taiwan, China, July 5-9, 2018.
   Title: Qualitative properties of ionic flows via Poisson-Nernst-Planck models: Selectivity of cations

10. The 12th International Conference on *Recent Advances in Applied Dynamical Systems*, Chongqing, China, June 7-10, 2018.
    Title: Ion size effects on individual fluxes via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potential: Analysis without electroneutrality boundary conditions.

11. The 3rd Annual Meeting of SIAM Central States Section, Colorado State Univ., Fort Collins, CO, September 29- October 1, 2017.
    Title: Geometric Singular Approach to Steady-State Poisson-Nernst-Planck Systems with Local Excess Chemical Potentials: Competition Between cations

12. The XI Americas Conference on *Differential Equations and Nonlinear Analysis*, The Univ. of Albert, Edmonton, Canada, August 12-19, 2017.
    Title: Qualitative properties of ionic flows via Poisson-Nernst-Planck Systems: Ion size effects

13. SIAM Conference on *Applications of Dynamical Systems*, Snowbird Ski and Summer Resort, Snowbird, Utah, May 21-25, 2017.
    Title: Individual flux study via steady-state Poisson-Nernst-Planck systems: Effects from boundary conditions

14. 11th AIMS Conference on *Dynamical Systems, Differential Equations and Applications,* Orlando, Florida, July 1-5, 2016.
    Title: Ion Size Effects on Ionic Flows Via Steady-state Poisson-Nernst-Planck Models

Contributed Conference Speaker

1. The 35th Southeastern Atlantic Regional Conference on *Differential Equations*, Greensboro, North Carolina, October 10-11, 2015.

2. First International Conference on *Dynamics of Differential Equations*, Atlanta, Georgia, March 16-20, 2013.

3. 2013 JMM, San Diego, January 9-12, 2013.

Invited Colloquium & Seminar Speaker

Invited talks between 2020 **and** 2025

1. Linyi University, June 23-24, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

2. Anhui Science and Technology University, June 20, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

3. Jiujiang University, June 18-19, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

4. NanChang University, June 16-17, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

5. Northwest Normal University, June 14-15, 2025.
   Title 1: Qualitative properties of zero-current ionic flows through membrane channels via Poisson-Nernst-Planck models with multiple cations
   Title 2: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

6. Lanzhou University, June 13, 2025.
   Title : Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

7. North China Univ. of Water Resources and Electric Powers, June 10, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

8. Hebei Normal University, June 8, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

9. Zhejiang Normal University, June 6, 2025.
   Title: Effects on ionic flows through membrane channels from permanent charges via Poisson-Nernst-Planck systems: A critical step towards the selectivity of cations

10. Beijing Institute of Mathematical Sciences and Applications (BIMSA), Nov. 17, 2024.
    Title: Effects on ionic flows from permanent charges via Poisson-Nernst-Planck models

11. Northeast Normal University, July 8-9, 2024.
    Title: Latest studies on ion channel problems via Poisson-Nernst-Planck models

12. Linyi University, July 4-5, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

13. Beijing University of Posts and Telecommunications, June 30-July 1, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

14. Jiujiang University, June 26-29, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

15. Hunan First Normal University, June 18-19, 2024.
    Title: Mathematical Analysis of Poisson-Nernst-Planck models with nonuniform finite ion sizes

16. Shanghai Jiaotong University, June 17, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

17. Shanghai Normal University, June 15-16, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

18. Hangzhou Normal University, June 13-15, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

19. Zhejiang Normal University, June 12-13, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

20. Huaqiao University, Quanzhou, June 10-11, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

21. North China Univ. of Water Resources and Electric Powers, Zhengzhou, June 7-9, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

22. Yulin normal University, Yulin, Guangxi, May 31, 2024.
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

23. Northwest Normal University, Nov. 3, 2023
    Title: Finite ion size effects on I-V relations via Poisson-Nernst-Planck system with two cations

24. Anhui Science and Technology University, June 20, 2023
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

25. China University of Mining and Technology, Beijing, June 9, 2023
    Title: Recent studies on ion channel problems via Poisson-Nernst-Planck models

26. Anqing Normal University, June 3, 2023
    Title: Geometric singular perturbation approach to ion channel problems via Poisson-Nernst-Planck models

