

Tiejun Li

Citizenship: China
Date of Birth: October 1974

Address:

School of Mathematical Sciences, Peking University, Beijing 100871, P.R. China
Email: tieli@pku.edu.cn Phone: 86-10-62757592 (O) Fax: 86-10-62751801
Office: Room 1549W in the 1st Science Building, Peking University.

Academic History:

Professor	Peking University	2010.8-Now
Associate Professor	Peking University	2005.8-2010.8
Assistant Professor	Peking University	2001.7-2005.8
Ph.D (Mathematics)	Peking University	1998.9-2001.7
M.S. (Mathematics)	Tsinghua University	1995.9-1998.7
B.S. (Mathematics)	Tsinghua University	1991.9-1995.7

Current Research Interests:

Chemical reaction kinetics
Model reduction of complex networks
Multiscale modeling of complex fluids
Numerical solution of SDEs

Editorial service:

Associate Editor of Journal of Computation Mathematics (Chinese version);
Associate Editor of Numerical of Mathematics: A Journal of Chinese Universities.
Past Editor in Communications in Mathematical Sciences;

Honors:

Selected in the Program for New Century Excellent Talents in University of Ministry of Education of China, 2010;

National Science Foundation for Excellent Young Scholars, 2012.

Academic Activities:

Invited Lectures:

International Conference on Applied Mathematics, May 30-June 2, 2016, HK CityU;

Advances in numerical and analytic approaches for the study of non-spatial stochastic dynamical systems in molecular biology, April 4-8, 2016, Cambridge;

The 4th SRI UQ Workshop in KAUST, January 5-8, 2016, Saudi Arabia;

Meeting on Computational Mathematics, October 30-November 1, 2015, Xiangtan;

The 4th China-Brazil Joint Meeting on Computational Mathematics, September 21-25, 2015, Xian;

Annual Meeting of Chinese CompMath Society, September 19-21, 2015, Guangzhou;

ICIAM 2015, August 10-14, 2015, Beijing;

Modeling and Analysis of Biological Network Dynamics, August 5-7, 2015, Shanghai;

International Conference on Numerical Partial Differential Equations and Their Applications, May 25-29, 2015, Wuhan;

Workshop on Computational Systems Biology, May 15-16, 2015, Shanghai;

The 9th International Conference on Computational Physics, January 7-11, 2015, Singapore;

Quantitative Biology: from Genes, Cells to Networks, October 13-17, 2014, Suzhou;

The 9th International Conference on Scientific Computing and Applications, June 11-16, 2014, Xian;

Sino-French Conference on Computational and Applied Mathematics, June 2-5, 2014, Xiamen;

SIAM Conference on UQ 2014, Mar. 31st-Apr. 3rd, 2014, Savannah;

Workshop on Modeling Rare Events in Complex Physical Systems, November 5-8, 2013, Singapore;

The 12th annual meeting for CompMath in Chinese Universities, October 19-23, 2013, Changsha;

Small system nonequilibrium fluctuations, dynamics and stochastics, and anomalous behavior, July 01-26, 2013, KITPC;

The Second Pacific Rim Math Association Conference, June 24-28, 2013, Shanghai;

Multiscale Inverse Problems, June 17-19, 2013, Warwick, UK;

International Workshop on Computational and Applied Mathematics, May 20-24, 2013, Huangshan;

Multiscale Modeling and Simulation in Materials Science, April 21-23, 2013, Shanghai;

Stochastic Physics in Biology, January 13-18, 2013, CA, USA;

The 8th International Conference on Computational Physics (ICCP8), January 6-11, 2013, HongKong;

CSIAM Annual meeting, August 19-24, 2012, Hefei;

Multiscale Modeling, Simulation, Analysis and Applications, November 14-18, 2011, Singapore;

Frontiers of computational and applied mathematics, October 21-25, 2011, Beijing;

Workshop on Kinetic theory and Multiscale, October 3-8, 2011, Shanghai;

IEEE Conference on System Biology, September 2-4, 2011, Zhuhai;

The 2011 Meeting of the Beijing CompMath Society, August 27, 2011, Beijing;

ICIAM 2011, July 18-22, 2011, Vancouver, Canada;

Workshop on Computational Problems in Material Science, July 4-6, 2011, Wuhan;

Second Workshop on System Biology, July 8-10, 2011, Tsinghua University;

The Second Brazil-China Conference on Scientific Computing , June 27-July 1, 2011, Beijing;

