Curriculum Vitae

Jianjun Paul Tian

Contents

Personal information

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Date: August, 2023

Current research interests and projects

Applied mathematics, Mathematical biology and medicine: developing analysis methods for applied mathematics (PDEs, ODEs, SDEs, and stochastic processes) and constructing mathematical models for biological and medical problems. I have the following ongoing projects.

(1) Collective dynamics of solid tumors and their microenvironment: a project of U54 FHCRC-NMSU partnership, I am the leader at NMSU (Eric Holland is the leader at Fred Hutchinson Cancer Research Center); collaborators include Philip Maini in the Centre for Mathematical Biology at the University of Oxford. One sub-project was funded by National Institute of Health (NIH) for which I was the Principal Investigator (PI). Since 2017, two sub-projects were completed. We currently work on two sub-projects, OPN functions and abscopal effects.

(2) Brain tumor growth with therapies and virotherapy: collaborating with E. Antonio Chiocca in Harvard Medical School, Avner Friedman in the Ohio State University, Jin Wang in the University of Tennessee Chattanooga; one sub-project was funded by National Science Foundation (NSF) for which I was the PI. Since 2012, we completed 5 sub-projects. Since July 2021, we work on the oncolytic crash problem initiated by Eric Bartee in Medical School at University of New Mexico.

(3) Potassium in tumor growth and viral infection: this is a new project initiated by Eric Bartee in Medical School University of New Mexico since September 2020, collaborators including Xianyi Zeng in Lehigh University and Mary Ballyk in NMSU. One sub-project was completed in August 2022. We currently work on T cell exhaustion.

(4) Optimization of CAR T cell therapy: in January 2022, I started to develop this project with Cameron Turtle in FHCRC now in Sydney Medical School the University of Sydney, currently working on stochastic variability in silicon clinical trials, and a grant proposal.

(5) Stem cell biology: collaborating with Ting Xie at the Stowers Institute for Medical Research, Angelique Bordey in Yale University, and Philip Maini in CMB Oxford. Project: Virtual stem cell - a digital platform for regenerative medicine collaborating with Jie Zheng in Nanyang Technological University, was supported by the Ministry of Education of Singapore for which I was a co-PI (returned because PI left to Shanghai Tech University). We completed 1 project, and are currently studying traffic of neural stem cells in SVZ.

(6) Disease ecology: collaborating with Jingan Cui at Beijing University of Architecture and Civil Engineering, it was funded by NNSFC (National Natural Science Foundation of China) and I was a co-PI. Since 2010, we have completed studies on avian influenza and cholera.

(7) Stochastic differential equations (SDEs): developing analysis methods for qualitative study of Ito SDEs, I have a book project with AMS.

Past research interests and projects

(1) Topology: quantum invariants of knots and 3-manifolds, and representations of braid groups on tangent bundle of Lie groups.

(2) Algebraic structures in genetics: evolution algebras and coalgebraic structure of genetic inheritance (I defined).

(3) Coalescent theory: colored coalescent theory and coalescent random walks (I defined).

Education

- Postdoctoral fellow in Mathematical Bioscience Institute supported by NSF, 2004 - 2007, Mentor: Avner Friedman
- Graduate study in Mathematics (Low-dimensional topology and knot theory), Ph.D. 1999 - 2004, University of California, Riverside, Advisor: Xiao-Song Lin
- Graduate study in Mathematics, Chinese Academy of Science, 1999, Beijing, Advisor: Banghe Li
- Undergraduate study in Mathematics, Northwest University, Xi'an City, Shaanxi, China

Academic positions

- August 2016 - Present, Associate Professor with tenure, Department of Mathematical Sciences, New Mexico State University (NMSU)
- August 2014 - August 2016, Assistant Professor, Department of Mathematical Sciences, New Mexico State University
- July 2009 - Present, Visiting Professor, School of Mathematics, Northwest University, Xi'an, China
- August 2007 - May 2014, Assistant Professor of Mathematics at the College of William and Mary in Virginia

Awards, Honors and Grants

- August 2018 - August 2021, Hanjiang Scholar, Shaanxi University of Technology, Hanzhong, China
- Outstanding Faculty Award in Creative Activity/Scholarship 2017, College of Arts and Sciences, New Mexico State University
- 2016-18: $200,000 (direct cost), NIH research award, U54CA132383, PI, Collective dynamics of solid tumor and its microenvironment, collaborating with Eric Holland in Fred Hutchinson Cancer Research Center

- 2012-17: $130,000 NSF research award, DMS - 1446139(1216907), PI, Collaborative research - New formulation and algorithms for fluid-structure interaction with application to tumor growth (initially funded for three years 2012-15, extended to 2017)
- 2018-21: $494,710 research grant from the Ministry of Education of Singapore, MOE-2017-T2-2-168, Co-PI (with PI Jie Zheng), Virtual stem cell - a digital platform for regenerative medicine, returned
- 2014-17: 620,000 RMB grant from National Natural Science Foundation of China - 11371048, Co-PI (with PI Jingan Cui), Research of New Emerging Infectious Disease Models with Media Coverage and Medical Constraints
- 2014-20: Faculty support fund from the College of Arts and Sciences at New Mexico State University
- 2011: College Lecture fund at William and Mary for distinguished speakers
- 2009: Summer Research Award of Arts and Sciences at William and Mary
- 2008: Reves Faculty International Travel Grant at William and Mary
- 2008: Suzann Wilson Matthews Summer Research Award at William and Mary
- 2007-10: Faculty Support Fund of Arts and Sciences at William and Mary
- 2004-07: NSF supported postdoctoral fellowship in Mathematical Biosciences Institute, Ohio State University
- 2006: Landahl Travel Award from Society of Mathematical Biology
- 2004: Graduate Research Honorable Mention, University of California, Riverside
- 2003: Phi Beta Kappa International Scholar Award from California Chapter
- 2002-04: Graduate Grants, University of California, Riverside
- 2001-02: Chancellor Distinguished Fellowship, University of California, Riverside
- 1999-01: Graduate fellowships, University of California, Riverside

Grants, Projects submitted or pending

- Proposal "Modeling Public Health Disinformation Evolution and Intervention Impacts in a Mid-Size Southwestern City"submitted to DoD at Aug 2020, 3 million dollars grant for 3 years, 7 colleagues (1 mathematician, 2 sociologists, and 4 computer scientists), co-PI, not funded.
- Proposal "Southwest Institute for Mathematical Biology"submitted in response to the call from NSF - Simons Foundation for MathBioSys centers, involving three universities, NMSU, New Mexico Tech, and University of Texas at El Paso with 11 colleagues (4 biologists, 6 mathematicians/statistians, 1 computer scientist) for 10 million dollars grant with 5 year duration where I was the PI, 2017, not funded.