27. Guizhou Normal University, January, 28, 2023
    Title: Recent studies on ion channel problems

28. Huaqiao University, Dec. 2, 2022
    Title: Recent studies on ion channel problems

29. University of Iowa, March 7, 2022
    Title: Qualitative properties of ionic flows via Poisson-Nernst-Planck models with nonzero permanent charges and multiple cations

30. University of Toledo, December 10, 2021
    Title: Qualitative properties of ionic flows via Poisson-Nernst-Planck models with nonzero permanent charges and multiple cations

31. Shandong University, Jinan, December 15, 2021
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

32. Shandong University of Science and Technology, Qingdao China, July, 2021
    Title: Dynamics of ionic flows via classical Poisson-Nernst-Planck models with multiple cations and small permanent charges

33. Northwest Normal University, Lanzhou China, Oct. 3, 2020.
    Title: Geometric singular approach to Poisson-Nernst-Planck models for ionic flows through membrane channels

34. University of Maine, Orono, ME, Feb. 9-11, 2020.
    Title: Dynamics of ionic flows through membrane channels via Poisson-Nernst-Planck systems

Invited talks before 2020

35. Hunan Univ. of Arts and Science, Changde China, July 9-12, 2019.
    Title: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations

36. Guangxi Univ. of Finance and Economics, Nanning China, July 4-7, 2019
    Title: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations

37. Univ. of South China, Hengyang China, July 7-9, 2019
    Title: Steric effects on ionic flows via Poisson-Nernst-Planck systems

38. Yunnan Normal Univ., Kunming China, May 30, 2019
    Title: Qualitative properties of ionic flows via steady-statePoisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations

39. Kunming Univ. of Science and Technology, Kunming China, May 29, 2019.
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

40. Yunnan Univ., Kunming China, May 28, 2019.
    Title: Poisson-Nernst-Planck systems for ionic flows with local hard-sphere chemical potentials

41. Xuchang Univ., Xuchang, Henan China, May 24-27, 2019 (totally **7** talks).
    Title 1: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels
    Title 2: Steric effects on ionic flows viaPoisson-Nernst-Planck systems
    Title 3: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations
    Title 4: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part II: Competitions among cations
    Title 5: Boundary layer effects on ionic flows via classical Poisson-Nernst-Planck systems
    Title 6: Individual flux study via steady-state Poisson-Nernst-Planck systems: Effects from boundary conditions
    Title 7: Cubic-like features of current-voltage relations via classical Poisson-Nernst-Planck models

42. Shandong Univ. of Science and Technology, Hangzhou China, June 15-21, 2019.
    Title: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations

43. China Univ. of Petroleum, Qingdao China, July 18, 2019.
    Title: Qualitative properties of ionic flows via steady-state Poisson-Nernst-Planck systems. Part I: Small permanent charge effects on current-voltage relations

44. Qingdao Univ. of Science and Technology, December 27., 2018
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

45. Huaqiao Univ., December 21-25, 2018 (**3** talks).
    Title 1: Selectivity of cations via Poisson-Nernst-Planck models: Effects from permanent charges
    Title 2: Effects of multi-component (small) permanent charges. Part I: Additive effects
    Title 3: Dynamics of classical Poisson-Nernst-Planck systems with boundary layers

46. Linyi Univ., December 17, 2018.
    Title: Dynamics of classical Poisson-Nernst-Planck systems with boundary layers

47. Linyi Univ., Linyi China, July 23-25, 2018
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

48. Xi'an Jiaotong Univ., Xi'an China, July 21-23, 2018.
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

49. Shanxi Univ., Taiyuan China, July 19-21, 2018.
    Title 1: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

Title 2: Selectivity of cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes

50. Huazhong Univ. of Science and Technology, Wuhan China, July 17-19, 2018. (**3** talks)
    Title 1: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels
    Title 2: Selectivity of cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes

51. Three Gorges Univ., Yichang China, July 14-17. (**3** talks)
    Title 1: Selectivity of cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes
    Title 2: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels.