KITPC Program on Interdisciplinary Applications of Statistical Physics & Complex Networks, March 1-April 1, 2011, Beijing;

China-Norway-Sweden workshop on computational mathematics, June 8-10, 2010, Bergen, Norway;

Joint China-Germany Conference on "Mathematics and Industry", Mar. 15-17, 2010, Beijing;

Multiscale Modeling and Simulation in Science, Nov. 16-19, 2009, Stockholm;

Program on Mathematical Theory and Numerical Methods for Computational Materials Simulation and Design, Aug. 9-21, 2009, Singapore;

Annual meeting of Chinese Math. Soc. 2009 (Invited speaker), Apr 21-24, 2009, Xiamen;

Adaptivity, robustness and complexity of multiscale algorithms, Mar. 30-Apr. 3, 2009, Edinburgh, UK;

Rheology of complex fluids, Jan. 5-9, 2009, Paris, France; Frontiers of Computational Mathematics, USTC, Hefei, July 19-22, 2008;

Foundations of Computational Mathematics 2008, City University of Hong Kong, June 16-26, 2008;

973 project meeting, Beijing, Nov. 10-11, 2007;

The 8th Annual Meeting of CompMath in China, Chengdu, Oct. 25-29, 2007;

973 group meeting, Xiangtan, Sep. 22-24, 2007;

Frontiers of Computational Mathematics, Beijing, Aug. 4-5, 2007;

ICIAM07, Zurich, July 16-20, 2007.;

CSIAM Annual Meeting in Nanjing University of Science and Technology, Aug 14th-16th, 2006;

Workshop on Multiscale modeling: complex fluids and microfluidics, Hong Kong University of Science and Technology, Jan. 9th-13th, 2006;

The 2nd International Conference on Scientific Computing and Partial Differential Equations & The First East Asia SIAM Symposium, Hong Kong Baptist University, Dec. 12-16, 2005;

The 10th Annual Meeting on Computational Mathematics for Chinese Universities, Dalian University of Science and Technology, Oct. 18-21, 2005;

International Conference on Scientific Computing, Nanjing Normal University, June 4-8, 2005;

Fourth China-Italy Joint Conference on Computational and Applied Mathematics, Fragrant Hill, Beijing, May 31st-June 2nd, 2005;

Mini-symposium on Multi-scale Modeling and Simulation of Complex Fluids, in Fourth SIAM Conference on Mathematical Aspects of Materials Science, Los Angeles, May 23-26, 2004;

Workshop on Multi-scale Challenges in Soft Matter Materials, SAMSI, North Carolina, February 15-17, 2004.

Academic Visits:

City University of Hongkong, 2013.1;

Department of Mathematics in National University of Singapore from 2011.2-3;

PACM in Princeton University from 2006.10-2007.6;

Courant Institute in New York University from 2004.3-2004.5;

PACM in Princeton University from 2004.1-2004.2;

PACM in Princeton University from 2002.1-2002.2;

Research Supervision:

Graduated students:

Xiang Zhou, Master;

Yan Ding, PhD;

Yibiao Wu, Master;

Jinlong Wu, PhD;

Yucheng Hu, PhD;

Jing Huang, Master;

Dajiang Tao, Master;

Jian Liu, PhD;

Rensheng Zhu, Master;
Wei Zhang, PhD;
Bin Min, PhD;
Xiaoguang Li, PhD;
Ping Qin, Master;
Sisi Wang, Master;

Current students:

Ye Chen, PhD student;
Zhiming Wang, PhD student;
Feng Lin, PhD student;
Jifan Shi, PhD student;
Peijie Zhou, PhD student;
Tongkai Li, PhD student;
Fan Yao, Master student;

Research Funding:

NSFC, grant 10401004, 2005.1-2007.12;
NSFC, grant 20490222, 2005.1-2008.12;
MST, grant 2005CB321704, 2005.11-2010.11
NSFC, grant 10871010, 2008.11-2011.11
NSFC, grant 11171009, 2012.1-2015.12
Major Program of NSFC, grant 91130005, 2012.1-2015.12
NSFC, grant 11222114, 2013.1-2015.12
NSFC, grant 11421101, Creative group
Major Program of NNSFC, grant 91530322, 2016.1-2018.12

Publication List:

1. Tiejun Li and Fengshan Bai, Minimizing multi-homogeneous Bezout numbers by a local search method, *Math. Comp.* 70 (2001), 767-787.
2. Tiejun Li and Pingwen Zhang, Shallow water waves on sloping beach with artificial boundary, *Mathematica Numerica Sinica* 23 (2001), 503-512. (in Chinese).
3. Tiejun Li and Pingwen Zhang, Numerical simulation of 3D shallow water waves on sloping beach, 257-266, *Recent progress in computational and applied PDEs* (Edited by Tony Chan et al.), Kluwer Academic Publishers, 2002.
4. Weinan E, Tiejun Li and Pingwen Zhang, convergence of a stochastic method for the modeling of polymeric fluids, *Acta Mathematicae Applicatae Sinica, English series*, 18 (2002), 529-536.
5. Weinan E, Tiejun Li and Pingwen Zhang, Well-posedness for the dumbbell model of polymeric liquids, *Comm. Math. Phys.* 248 (2004), 409-427.
6. Tiejun Li, Eric Vanden-Eijnden, Pingwen Zhang and Weinan E, Stochastic models of polymeric liquids at small Deborah number, *J. Non-Newtonian Fluid Mech.* 121 (2004), 117-125.
7. Tiejun Li, Pingwen Zhang and Xiang Zhou, Analysis of 1+1 dimensional stochastic models of liquid crystal polymer flows, *Comm. Math. Sci.* 2 (2004), 295-316.
8. Tiejun Li, Hui Zhang and Pingwen Zhang, Local existence for the dumbbell model of polymeric fluids, *Comm. PDE*, 29 (2004), 903-923.

9. Tiejun Li and Pingwen Zhang, Convergence analysis of BCF methods for Hookean dumbbell model, *Multi. Model. Simul.* 5 (2006), 205-234.
10. Tiejun Li, Analysis of explicit tau-leaping schemes for simulating chemically reacting systems, *Multi. Mod. Simul.* 6 (2007), 417-436.
11. Tiejun Li and Pingwen Zhang, Mathematical analysis of multiscale models of complex fluids, *Comm. Math. Sci.* 5 (2007), 1-51.
12. Yucheng Hu, Xiang Peng, Tiejun Li and Hong Guo, On the Poisson approximation for photon distribution for faint lasers, *Phys. Lett. A*, 367 (2007), 173-176.
13. Yan Ding, Tiejun Li, Dongxiao Zhang and Pingwen Zhang, Adaptive Stroud stochastic collocation method for flow in random porous media via Karhunen-Loeve expansion, *Comm. Comp. Phys.*, 4 (2008), 102-123.
14. Tiejun Li, Assyr Abdulle and Weinan E, Effectiveness of implicit methods for stiff stochastic differential equations, *Comm. Comp. Phys.*, 3 (2008), 295-307.
15. Yan Ding and Tiejun Li, A note on the analysis of heterogeneous rod like chain in DNA modeling, *Int. J. Mod. Phys. B*, 22 (2008), 2213-2224.
16. Weinan E, Tiejun Li and Eric Vanden-Eijnden, Optimal partition and effective dynamics of complex networks, *Proc. Nat. Acad. Sci.*, 105 (2008), 7907-7912.
17. Jinlong Wu and Tiejun Li, Image segmentation by using the localized subspace iteration algorithm, *Science in China, series A*, 51 (2008), 1495-1509.
18. Jinlong Wu and Tiejun Li, A modified fuzzy C-means algorithm for collaborative filtering, *The 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2008)*, Las Vegas, 2008.
19. Assyr Abdulle and Tiejun Li, Ito S-ROCK methods for stiff stochastic differential equations, *Comm. Math. Sci.* 6 (2008), 845-868.
20. Tiejun Li, Jian Liu and Weinan E, A probabilistic framework for network partition, *Phys. Rev. E*, 80 (2009), 026106.
21. Yucheng Hu and Tiejun Li, Highly accurate tau-leaping methods with random corrections, *J. Chem. Phys.*, 130 (2009), 124109.
22. Assyr Abdulle, Yucheng Hu and Tiejun Li, Chebyshev methods with discrete noise: the tau-ROCK methods, *J. Comp. Math.*, 28 (2010), 195-217.
23. Weinan E, Tiejun Li and Jianfeng Lu, Localized basis of eigen-subspaces and operator compression, *Proc. Nat. Acad. Sci.* 107 (2010), 1273-1278. 24.
24. Jinlong Wu, Tiejun Li, Xiang Peng and Hong Guo, Statistical method for resolving the photon-photoelectron-counting inversion problem, *J. Comp. Phys.* 230 (2011), 726-743.
25. Yucheng Hu, Tiejun Li and Bin Min, The weak convergence analysis of tau-leaping methods: revisited, *Comm. Math. Sci.* 9 (2011), 965-996.
26. Tianqi Zhu, Yucheng Hu, Zhiming Ma, Dexing Zhang, Tiejun Li and Ziheng Yang, Efficient simulation under a population genetics model of carcinogenes, *Bioinformatics* 27 (2011), 837-843.
27. Jian Liu and Tiejun Li, A validity index approach to network partitions, *Physica A* 390 (2011), 3579-3591.
28. Yucheng Hu, Tiejun Li and Bin Min, A weak second order tau-leaping method for simulating chemical kinetic systems, *J. Chem. Phys.* 135 (2011), 024113.
29. Jing Huang, Jilei Wu, Tiejun Li, Xinming Song, Bingzi Zhang, Pingwen Zhang and Xiaoying Zheng, Effect of exposure to trace elements in the soil on the prevalence of neural tube defects in a high-risk area of China, *Biomed. Environ. Sci.* 24 (2011), 94-101.
30. Yucheng Hu, Assyr Abdulle and Tiejun Li, Boosted hybrid method for solving chemical reaction systems with multiple scales in time and population size, *Comm. Comp. Phys.* 12 (2012), 981-1005.
31. Wei Zhang, Tiejun Li and Pingwen Zhang, Numerical study for the nucleation of one-dimensional stochastic Cahn-Hilliard dynamics, *Comm. Math. Sci.* 10 (2012), 1105-1132.