- Proposal "Understanding Mechanisms of Abscopal Effects to Enhance Glioma Therapies "submitted to NSF, it is $526,000 grant for 3 year duration, I was the PI, 2017 not funded.
- Proposal "Ebola virus: mechanisms of transmission, epizootic and epidemic ", $200,000, submitted in response to NSF's call RAPID proposal on the Ebola epidemic, December 2014, not funded.

Publications in mathematics

(All available in my homepage https://people.nmsu.edu/jtian/, grouped according to mathematics involved, roughly chronologically listed within each group, *indicating undergraduate students, **graduate students)

A. Algebra (coalgebra and nonassociative algebra)

(1) Jianjun Paul Tian:
Evolution Algebras and Their Applications (research monograph), *Lecture Notes in Mathematics* of Springer, vol. 1921, Springer-Verlag Heidelberg, 2008

(2) Jianjun Tian and Bai-Lian Li:
Coalgebraic structure of genetic inheritance, *Mathematical Biosciences and Engineering*, Vol. 1 (2004), no. 2, pp. 243 - 266.

(3) Jianjun Paul Tian and Petr Vojtechovsky:
Mathematical concepts of evolution algebras in non-Mendelian genetics, *Quasigroups and related systems*, Vol. 14 (2006), no. 1, pp. 111 - 122.

(4) Jianjun Paul Tian:
Algebraic model for non-Mendelian genetics, *Discrete and Continuous Dynamical Systems - S*, Vol. 4 (2010), Issue 6, pp. 1577 - 1586.

(5) U. Rozikov and Jianjun Paul Tian:
Evolution algebras generated by Gibbs measure, *Lobachevskii Journal of Mathematics*, Vol. 32 (2011), no. 4, pp. 270 - 277.

(6) Jianjun Paul Tian and Yi Ming Zou:
Finitely generated nil but not nilpotent evolution algebras, *Linear algebra and its applications*, Vol. 13(2014), Issue 01, 10 pages.

(7) Jianjun Paul Tian:
An invited article to Contemporary Mathematics of AMS — Invitation to Research of New Mathematics from Biology: Evolution Algebras, *Contemporary Mathematics: Topics in Functional Analysis and Algebra*, Vol. 672 (2016), pp. 257-272.

B. Low-dimensional topology and knot theory

(8) Jianjun Paul Tian:
On several types of universal invariants of framed links and 3-manifolds derived from Hopf algebras, *Mathematical Proceedings of the Cambridge Philosophical Society*, Vol. 142 (2007), no. 01, pp. 73 - 92.

(9) Jianjun Paul Tian:
On a type of 3-manifold invariants arising from finite-dimensional Hopf algebras, *Acta Mathematica Academiae Paedagogicae Nyiregyhaziensis*, Vol. 23 (2007), No. 2, pp. 177 - 189.

(10) Stephen Bigelow, and Jianjun Paul Tian:
Generalized Long-Moody representations of braid groups, *Communications in Contemporary Mathematics*, Vol. 10 (2008), suppl. 1, pp 1093 - 1102.

(11) Jianjun Paul Tian, Murray Bremner, Reinhard Laubenbacher, and Banghe Li:
Newly Developed Applied Mathematics and New Mathematics Arising from Biosciences, (edited journal issue) DCDS, AIMS, 2010

C. Stochastic processes

(12) Jianjun Tian and Xiao-Song Lin:
Colored coalescent theory, *Discrete and Continuous Dynamical Systems*, Aug. issue, 2005, pp. 833 - 845.

(13) Jianjun Paul Tian and Dan Kannan:
Lumpability and commutativity of Markov processes, *Stochastic Analysis and Applications*, Vol. 24 (2006), no. 3, pp. 685 - 702.

(14) Jianjun Paul Tian and Xiao-Song Lin:
Continuous-time Markov processes on graphs, *Stochastic Analysis and Applications*, Vol. 24, no. 5 (2006), pp. 953 - 972.

(15) Jianjun Paul Tian and Zhenqiu Liu:
Coalescent random walks on graphs, *Journal of Computational and Applied Mathematics*, Vol. 202 (2007), no. 01, pp. 144-154.

(16) Jianjun Paul Tian and Xiao-Song Lin:
Mutation process in colored coalescent theory, *Bulletin of Mathematical Biology*, Vol. 71 (2009), no. 8, pp. 1873 - 1889.

D. Statistics

(17) Zhenqiu Liu, Decheng Chen and Jianjun Paul Tian:
Classification of proteomic data with logistic kernel partial least square algorithm, *Proceedings of IEEE*, CVPR'05, Vol. 3 (2005), pp. 145 - 150.

(18) Zhenqiu Liu, Decheng Chen and Jianjun Paul Tian:
Classification of proteomic data with multiclass logistic partial least square algorithm, *International Journal of Bioinformatics Research and Applications*, Vol. 4 (2008), Issue 1, pp. 1 - 10.

E. PDEs and ODEs

(19) Avner Friedman, Jianjun Paul Tian, G. Fulci, E. Antonio Chiocca and Jin Wang:
Glioma virotherapy: the effects of innate immune suppression and increased viral replication capacity, *Cancer Research*, 66 (2006), pp. 2314 - 319.

(20) Jin Wang and Jianjun Paul Tian:
Numerical study for a model of tumor virotherapy, *Applied Mathematics and Computation*, Vol. 196 (2008), Issue. 1, pp. 448 - 457.

(21) Jianjun Paul Tian, Avner Friedman, Jin Wang, and E. Antonio Chiocca:
Modeling the effects of resection, radiation and chemotherapy in glioblastoma, *Journal of Neuro-Oncology*, Vol. 91 (2009), no. 3, pp. 287 - 293.

(22) Jianjun Paul Tian:
Finite-time perturbations of dynamical systems and applications to tumor therapy, *Discrete and Continuous Dynamical Systems - B*, Vol. 12 (2009), no. 2, pp. 469 - 479.

(23) Jianjun Paul Tian, Kendall Stone* and Thomas John Wallin*:
A simplified mathematical model of solid tumor regrowth with therapies, *Discrete and Continuous Dynamical Systems*, supplement 2009, pp. 771 - 779.

(24) Shu Liao**, Jin Wang and Jianjun Paul Tian:
On a computational study of avian influenza, *Discrete and Continuous Dynamical Systems - S*, Vol. 4(2010), Issue 6, pp. 1499 - 1509.