52. Hubei Univ. of Technology, Wuhan China, July 12-13, 2018.
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

53. Fujian Normal Univ., Fuzhou China, June 29, 2018.
    Title: Geometric singular approach to Poisson-Nernst-Planck type models for ionic flows through membrane channels

54. Zhejiang Univ. of Science and Technology, Hangzhou China, June 20-22, 2018.
    Title 1: Effects of (small) permanent charge and channel geometry on ionic flows via classical Poisson-Nernst-Planck models
    Title 2: Selectivity of cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes

55. Zhejiang Normal Univ., Jinhua China, June 10-20, 2018 (Totally **7** talks).
    Title 1: Selectivity of cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes
    Title 2: Poisson-Nernst-Planck model and its application to ion channel problem
    Title 3: Effects of (small) permanent charge and channel geometry on ionic flows via classical Poisson-Nernst-Planck models
    Title 4: Cubic-like features of current-voltage relations via classical Poisson-Nernst-Planck models
    Title 5: Multiple solutions of a steady-state Poisson-Nernst-Planck system with nonzero permanent charge
    Title 6: Qualitative properties of ionic flows via Poisson-Nernst-Planck systems with Rosenfeld's local hard-sphere model: Part I: Analysis under electroneutrality conditions
    Title 7: Qualitative properties of ionic flows via Poisson-Nernst-Planck systems with Rosenfeld's local hard-sphere model: Part II: Violation of electroneutrality conditions

56. Southwest Univ., Chongqing China, June 9, 2018
    Title: Competition between cations via Poisson-Nernst-Planck systems with local excess chemical potentials: Effects from finite ion sizes

57. New Mexico State Univ., Las Cruces, NM, Oct. 6, 2016.
    Title: Individual flux study via steady-state Poisson-Nernst-Planck systems: Effects from boundary conditions

58. Shandong Univ., Weihai China, July 18, 2016.
    Title: Poisson-Nernst-Planck systems for ion flow with density functional theory for local hard-sphere potential

59. Linyi Univ., Linyi China, July 16, 2016.
    Title: Poisson-Nernst-Planck systems for ion flow with density functional theory for local hard-sphere potential

Talks at New Mexico Tech

1. *Several interesting research projects related to Poisson-Nernst-Planck models.* Department of Mathematics, New Mexico Tech. Nov. 6, 2015.

2. *Ion size effects on ionic flows via a steady-state Poisson-Nernst-Planck system.* Department of Mathematics, New Mexico Tech. Sep. 18, 2015.

3. *Individual flux study via steady-state Poisson-Nernst-Planck systems: Effects from boundary conditions.* New Mexico Tech, Fall 2016.

4. *Mathematical studies of Poisson-Nernst-Planck systems: dynamics of ionic flows without electroneutrality conditions.* New Mexico Tech, Feb. 17, 2017.

5. *Qualitative properties of ionic flows via Poisson-Nernst-Planck models: Selectivity of cations.* New Mexico Tech. Fall 2017.

6. *Boundary layer effects on ionic flows via classical Poisson-Nernst-Planck systems.* New Mexico Tech. Fall 2018.

7. *Multiple solutions of a steady-state Poisson-Nernst-Planck system with nonzero permanent charge.* New Mexico Tech. Spring 2018.

8. *The spectral collocation method for efficiently solving PDEs with fractional Laplacian.* New Mexico Tech. April 5, 2019.

Workshops Attended

1. Workshop on *Research Opportunities and Grand Preparation*, Sevilleta Refuge, NM, 2016 and 2017.

2. IMA workshop *Mathematics of Biological Charge Transport: Molecules and Beyond*, Univ. of Minnesota, July 20-24, 2015.

3. IMA workshop *The Eighteenth Riviere-Fabes Symposium on Analysis and PDE* and *Spring* 2015 *Midwest PDE Conference*, Univ. of Minnesota, April 17-19, 2015.

4. Workshop on *Persistent Homology for Biosciences*, Michigan State Univ., East Lansing, MI, Oct. 18, 2014.

5. KI-Net summer school on *Dynamics and Numerics for Non-local PDEs and Related Equations in the Physical and Biological Science*, Iowa State Univ., Ames, Iowa, May 4-7, 2014.

6. Workshop on *Nonlinear elliptic systems and infinite-dimensional and stochastic dynamical system*, Michigan state Univ., East Lansing, MI, April 28, 2014.

7. IMA Summer Graduate Student Program on *Flow, Geometric Motion, Deformation and Mass Transport in Physiological Processes*, July 15- August 2, 2013.