32. Bin Min, Tiejun Li, Matthias Rosenkranz and Weizhu Bao, Subdiffusive expansion of a Bose-Einstein condensate in a speckle potential, *Phys. Rev. A*, 86 (2012), 053612.
33. Tiejun Li, Bin Min and Zhiming Wang, Marcus canonical integral for non-Gaussian processes and its computation: Pathwise simulation and tau-leaping algorithm, *J. Chem. Phys.* 138 (2013), 104118.
34. Tiejun Li, Pingwen Zhang and Wei Zhang, Nucleation rate calculations for the phase transition of diblock copolymers under stochastic Cahn-Hilliard dynamics, *SIAM Multi. Model. Simul.* 11 (2013), 385-409.
35. Bin Min and Tiejun Li, Transport in weak dynamic disorder: A unified theory, *Phys. Rev. E* 88 (2013), 052140.
36. Cheng Lv, Xiaoguang Li, Fangting Li and Tiejun Li, Constructing the energy landscape for genetic switching system driven by intrinsic noise, *PLoS ONE* 9 (2014), e88167.
37. Tiejun Li, Bin Min and Zhiming Wang, Adiabatic elimination for systems with inertia driven by compound Poisson colored noise, *Phys. Rev. E* 89 (2014), 022144.
38. Cheng Lv, Xiaoguang Li, Fangting Li and Tiejun Li, Energy landscape reveals that the budding yeast cell cycle is a robust and adaptive multi-stage process, *PLoS Comp. Biol.* 11 (2015), e1004156.
39. Ye Cheng, Cheng Lv, Fangting Li and Tiejun Li, Distinguishing the rates of gene activation from phenotypic variations, *BMC Syst. Biol.* 9 (2015), 29.
40. Tiejun Li, Xiaoguang Li and Xiang Zhou, Finding transition pathways on manifolds, accepted by *SIAM Multi. Model. Simul.* 14 (2016), 173-206.
41. Tiejun Li and Feng Lin, Two-scale large deviations for chemical reaction kinetics through second quantization path integral, *J. Phys. A: Math. Theor.* 49 (2016), 135204.
42. Peijie Zhou and Tiejun Li, Construction of the landscape for multistable systems: potential landscape, quasi-potential, A-type integral and beyond, *J. Chem. Phys.* 144 (2016), 094109.
43. Jian Shi, Tiejun Li and Luonan Chen, Towards a critical transition theory under different temporal scales and noise strengths, *Phys. Rev. E* 93 (2016), 032137.
44. Peijie Zhou and Tiejun Li, Response to “Comment on ‘Construction of the landscape for multi-stable systems: Potential landscape, quasi-potential, A-type integral and beyond’”, *J. Chem. Phys.* 145 (2016), 147104.
45. Tiejun Li and Feng Lin, Large deviations for two scale chemical reaction kinetic processes, *Comm. Math. Sci.*, to appear, 2017.