(25) Daniel Vasiliu and Jianjun Paul Tian:
Periodic solutions of a model for tumor virotherapy, *Discrete and Continuous Dynamical Systems - S*, Vol. 4(2010), Issue 6, pp. 1587 - 1597.

(26) Jianjun Paul Tian:
The replicability of oncolytic virus: defining conditions on tumor virotherapy, *Mathematical Biosciences and Engineering*, Vol. 8 (2011), no. 3, pp. 841 - 860.

(27) Jianjun Paul Tian and Jin Wang:
Global stability for cholera epidemic models, *Mathematical Biosciences*, Vol. 232 (2011), no. 1, pp. 31 - 41.

(28) Jianjun Paul Tian, Zhigang Jin and Ting Xie:
Mathematical model for two germline stem cells competing for niche occupancy, *Bulletin of Mathematical Biology*, Vol. 74 (2012), Issue 5, pp. 2107 - 2125.

(29) Jianjun Paul Tian, Yang Kuang and Hanchun Yang:
Intracellular viral life-cycle induced rich dynamics in tumor virotherapy, accepted by *The Canadian Applied Mathematics Quarterly*, 2012.

(30) Dian Yang*, Jianjun Paul Tian and Jin Wang:
A solvable hyperbolic free boundary problem modeling tumor regrowth, *Applicable Analysis*, Vol. 92 (2013), Issue 7, pp. 1541-1558.

(31) Yiheng Pang**, Jianjun Paul Tian and Hanchun Yang:
Two-dimensional Reimann problem for a hyperbolic system of conservation laws in three pieces, *Applied Mathematics and Computation*, Vol. 219 (2012), Issue 4, pp. 1695 - 1711.

(32) Yujie Wang**, Jianjun Paul Tian and Junjie Wei:
Lytic cycle: a defining process in oncolytic virotherapy, *Applied Mathematical Modelling*, Vol. 37(2013), pp. 5962-5978.

(33) Jianjun Paul Tian, Shu Liao** and Jin Wang:
Analyzing the infection dynamics and control strategies in modeling cholera, accepted by *Discrete and Continuous dynamical Systems* Suppl, 2013, pp. 747-757.

(34) Yiheng Pang**, Jianjun Paul Tian and Hanchun Yang:
Two-dimensional Reimann problem involving three J's for a hyperbolic system of nonlinear conservation laws, *Applied Mathematics and Computation*, Vol. 219(2013), Issue 9, pp. 4614-4624.

(35) Jianjun Paul Tian and Jin Wang:
Some results in Floquet theory, with application to periodic epidemic models, *Applicable Analysis*, Vol. 94 (2015), Issue 6, pp. 1128-1152.

(36) Jianjun Paul Tian, Junping Shi and Jingan Cui:
A mathematical model for high pathogenicity avian influenza virus emerging from outbreaks with low pathogenicity avian influenza virus, *Dynamics of Continuous, Discrete and Impulsive Systems, Series B*, Vol. 22 (2015), pp. 359-379.

(37) Jiantao Zhao**, Jianjun Paul Tian, and Junjie Wei:
Minimal model of plankton systems revisited with spatial diffusion and maturation delay, *Bulletin of Mathematical Biology*, Vol. 78 (2016), Issue 3, pp. 381-412.

(38) Asim Timalsina**, Jianjun Paul Tian, Jin Wang:
Mathematical and computational modeling for tumor virotherapy with mediated immunity, *Bulletin of Mathematical Biology*, 2017, 79(8): 1736-1758

(39) Tuan Anh Phan**, Jianjun Paul Tian:
The role of the innate immune system in oncolytic virotherapy, *Computational and Mathematical Methods in Medicine*, 2018, Article ID6587258, 17 pages.

(40) Jiantao Zhao, Jianjun Paul Tian, Spatial model for oncolytic virotherapy with lytic cycle delay, *Bulletin of Mathematical Biology*, 2019, 81: 2396-2427.

(41) Yuxiao Guo, Ben Niu, Jianjun Paul Tian:
Backward Hopf bifurcation in a mathematical model for oncolytic virotherapy with the infection delay and innate immune effects, *Journal of Biological Dynamics*, 2019, 13(1): 733-748.

(42) Xianyi Zeng, M. Saleh**, and Jianjun Paul Tian:
On finite volume discretization of infiltration dynamics in tumor growth models, *Advances in Computational Mathematics*, 2019, 45: 3057-3094.

(43) Ben Niu, Xianyi Zeng, Tuan Phan**, Frank Szulzewsky, Sarah Holte, Eric Holland, Jianjun Paul Tian:
Mathematical modeling of PDGF-driven glioma reveals the infiltrating dynamics of immune cells into tumors, *Neoplasia*, 2020, 22(9): 323-332.

(44) Jinlong Lv**, Songbai Guo, Jing-An Cui, and Jianjun Paul Tian:
Asymptomatic transmission shifts epidemic dynamics, accepted by *Mathematical Biosciences and Engineering*, Nov 2020

(45) Hua Zhang**, Jianjun Paul Tian, Ben Niu, and Xiaoyu Guo:
Mathematical modeling of tumor surface growth with necrotic kernels, accepted by Mathematical Methods in Applied Sciences, May, 2021.

(46) Jiantao Zhang, Xin Wei, and Jianjun Paul Tian:
Modeling of tumor radiotherapy with damage and repair processes, accepted by The European Physical Journal Plus, March, 2022.

(47) Heather Curtsinger, Xianyi Zeng, Mary Ballyk, Tuan Anh Phan, Ben Niu, Mee Y Bartee1, Jianjun Paul Tian, and Eric Bartee:
High levels of extracellular potassium can delay myxoma virus replication by preventing release of virions from the endosomes, accepted by Journal of Virology, November, 2022.

F. Stochastic differential equations

(48) Yadong Shang, Jianjun Paul Tian, and Bixiang Wang:
Asymptotic Behavior of the Stochastic Keller-Segel Equations, *Discrete and Continuous Dynamics B*, 2018, 24(3): 1367-1391.

(49) Ziwei Ma**, Ben Niu, Tuan Anh Phan**, Anne Line Stensjen, Chibawanye Ene, Tonghui Wang, Philip Maini, Eric Holland, and Jianjun Paul Tian:
Stochastic growth pattern of untreated human glioblastomas predicts the survival time for patients, *Scientific Reports*, 2020, 10, article number 6642.

(50) Tuan Anh Phan**, Jianjun Paul Tian, and Bixiang Wang:
Dynamics of cholera epidemic models in fluctuating environments, *Stochastics and Dynamics*, 25 pages, April 2020.