8. Tutorials on *Dynamics and Differential Equations*, Atlanta, Georgia, March 15, 2013.

9. SIAM Workshop on *Stability of Coherent Structures and patterns*, Univ. of Washington, Seattle, Washington, June 11-12, 2012.

TEACHING

Graduate Students Supervision

- **Jianing Chen**, Ph.D student, graduated in Dec. 2022. Dissertation Title: *Mathematical studies on ionic flows through membrane channels via Poisson-Nernst-Planck models*. Currently Tenure-Track Assistant Professor at Zhejiang Normal University, China.

- **Zhantao Li**, Ph.D student, expected to graduate in May 2027. Dissertation Title: *A Poisson-Nernst-Planck study of ion movement within membrane channels*.

- **Yiwei Wang**, Ph.D student, expected to graduate in May 2026. Dissertation Title: *The mechanism of ionic transport in membrane pores, analyzed using Poisson-Nernst-Planck equations*. (Jointly supervised with Dr. Lijun Zhang from Shandong University of Science and Technology. She studied at NMT twice: between Aug. 2019 and July 2020; and between Aug. 2023 and Aug. 2024.)

- **Xiangshuo Liu**, Ph.D student, expected to graduate in May 2027. Dissertation Title: *Ion flux modulation in biological nanopores: A Poisson-Nernst-Planck study of fixed charge and channel architecture.* (Jointly supervised with Dr. Lijun Zhang from Shandong University of Science and Technology. He studies at NMT from Aug. 2023 to Oct. 2025.)

- **Heidi Struse**, Master's student, expected to graduate in May 2028.

Publications of Graduate Students Supervised

1. **Yiwei Wang**, Jianwei Shen, Lijun Zhang and Mingji Zhang Studies on reversal potential via classical Poisson-Nernst-Planck systems. Part I: Multiple pieces of nonzero permanent charges having the same sign. Qualitative Theory of Dynamical Systems, (To appear)

2. Xijun Deng, Hong Li, **Zhantao Li**, Jianjia Yu and Mingji Zhang, Numerical approach to Poisson-Nernst-Planck models with nonzero permanent charges and steric effects. Symmetry, **2025**, 17(9), 1479.

3. **Jianing Chen**, **Zhantao Li**, Jie Song and Mingji Zhang, Mathematical analysis on Poisson-Nernst-Planck systems with large permanent charges under relaxed neutral boundary conditions. Mathematics, **2025**, 13, 2847

4. **Xiangshuo Liu**, Jie Song, Lijun Zhang and Mingji Zhang, Roles played by critical potentials in the study of Poisson-Nernst-Planck models with steric effects under relaxed neutral boundary conditions. Axioms, **2025**, 14, 69.

5. Hong Li, **Zhantao Li**, Chaohong Pan, Jie Song and Mingji Zhang, Cubic-like features of I-V relations via classical Poisson-Nernst-Planck systems under relaxed electroneutrality boundary conditions. Axioms, **2024**, 13, 790.

6. **Xiangshuo Liu**, Lijun Zhang and Mingji Zhang, Studies on ionic flows via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potentials under relaxed neutral boundary conditions. Mathematics, **2024**, 12, 1182.

7. **Yiwei Wang** and Mingji Zhang, Finite ion size effects on I-V relations via Poisson-Nernst-Planck systems with two cations: A case study. Mathematical Bioscience & Engineering, **2024**, 21(2), 1899-1916.

8. **Yiwei Wang**, Lijun Zhang and Mingji Zhang, Mathematical analysis on current-voltage relations via classical Poisson-Nernst-Planck systems with nonzero permanent charges under relaxed electroneutrality boundary conditions. Membranes, **2023**, 13, 131.

9. Yanyu Bao, **Jianing Chen**, Lijun Zhang and Mingji Zhang, Higher order expansions in finite ion size via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potential. Journal of Applied Analysis and Computation, 12(3) 2022, 907-931.

10. **Yiwei Wang,** Lijun Zhang and Mingji Zhang, Studies on individual fluxes via Poisson-Nernst-Planck models with small permanent charges and partial electroneutrality conditions. Journal of Applied Analysis and Computation, **12**(1) (2022), 87-105.