(51) Tuan Anh Phan** and Jianjun Paul Tian:
Basic stochastic dynamical model for oncolytic virotherapy, *Mathematical Biosciences and Engineering*, 2020, 17(4): 4271-4294.

(52) Tuan Anh Phan, Hai-Dang Nguyen, and Jianjun Paul Tian:
Deterministic and stochastic modeling for PDGF-driven gliomas reveals a classification of gliomas, accepted by Journal of Mathematical Biology, August 2021.

(53) Tuan Anh Phan and Jianjun Paul Tian:
Analysis of a new stochastic Gompertz diffusion model for untreated human glioblastomas, accepted by Stochastics and Dynamics, December 2021

(54) Tuan Anh Phan and Jianjun Paul Tian:
Bifurcation without parameters in deterministic and stochastic modeling of cancer virotherapy, part I, accepted by Journal of Mathematical Analysis and Applications, April, 2022.

(55) Tuan Anh Phan and Jianjun Paul Tian:
Bifurcation without parameters in deterministic and stochastic modeling of cancer virotherapy, part II, accepted by Journal of Mathematical Analysis and Applications, June, 2022.

- **Submitted Monographs and Papers, or Work in progress**

(56) Tuan Anh Phan, Farhana Sarower**, Jinqiao Duan, and Jianjun Paul Tian:
Stochastic dynamics of human papillomavirus delineates cervical cancer progression, 47 pages, submitted.

(57) Xin Wei, Jianjun Paul Tian, and Jiantao Zhao:
Fairy circle and temporal periodic patterns in a delayed plant-sulfide feedback model, 26 pages, submitted.

(58) Megan Dixon, Tuan Anh Phan, John Dallon, and Jianjun Paul Tian:
Mathematical model for IL-2-based cancer immunotherapy, 26 pages, submitted.

(59) Chau Hoang**, Tuan Anh Phan, Cameron Turtle, and Jianjun Paul Tian:
Stochastic modeling of CAR T cell therapy with in silicon clinical trials, 26 pages, submitted.

(60) Tuan Anh Phan, Chau Hoang, and Jianjun Paul Tian:
Stochastic model for virotherapy with both innate and adaptive immune responses, in preparation.

(61) Tuan Anh Phan and Jianjun Paul Tian:
Classification of 1-d stochastic differential equations, in preparation.

(62) Tuan Phan, Benjamin Ellingson, and Jianjun Paul Tian:
Study of untreated human glioma growth based data from Los Angeles, in preparation.

(63) Xianyi Zeng, Ben Niu, Eric Holland, Philip Maini, and Jianjun Paul Tian:
Mathematical model for osteopontin dynamics in solid tumor growth, in preparation.

(64) Xianyi Zeng, Tuan Phan, Mary Ballyk, Eric Bartee, Jianjun Paul Tian et al:
experimental and mathematical study of Oncolytic crash, in preparation

(65) Jianjun Paul Tian, Philip Maini and Angelique Bordey:
Control of neural stem cell lineage progression in the adult mammalian brain: insights from mathematical models, in preparation, 30 pages.

(66) Jianjun Paul Tian:
Stochastic Differential Equations and Applications, book project with AMS.

- **Preprints**

(1) Youshan Tao and Jianjun Paul Tian:
Mathematical Oncology (PDE modeling monograph), 225 pages, preprint.

(2) Carolyn Ayers*, Jianjun Paul Tian and Randy Chambers:
A matrix model of potential human impacts on diamondback terrapin populations, 25 pages, preprint.

(3) Daniel Hariprasad*, Junping Shi, Jianjun Paul Tian, and Meagan Herald:
Three pool model for calcium signaling, 20 pages, preprint.

(4) Jianjun Paul Tian:
A brief introduction to evolution algebras, 11 pages, preprint.

(5) Jianjun Paul Tian:
On integrals of quantum supergroup, 22 pages, preprint.

(6) Jianjun Paul Tian:
Spin representations of Artin's group, 29 pages, preprint.

Talks and lectures given in seminars and conferences

- **Invited talks in universities, national and international conferences**

(103) Invited talk in AMS Fall Eastern Sectional Meeting, University at Buffalo (SUNY), Buffalo, NY, September 9-10, 2023.

(102) Invited lectures: Dynamical Perspectives of Algebra, Coalgebra, bialgebra, and Hopf Algebra, online, Shaanxi University of Technology, December 8, 2022.

(101) Invited talk in Special session on Stochastic dynamics: Theory and Applications in Biology - AMS Fall Central Sectional Meeting, University of Texas at El Paso, TX, September 17-18, 2022.

(100) Invited talk in the 7th International Conference on Random Dynamical Systems, Hanoi, Vietnam, June 21-25, 2022.

(99) Invited talk in the special session - Dissipative Systems and Their Applications - AMS Fall Western Sectional Meeting, Virtual Meeting, Oct 23-24, 2021.

(98) Invited talk in the special session - on Stochastic Modeling in Mathematical Biology - AMS Fall Central Sectional Meeting, Virtual Meeting, Sept 12-13, 2020.

(97) Invited seminar talk in Mathematics Department, New Mexico Institute of Mining and Technology, April, 2021.

(96) Invited lecture in Annual Meeting of Yunnan Mathematics Society, Wenshan, Yunnan, China, July 19-23, 2019.

(95) Invited lectures in School of Sciences Beijing University of civil Engineering & Architecture, Beijing, China, July 6-10, 2019.

(94) Invited lecture in School of Mathematics, Harbin Institute of Technology, Harbin, China, July 4, 2019.

(93) Invited lecture in School of Mathematical Sciences, Heilongjiang University, Harbin, China, July 2-3, 2019.

(92) Invited lecture in School of Sciences, Harbin Institute of Technology - Weihai, Shandong, China June 28 - July 1, 2019.

(91) Invited lecture in the Center for Mathematical Sciences in Huazhong University Of Science And Technology, Wuhan, China, June 24-26, 2019.

(90) Invited lectures at School of Mathematics and Computer Sciences in Shaanxi University of Technology, Hanzhong, China, July 15-20, 2018.

(89) Invited talk at Department of Mathematics in Southern University of Science and Technology, Shenzhen, China, June 20-23, 2018.

(88) Invited talk at Department of Mathematics in Guangzhou University, Guangzhou, China, June 17 - 19, 2018.

(87) Invited lectures at school of Sciences in Beijing University of Civil Engineering and Architecture, Beijing, China, June 10 - June 16, 2018.

(86) Invited talk in Special Session on Mathematical Modeling and Analysis of Infectious Diseases at Joint Mathematics Meetings, San Diego, CA, January 9-14, 2018.