11. **Jianing Chen** and Mingji Zhang, Geometric singular perturbation approach to Poisson-Nernst-Planck systems with local hard-sphere potential: Studies on zero-current ionic flows with boundary layers. Qualitative Theory of Dynamical Systems, 2022 21 : 139. https://doi.org/10.1007/s12346-022-00672-0

12. **Xiangshuo Liu**, Lijun Zhang and Mingji Zhang, Studies on pull-in instability of an electrostatic MEMS actuator: Dynamical system approach. Journal of Applied Analysis and Computation, 12(2), (2022), 850-861.

13. **Jianing Chen** and Mingji Zhang, Boundary layer effects on ionic flows via Poisson-Nernst-Planck systems with nonuniform ion sizes. Discrete and Continuous Dynamical Systems, Series B, 27(10) (2022), 6197-6216.

14. **Jianing Chen, Yiwei Wang,** Lijun Zhang and Mingji Zhang, Mathematical analysis of Poisson-Nernst-Planck models with permanent charges and boundary layers: Studies on individual fluxes. Nonlinearity, **34** (2021), 3879-3906.

15. Peter W. Bates, **Jianing Chen** and Mingji Zhang, Dynamics of ionic flows via Poisson-Nernst-Planck systems with local hard-sphere potentials: Competition between cations. Mathematical Bioscience and Engineering, **17**(4), 3736-3766 (2020).

16. Jianbao Zhang, **Daniel Acheampong** and Mingji Zhang, Effects on ionic flows from finite ion sizes via Poisson-Nernst-Planck models with non-local excess chemical potentials. Molecular Based Mathematical Biology, **5**(1), 58 − 77 (2017).

Publications of Undergraduate Student Supervised

- Hong Lu, Ji Li, **Joseph Shackelford**, **Jeremy Vorenberg** and Mingji Zhang: Ion size effects on individual fluxes via Poisson-Nernst-Planck systems with Bikerman's local hard-sphere potential: Analysis without electroneutrality boundary conditions. Discrete and Continuous Dynamical Systems, Series B, **23**(4), 1623 − 1643 (2018).

Courses Taught at New Mexico Tech, 2015-Present

- Math 2532 Calculus and Analytic Geometry III, 4 credits (Fall 2015, 2017 and Spring 2016)

- Math 3035 Ordinary Differential Equations, 3 credits (Fall 2015, 2016, 2018, 2021, 2023, 2024, 2025, Spring 2016, 2019, 2020, 2023, Summer 2017, 2021)

- Math 3036 Introduction to Partial Differential Equations, 3 credits (Fall 2016, Spring 2024)

- Math 3037 Engineering Mathematics, 3 credits (Spring 2017, 2021, Fall 2019, 2022)

- Math 3052 Basic Concepts of Mathematics, 3 credits (Spring 2016)

- Math 3072 Basic Concepts of Analysis, 3 credits (Fall 2019)

- Math 4030 Mathematical Modeling, 3 credits (Fall 2017)

- Math 4037 Systems of Ordinary Differential Equations, 3 credits (Fall 2016, 2017, 2018, 2020, 2023, 2024, 2025)

- Math 4054 Linear Algebra, 3 credits (Spring 2018, 2020, 2021, 2023, 2024, 2025)

- Math 4055 Introduction to Abstract Algebra, 3 credits (Fall 2021, 2022)

- Math 5031 Topics in Ordinary Differential Equations, 3 credits (Spring 2017, 2018, 2019, 2025)

- Math 5032 Perturbation Analysis, 3 credits (Fall 2020)

Courses Taught at Michigan State University, 2013-2015

- Math 124 Calculus for Business students, 3 credits (Fall 2013)

- Math 132 Calculus I for Engineering and Science students, 4 credits (Spring 2014, 2015)

- Math 133 Calculus II for Engineering and Science students, 4 credits (Fall 2013, 2014)

- Math 411 Abstract Algebra II, 3 credits (Spring 2014 and Summer 2015)

Course Taught at University of Kansas, 2007-2013

- Math 115 Calculus I for Business students, 3 credits (multiple semesters)

- Math 116 Calculus II for Business students, 3 credits (multiple semesters)

- Math 121 Calculus I for Engineering and Science students, 5 credits (multiple semesters)

- Math 122 Calculus II for Engineering and Science students, 5 credits (multiple semesters)

SERVICE

Professional Service

- **Editor/Guest Editor**

    - *Editor* of Computational and Mathematical Biophysics, Aug. 2024-present.
    - *Guest editor* of Mathematical Bioscience & Engineering on the special issue *Differential Equations, Dynamical Systems, and Their Applications*, 2023.
    - *Guest editor* of Discrete and Continuous Dynamical Systems-S on the special issue *Nonlinear Differential Equations, Dynamical Systems, and Applications* celebrating the 80th birthday of Prof. Jibin Li, 2021.
    - *Guest editor* of Journal of Applied Analysis and Computation on the special issue *Differential Equations, Dynamical Systems and Their Applications* celebrating the 80th birthday of Prof. Jibin Li, 2021.
    - *Guest editor* of Molecular Based Mathematical Biology on the special issue *Microscopic charge/particle transport at molecular level*, 2017.

- **Member of Editorial Board** of the journals

    - Axioms, Oct. 2024-present.
    - American Journal of Applied Mathematics, May, 2018- May 2020.
    - SCIREA Journal of Mathematics, Sep. 2018-Aug. 2020.

- **Organizer and Co-organizer**

  - **Organizer** & **Chair** of the special section on *Recent Advances in Study of Electrodiffusion Phenomena* at AMS Spring Central Sectional Meeting, Univ. of Kansas, March 29-30, 2025.
  - **Organizer** & **Chair** of the special session on *Recent Studies in Topics Related to Ion Channel Problems* at AMS Fall Central Sectional Meeting, Univ. of Texas at San Antonio, Sep. 14-15, 2024.
  - **Organizer** & **Chair** of the special session on *Dissipative systems and Their Applications* at AMS Fall Central Sectional Meeting, Univ. of New Mexico, Oct. 23-24, 2021.
  - **Organizer** & **Chair** of the special session on *Recent Advances in Studies of Electrodiffusion Phenomena* at AMS Fall Central Sectional Meeting, Univ. of New Mexico, Oct. 23-24, 2021.
  - **Co-organizer** & **Chair** of the mini-symposium on *Ionic Flow through Membrane Channels* at the Virtual Annual Meeting of Society for Mathematical Biology, University of California, Riverside, June 13-17, 2021.
  - **Organizer** & **Chair** of a mini-symposium on *Recent Advances in Modeling, Numerics, and Analysis of Electrodiffusion Phenomena* at the 4th Annual meeting of SIAM Central States Section, Univ. of Oklahoma, Norman, Oct. 5-7, 2018.
  - **Chair** of the mixed session on *CP3* at SIAM-GLS 2015 Annual Conference on *Multiscale Modeling with PDEs*, Grand Valley State Univ., Grand Rapids, MI, May 2, 2015.
  - **Organizer** & **Chair** of the special session on *Modeling, numerics and analysis of electrodiffusion phenomena* at AMS Central Spring Sectional Meeting, Michigan State Univ., March 13-15, 2015.
  - **Organizer** of *Geometric Singular Perturbation Theory and Its Applications to Ion Channel Problems* seminar, Michigan State University, 2013-2015.

- **Reviewer of Mathematical Databases**

  1. Mathematical Reviews
  2. Zentralblatt Math

- **Journal Referee**

  1. Journal of Differential Equations,
  2. Discrete and Continuous Dynamical System$-$A,
  3. Discrete and Continuous Dynamical system$-$B,
  4. Discrete and Continuous Dynamical system$-$S,
  5. SIAM Journal on Applied Mathematics,
  6. SIAM Journal on Applied Dynamical Systems,
  7. Applied Mathematical Letters,
  8. Physics D: Nonlinear Phenomena
  9. IEEE Access,
  10. IEEE Transactions on Industrial Informatics,
  11. Stochastic Analysis and Applications,
  12. Fluids,
  13. Journal of Physics: Condensed Matter
  14. Entropy,
  15. Journal of Function Spaces
  16. Mathematics
  17. Frontiers in Energy Research, Section Process and Energy Systems Engineering