(85) Invited talk in International Conference on Random Dynamical Systems on occasion of Ludwig Arnold's 80th birthday at the Center for Mathematical Sciences, Huazhong University of Science and Technology, Wuhan, China, June 23–28, 2017.

(84) Invited seminar talk in Mathematics Department, New Mexico Institute of Mining and Technology, November 7, 2016

(83) Invited seminar talk in Department of Biology, NMSU, October 1, 2015.

(82) Invited talk in Northwest University, Xi'an, China, June 29 -July 1, 2015.

(81) Invited talk in Beijing University of Civil Engineering and Architecture, China, June 22 - June 28, 2015.

(80) Three invited lectures in Harbin Institute of Technology, Weihai, China, June 12 - June 21, 2015.

(79) Invited talk in The Ninth International Conference on Differential Equations and Dynamical Systems, Texas A&M, Dallas, May 14-16, 2015.

(78) Invited lecture series of mathematical biology in Beijing University of Civil Engineering and Architecture, September 28-29, 2014.

(77) Invited talk in Bio-math seminar at the Department of Mathematics and Applied Mathematics of Virginia Commonwealth University, April 5, 2013.

(76) Invited talk in the session of Modeling Complex Biological System: Theoretical and Computational Studies at 36th Annul SIAM Southeastern Atlantic Section Conference, Huntsville, Alabama, March 24-25, 2012.

(75) Invited lecture series of mathematical biology in Beijing University of Civil Engineering and Architecture, five lectures and each lecture was two hours. One lecture took place in December 27, 2011, and four lectures took place in January 6 - 10, 2012.

(74) Invited talk on a mathematical model of oncolytic virotherapy in the Department of Mathematics at Yunnan University, Kunming, China, August 12, 2011.

(73) Invited lecture on modeling of mathematical biology in Department of Mathematics at Beijing University of Science and Technology, Beijing, China, July 20, 2011.

(72) Two invited lectures on mathematical analysis of oncolytic virotherapy in Department of Mathematics at Harbin Institute of Technology, Weihai, China, July 14-01, 2011.

(71) Invited talk on a model of plant invasion in the School of Life Science at Zhongshan University (Sun Yat-sen University), Guangzhou, China, June 23, 2011.

(70) Invited lecture for talented undergraduate students on mathematical modeling and applications at Northwest A & F University, Yangling, China, June 14, 2011.

(69) Invited talk on applied mathematics in the College of Science at Northwest A & F University, Yangling, China, June 14, 2011.

(68) Invited talk in Department of Mathematics at Northwest University, Xi'an, China, June 9, 2011.

(67) Invited lecture on mathematical biology in the College of Science at Xi'an Jiaotong University, Xi'an City, China, June 8, 2011.

(66) Mathematical seminar talk in Department of Mathematics at University of California, Davis, March 28, 2011.

(65) Seminar talk in Department of Botany and Plant Sciences, University of California, Riverside, March 23, 2011.

(64) Featured speaker in Tenth Annual Red Raider Mini-symposium at Texas Tech University, Oct. 28-30, 2010.

(63) Invited talk in AMS Fall Southeastern Section Meeting: special session on Mathematical Models in Biology and Medicine, Richmond, VA, Nov. 6-7, 2010.

(62) Invited talk in AMS Fall Southeastern Section Meeting: special session on Differential Equations and Applications to Physics and Biology, Richmond, VA, Nov. 6-7, 2010.

(61) Invited talk in 2010 SIAM Great Lakes Conference: Modeling and Numerical PDEs in Mathematical Biology, University of Michigan, Dearborn, April 17, 2010.

(60) Invited laboratory talk in Ting Xie's lab at Stowers Institute for Medical Research, Kansas City, July 3 - 11, 2010.

(59) Invited talk in the special session on Knotting Around Dimension Three: A Special Session in Memory of Xiao-Song Lin in AMS 2009 Fall Western Section Meeting at Riverside, CA, November 7-8, 2009.

(58) Colloquium talk in Department of Mathematics at Christopher Newport University, October 21, 2009.

(57) Invited lectures in Department of Mathematics at Yunnan University, Kunming, China, July 24-30, 2009.

(56) Keynote Speaker in the Annual Conference of Yunnan Mathematical Society, Zhaotong city, Yunnan, China, July 20-23, 2009.

(55) Invited lectures in Department of Mathematics at Northwest University, Xi'an, China, July 1-16, 2009.

(54) Invited talk in School of Life Science at Zhongshan University, Guangzhou, China, June 29-30, 2009.

(53) Invited talk in "International Workshop on Reaction-Diffusion Models and Mathematical Biology" at Harbin Institute of Technology and Harbin Normal University, Harbin, Helongjiang, China, June 25-27, 2009.

(52) Invited talk in "11th international conference on molecular systems biology" at CAS-MPG Partner Institute for Computational Biology, Shanghai, China, June 21-25, 2009.

(51) Invited talk in Department of Mathematics and the Center of System Biology at Suzhou University, Suzhou, China, June 19-21, 2009.

(50) Invited talk in Department of Mathematics at DongHua University, Shanghai, June 18-19, 2009.

(49) Invited talk in the Joint Meeting of Society for Mathematical Biology and Chinese Society for Mathematical Biology, Zhejiang University, Hangzhou, China, June 14 - 17, 2009.

(48) Seminar talk in Department of Mathematics and Statistics at the Old Dominion University, Norfolk, VA, April 24, 2009.

(47) Invited talk in Life Science School at Beijing University of Technology, Beijing, China, January 6, 2009.

(46) Invited talk in Department of Mathematics at Northwest University, Xi'an, China, December 30, 2008.

(45) Invited talk in Department of Mathematics at Guizhou University, Guiyang, China, December 26, 2008.

(44) Organizing and talk in special session on Biomathematics: Newly Developed Applied Mathematics and New mathematics Arising from Biology in the First Joint International Meeting of American Mathematical Society and Shanghai Mathematical Society, Shanghai, China, December 17-21, 2008.

(43) Invited talk in Yunnan University, Kunming, Yunnan, China, December 24, 2008.

(42) Seminar talk in the Department of Mathematics at the George Washington University, Washington DC, November 11, 2008.

(41) Invited talk in the minisymposium on Modeling of Gene Regulatory Network and Cellular Signaling at SIAM Conference Life Sciences, Montreal, Quebec, Canada, August 4-7, 2008.

(40) Invited talk in the minisymposium on Modeling Epidemics and Infectious Diseases: Recent Advances in Theoretical Immunology and Epidemiology at SIAM Conference Life Sciences, Montreal, Quebec, Canada, August 4-7, 2008.

(39) Invited talk in the special session on Dynamical Systems in Biology and Medicine at 7th AIMS International Conference on Dynamical Systems Differential Equations and Applications, Arlington, Texas, May 18-21.

(38) Invited talk in the special session on Nonlinear Elliptic and Parabolic PDEs with Application at 7th AIMS International Conference on Dynamical Systems Differential Equations and Applications, Arlington, Texas, May 18-21.

(37) Seminar talk in Mathematical Biology Seminar at the University of British Columbia, Vancouver, Canada, March 13, 2008.

(36) Talk in 2008 AMS Spring Southeastern Meeting Baton Rouge, LA, March 28-30, 2008.

(35) Colloquium talk in National Institute of Health, National Center for Biotechnology Information, Bethesda, Maryland, November 20, 2007.

(34) Talk in the international symposium on "Ecology, Evolution and Modeling of Disease Dynamics" in Eco Summit 2007, Beijing, China, May 22 -27, 2007.

(33) Colloquium talk in the Institute of Tumor Study and Hospital of Tumor Prevention of Shaanxi Provence, Xi'an City, China, June 4, 2007.

(32) Colloquium talk in the Center for Nonlinear Studies and Mathematics Department at Northwest University, Xi'an City, China, June 6, 2007.

(31) Invited talk in the College of Applied Science and College of Life Science and Bio-engineering at Beijing University of Technology, Beijing, China, May 21, 2007.

(30) Invited talk in School of Sciences at Xi'an Shiyou University, Xi'an City, China, June 1, 2007.

(29) Invited laboratory talk in Ting Xie's lab, Stowers Institute for Medical Research, Kansas City, December 21, 2007.

(28) Invited talk in Computational and Applied Mathematics Seminar at Mathematics Department, Iowa State University on Nov. 7, 2006.

(27) I was invited to give a talk in the Departmental Colloquium at Mathematics Department, University of Cincinnati on Nov. 9, 2006.

(26) I was invited to give a talk in AMS 2006 Fall Central Section Meeting, Cincinnati Ohio, Oct 21-22, 2006.

(25) I was invited to give a talk in Summer Seminar Series on Disease Ecology, Department of Botany and Plant Sciences at University of California, Riverside, August 21 - 24, 2006.

(24) Talk at the mini-symposium in the Joint SIAM-SMB conference on the Life Sciences, Raleigh, North Carolina, July 31-August 4, 2006.

(23) I was invited to give a talk in AMS Special Session on Mathematical Biology, University of Notre Dame, April 8-9, 2006.

(22) I was invited to give a talk in the Special Session on Mathematical Biology and Epidemics at the Joint Mathematics Meetings (AMS/MAA) in San Antonio, TX, January 12-15, 2006.

(21) I was invited to give a talk in the Special Session on Quantum Invariants of Knots and 3-Manifolds at the Joint Mathematics Meetings (AMS/MAA) in San Antonio, TX, January 12-15, 2006.

(20) I was invited to give a talk in the Special Session on Algebraic Statistics at the Joint Mathematics Meetings (AMS/MAA) in San Antonio, TX, January 12-15, 2006.

(19) I was invited to give a talk at Mile High International Conference on Quasigroups, Loops and Nonassociative Systems in Denver, Colorado, July 2-9, 2005.

(18) I was invited to give a talk in the Special Session on Stochastic, Large-Scale and Hybrid Systems at the Joint Mathematics Meetings (AMS/MAA) in Atlanta, Georgia, January 4-8, 2005.

(17) I was invited to give a talk in the Special Session on Nonassociative Algebras at the Joint Mathematics Meetings (AMS/MAA) in Phoenix, Arizona, January 7-10, 2004.

(16) I was invited to give a talk in AIMS' fifth International Conference on Dynamical Systems and Differential Equations at Pomona, California, June 16-19, 2004.

- **Other talks**

(15) Seminar talk on Braid group in the Department of Mathematics at the College of William and Mary, November 9, 2007.

(14) Talk in Bio-math lunch meeting at WM about my ongoing research in stem cell regulation modeling, Spring, 2012.

(13) Talk in Mathematics Department at WM CSUMS summer lecture: How to determine signs of eigenvalues of a matrix without explicitly computing them, June, 2012.

(12) Talk in Mathematics Department at WM CSUMS summer lecture: Simplified model on stem cell competition, Summer 2008.

(11) Talk in Graduate class taught by Leah Show at Applied Science Department at WM: Introduction to some research topics on mathematical and computational biology, November 21, 2008.

(10) Postdoctoral Seminar at the Mathematical Biosciences Institute (MBI), the Ohio State University. Title: Colored Coalescent Theory, Feb. 10, 2005.

(9) Postdoctoral Seminar at the MBI, the Ohio State University, Title: Coalgebraic Structure of Genetic Inheritance, April 14, 2005.

(8) Postdoctoral Seminar at the MBI, the Ohio State University, Title: Evolution Algebra Theory, Dec. 9, 2005.

(7) Ecological Scaling Seminar in the Department of Botany and Plant Science at University of California, Riverside, Title: Wavelets in Investigating the Relationship between Genome Structure, Composition and Ecology in Prokaryotes, Spring quarter, 2003.

(6) Mathematical Physics Seminar in Department of Mathematics at University of California, Riverside, Title: Some Aspects of Einstein's Theory-Relativity, Winter quarter, 2001.

(5) Topology Seminar in Department of Mathematics at UC Riverside, Title: Heegaard Decomposition of 3-manifolds, Winter quarter, 2001.

(4) Topology Seminar in Department of Mathematics at UC Riverside, Title: The Total Curvature of Knots, Spring quarter, 2001.

(3) Topology Seminar in Department of Mathematics at UC Riverside, Title: Representations of Braid Groups, Fall quarter, 2001.

(2) Topology Seminar in Department of Mathematics at UC Riverside, Title: Statistics of Knots, part I, Winter quarter, 2002.

(1) Topology Seminar in Department of Mathematics at UC Riverside, Title: Statistics of Knots, part II, Spring quarter, 2002.