18. Journal of Nonlinear Functional Analysis

19. Journal of Applied Analysis and Computation

20. Communications in Nonlinear Science and Numerical Simulation,

21. Qualitative Theory of Dynamical Systems,

22. Membranes

23. Chaos

24. Proceedings of the American Mathematical Society

25. Journal of Mathematics and Statistics,

26. Acta Mathematica Scientia,

27. Communications on Pure and Applied Analysis,

28. Journal of Difference Equations and Applications,

29. Journal of Computational and Applied Mathematics,

30. Discrete Dynamics in Nature and Society,

31. Dynamical Systems,

32. Universal Journal of Applied Mathematics,

33. Taiwanese Journal of Mathematics,

34. International Journal of System Science,

35. Results in Applied Mathematics,

36. Punjab University Journal of Mathematics,

37. Chinese Physics B,

38. American Journal of Applied Mathematics,

39. International Journal of Theoretical and Applied Mathematics,

40. Sustainability

41. Axioms

42. Journal of Mathematical Analysis and Applications

43. Processes

44. Scientific Reports

45. Electronic Research Archive

46. Nanotechnology Reviews

47. Computation

48. Communications in Theoretical Physics

49. Advances in Continuous and Discrete Models

50. Open Mathematics

51. Journal of Theoretical Biology

52. Fractional Calculus and Applied Analysis

53. Mathematics and Computers in Simulation

54. Chaos, Solitons and Fractals

Department Service (NMT)

- **Supervisor** of **four** Ph.D students and **one** Master Student, 2017− present

- **Academic advisor** of **Twenty-one** undergraduate students at NMT since Spring 2016.

- **Organizer** & **Chair** of Mathematical Colloquium at NMT, Jan. 2016-present.

- **Organizer** of Seminar on *Dynamical Systems* & *Its Applications in Biology*, 2017-present.

- **Chair** of Common Course Numbering Committee for Math 3035 (ODE), Fall 2016.

- **Supervisor** for Lab of Math 3035 (ODE), Spring 2016, 2023 and Fall 2016, 2022.

- **Supervisor** for course Math 3035 (ODE), Fall 2016.

- Observing GTA's class teaching (2024-2025).

- Member of Tenure Promote Committee of one faculty, 2023-2024.

- Member of Ph.D Preliminary Exam Committee in Differential Equations, 2017-present.

- Member of Academic Committee of 4 Ph.D students (**Chair** for two) and 5 Master Students (**Chair** for one), 2016-present.

- Writing recommendation letters for undergraduate and graduate students, 2016-present (More than 30 letters).

- Meeting visiting students who are interested in Mathematics.

University Service (NMT)

- Committee member on *Sabbatical Leave*, NMT Senate, 2024-2026.

- Committee member on *Academic Freedom and Tenure*, NMT Senate, 2022-2024.

- Committee member on *Sabbatical Leave*, NMT Senate, 2022-2024.

- Committee member on *Sabbatical Leave*, NMT Senate, 2020-2022.

- Committee member on *Honorary Degrees* & *Awards*, NMT Senate, 2017–2019.

- Committee member on *Student Discipline*, NMT Faculty Senate, 2017–2019.

- Serve as a judge on the 64th and 65th Annual New Mexico Science & Engineering Fair, 2016-2017.

- Member of the Hiring Committee for Visiting Assistant Professor position in mathematics, 2016.

- Member of the Hiring Committee for tenure-track Assistant Professor position in mathematics, 2017.

Other Service and Activities

- Work with local public schools (Parkview Elementary School, Midway Elementary School and Cottonwood Valley Charter School) with mathematics in 2016 and 2019.

- Mathematics Awareness Month joint presenter at Univ. of Kansas, April 2012.

- Advisor of English Club ESL, 2008 − 2012.

Outreach Activities

- Two international students were recruited for the Ph.D. program: Qi Wang from Beijing Technology and Business University, China, who was successfully placed in the Department of Chemistry under the supervision of Dr. Sally Pias; and Jianing Chen from Linyi University, China, joined the Department of Mathematics, supervised by Dr. Mingji Zhang.

- Introduce NMT to many universities in China trying to recruit more graduate students.

- Work with ABQ School of Excellence trying to recruit undergraduate students since 2024.

References

- Peter W. Bates, Michigan State University, bates@math.msu.edu (Postdoc Mentor)

- Bob Eisenberg, Rush University, bob.eisenberg@gmail.com (independent, expert in ion channel problems and Poisson-Nernst-Planck theory)

- Bo Deng, University of Nebraska-Lincoln, bdeng@math.unl.edu (independent, expert in dynamical systems and perturbation theory)

- Wenxian Shen, Auburn University, wenxish@auburn.edu (independent, expert in nonlinear PDEs)

Last updated: November 10, 2025