- **Recruitment talks given during January to March 2007**

(1) Penn State University, University park, math position

(2) University of Delaware, math position

(3) Worcester Polytechnic Institute, math position

(4) University of Alabama, math position

(5) Old Dominion University, math position

(6) College of William and Mary, math position

(7) George Mason University, math position

(8) University of North Carolina, math position

(9) University of Texas, math position

(10) Howard University, math position

- **Job talks given January 2011 to December 2013**

(1) New York University, Courant Institute of Mathematical Sciences

(2) City University of New York, Queens College, and Graduate Center

(3) Iowa State University, Department of Mathematics

(4) University of South Florida St. Petersburg, Departmental chair position

(5) Portland State University, Department of Mathematics, Maseeh Chair position

(6) New Mexico State University, Department of Mathematical Sciences

Research visits, Workshops, Journal Clubs, Tutorials

(41) June 10 -16, 2023, visiting James Liu at the Department of Mathematics to discuss collaboration in computational fluid dynamics and attended "Computational and Systems Biology Annual Symposium"in Colorado State University.

(40) July 25 - 29, 2022, visiting Eric Bartee and his lab the Medical center in University of New Mexico to discuss research collaboration in oncolytic viral therapy.

(39) April 24 -26, 2017, visiting Eric Holland lab in Fred Hutchinson Cancer Research Center to establish research collaboration.

(38) August 16 - August 19, 2015, visiting Fred Hutchinson Cancer Research Center in Seattle, supported by NMSU/FHCRC partnership.

(37) July 06 - August 10, 2013 visiting the Department of Mathematical Science at University of Essex, Mathematics Group at Aston University, Mathematical Institute at University of Oxford, UK; School of Mathematics, Statistics and Applied Mathematics at the National University of Ireland Galway, Ireland.

(36) Invited participant of Math Biology: Looking at the Future at the Mathematical Biosciences Institute, the Ohio State University, September 19-21, 2012.

(35) Department of Mathematical and Statistical Sciences, University of Alberta, April 1 - 8, 2011.

(34) National Institute for Mathematical and Biological Synthesis (NIMBios), Investigative Workshop: Modeling Toxoplasm Gondii, May 13-15, 2010.

(33) National Center for Biotechnology Information of NIH, Bethesda, MD, September 18 - 20, 2009.

(32) Academy of Mathematics and Systems Science, the Chinese Academy of Sciences, Beijing, China, January 3-8, 2009.

(31) Department of Mathematics at UC Santa Barbara, California, Santa Barbara, May 25 - 31, 2008.

(30) Center for Nonlinear Studies at Northwest University, Third International Workshop on Nonlinear PDEs: Analysis, Computation and Applications, Xi'an City, China, December 27 - 31, 2008.

(29) Dardinger Cancer Seminar (E.A Chiocca group) every Monday from March 2005 to March 2007, Department of Neurological Surgery, the Ohio State University.

(28) MBI Workshop Cardiac Electrophysiology and Arrhythmia, September 25-29, 2006.

(27) MBI Workshop Global Ecology, June 26 - 30, 2006.

(26) MBI Workshop Uncertainty in Ecological Analysis, April 3-6, 2006.

(25) Second Young Researchers Workshop in Mathematical Biology, March 27 - 30, 2006

(24) MBI Workshop Spatial Ecology, March 13 - 17, 2006.

(23) MBI Workshop Spatial Heterogeneity in Biotic and Abiotic Environment: Effects on Species Ranges, Co-evolution, and Speciation, February 6 - 10, 2006

(22) MBI Workshop the Problems of Phylogenetic Analysis of Large Datasets, December 1 - 2, 2005.

(21) MBI Workshop Aspects of Self-Organization in Evolution, Nov. 14 - 18, 2005.

(20) MBI Workshop Phylogeography and Phylogenetics, Sept 26 -3 0, 2005.

(19) Tutorial Tree Reconstruction and Coalescence Theory, September 7 - 9 and 12 - 13, 2005.

(18) MBI Workshop Recombination: Hotspots and Haplotype Structure, June 13 - 16, 2005.

(17) Tumor Dynamics Workshop in the University of Michigan, Ann Arbor, Michigan, spring 2005.

(16) Current Topics Workshop - Enzyme Dynamics and Function, May 19 - 21, 2005.

(15) MBI Workshop Biomarkers in HIV and Cancer Research, April 18 - 22, 2005.

(14) First Young Researchers Workshop in Mathematical Biology, March 29 - April 1, 2005.

(13) MBI Workshop Emerging Genomic Technologies and Data Integration Problems, February 21 - 24, 2005

(12) MBI Workshop Computational Proteomics and Mass Spectrometry, January 11 - 14, 2005.

(11) MBI and MRI Mini-workshop Quantitative Mathematical Modeling of Gene Regulatory Networks, December 2 - 4, 2004.

(10) MBI Workshop Regulatory Networks, November 8 - 12, 2004.

(9) MBI Workshop Analysis of Gene Expression Data: Principles and Applications, October 11 - 15, 2004.

(8) MBI Tutorial on Microarrays, September 13 - 17, 2004.

(7) Genetics Club in Statistics Department, the Ohio State University, fall 2004, winter 2005.

(6) Mathematical Biology Conference at Harvey Mudd College, California, Fall 2003.

(5) "Coalescent theory"discussion at Michael Clegg's lab in Department of Botany and Plant Science at University of California, Riverside, summer 2002.

(4) AMS section conference at Nevada University, spring, 2001.

(3) AMS section conference at University of California, Irvine, fall, 2001.

(2) AMS section conference at University of California, Santa Barbara, spring, 2000.

(1) The Southern California Topology Colloquium at Cal Tech, Fall 1999.

Conference/meetings co-/organized

(1) Organizer and major speaker of Graduate Seminar: "Quantum Group and Topology"at Department of Mathematics in University of California, Riverside, 2001.

(2) Organizer of the mini-symposium on Quantitative Study of Disease Ecology in the Joint SIAM SMB Conference on the Life Sciences in North Carolina, July 31 - August 4, 2006.

(3) Co-organizer of Young Researchers Workshops in Mathematical Biology at the MBI, March, 12-15, 2007.

(4) Organizer of the MBI Postdoctoral Seminar, spring, 2007.

(5) I co-organized with Yang Kuang International symposium on Ecology, Evolution and Modeling of Disease Dynamics in Eco Summit 2007, Beijing, China, May 22-27, 2007.

(6) I co-organized with Hongyu He and Sergei Pilyugin Special session on Mathematical Modeling in Biology at AMS Spring Southeastern Meeting at Baton Rouge, LA, March 28-30, 2008.

(7) I co-organized with Murray Bremner, Reinhard Laubenbacher, and Banhe Li Special session on Biomathematics: Newly Developed Applied Mathematics and New Mathematics Arising from Biosciences in the First Joint International Meeting of the AMS and Shanghai Mathematical Society, Shanghai, China, December 17-21, 2008.

(8) I co-organized the special session - Recent Advances in Computational and Mathematical Biology - with Fengzhu Sun and Mary Ballyk in AMS Fall Western Sectional Meeting in Fullerton CA, Oct 24-25, 2015.

(9) I co-organized the special session - Stochastic differential equations and applications of mathematical biology - in Joint Mathematics Meeting, Denver, Jan 15-18, 2020.

(10) I co-organized special session - on Stochastic Modeling in Mathematical Biology - AMS Fall Central Sectional Meeting, Virtual Meeting, Sept 12-13, 2020.

(11) I co-organized special session - on Stochastic dynamics: Theory and Applications in Biology - AMS Fall Central Sectional Meeting, University of Texas at El Paso, TX, September 17-18, 2022.

(12) I co-organizing special session - Recent advances in stochastic differential equation theory and its applications in modeling biological systems - the Joint Mathematics Meetings, San Francisco, California, January 3-6, 2024.

Editorships

- Associate editor for Frontiers in Applied Mathematics and Statistics, August 2023 - present
- Associate editor for MDPI Mathematics, April 2021 - present.
- Associate editor for Uzbek Mathematical Journal, Jan 2018 - present.
- Associate editor for Journal of Algebraic Statistics, Dec. 2009 - 2015.
- Co-edited an issue of Discrete and Continuous Dynamical Systems - S: Newly Developed Applied Mathematics and New Mathematics Arising from Biosciences with Murray Bremner, Reinhard Laubenbacher, and Banhe Li.

Refereeing and reviewing for the following journals

(1) Bulletin of Mathematical Biology

(2) Journal of Mathematical Biology

(3) Journal of Theoretical Biology

(4) Mathematical Medicine and Biology

(5) Mathematical Biosiences and Engineering

(6) Journal of the Royal Society Interface

(7) Physical Biology

(8) Applicable Analysis

(9) Journal of Mathematical Analysis and Applications

(10) Nonlinear Analysis Series B: Real World Applications

(11) Bioinformatics

(12) Transactions on Device and materials Reliability

(13) Computer and Mathematics with Application

(14) Discrete and Continuous Dynamical Systems - A

(15) Journal of Difference Equations and Applications

(16) Journal of the Franklin Institute

(17) Advance in Mathematics (Chinese)

(18) Linear Algebra and Its Applications

(19) Journal of Algebra

(20) Mathematics and Computers in Simulation

(21) Canadian Applied Math Quarterly

(22) Forum Mathematicum

(23) Archiv der Mathematik

(24) PloS ONE

(25) Oncolytic Virotherapy

(26) Epidemiology and Infection

(27) Applied Mathematics and Computation

(28) Springer Proceedings in Mathematics

(29) Computational and mathematical Methods in Medicine

(30) Mathematical Reviews

(31) Filomat (Serbia)

(32) Journal of Biological Dynamics

(33) Computers in Biology and Medicine

(34) Mathematical Biosciences

(35) Physics in Medicine and Biology

(36) Natural Resource Modeling

(37) Linear and Multilinear Algebra

(38) International Journal of Biomathematics

(39) Algebras and Representation Theory

(40) Mathematical and Computational Applications

(41) Scientific Reports

(42) International Immunopharmacology

(43) Biomedical Physics and Engineering Express

(44) Cancer Research

(45) International Journal of Dynamics and Control

(46) MDPI Mathematics

(47) Cogent Mathematics & Statistics

(48) Statistics and Probability Letters

(49) Stochastics and Dynamics

(50) IMA Journal of Applied Mathematics

(51) Discrete and Continuous Dynamical Systems - B

(52) Statistics and Probability Letters

(53) Expositions Mathematicae

(54) Computational Biology and Chemistry

(55) Journal of Taibah University for Science

(56) Computers in Biology and Medicine

(57) Mathematics and Computers in Simulation

(58) Frontiers in Oncology

(59) Discrete Dynamics in Nature and Society

(60) Applied Sciences

(61) Computational and Mathematical Methods in Medicine

(62) Nonlinear Engineering. Modeling and Application

(63) Frontiers in Applied Mathematics and Statistics

(64) Critical Reviews in Eukaryotic Gene Expression

(65) Heliyon

(66) Boletin de la Sociedad Matematica Mexicana

(67) Journal of Algebra and its Applications

(68) Journal of Biological Systems

(69) Journal of Mathematical Analysis and Applications

(70) Theoretical Population Biology

(71) Acta Biotheoretica

(72) International Journal of Applied and Computational Mathematics.

Grant proposal reviewer

(1) National Science Foundation (US), 2014, 2017, 2020; also Review Panelist in 2019, 2021, 2022, 2023.

(2) Kentucky Science & Engineering Foundation, 2015.

(3) Chilean National Science and Technology Commission, 2017.

Evaluator or reviewer for memberships

(1) The World Academy of Sciences for the advancement of science in developing countries, 2016.

Teaching

- **Courses taught or teaching at New Mexico State University**(2014 -)

  Fall 2014: Math 291 - Multivariable Calculus and Analytical Geometry, 2 sections

  Spring 2015: Math 291 - Multivariable Calculus and Analytical Geometry; Stat 562 - Foundations of Probability (graduate course)

  Fall 2015: Math 392 - Introduction to Ordinary Differential Equations, 2 sections

  Spring 2016: Stat 535 - Elementary Stochastic Processes (graduate course)

  Fall 2016: Math 481/525 - Advanced Linear Algebra (graduate course); Math 392 - Introduction to Ordinary Differential Equations

  Spring 2017: Math 291 - Multivariable Calculus and Analytical Geometry; Stat 371 - Statistics for Engineers and Scientists

  Fall 2017: Math 291; Stat 470/515 - Probability, Theory and Applications (undergraduate and graduate course).

  Spring 2018: Math 291; Stat 562 - Foundations of Probability (measure theory based, graduate course).

  Fall 2018: Math 291; Stat 251; Math 530 - Special Topics in Stochastic Differential Equations for graduate students; Math 600 - Doctorial Study.

  Spring 2019: Math 530; Stat 251; Math 600- Special Topics in Partial Differential Equations; Math 586 - Nonlinear Dynamics.

Fall 2019: Math 191 - Calculus I; Stat 251; Math 471 - Complex Variables; Math 600.

Spring 2020: Math 191 - Calculus I; Math 530 - Stochastic Differential Equations; Math 700 - Doctorial Study.

Fall 2020: Math 192 - Calculus II; Math 291 - Multivariable Calculus and Analytical Geometry; Math 700 - Stochastic Processes; Math 700 - Doctorial Study dissertation.

Spring 2021: Math 2530 - Calculus III; math 392 - Introduction to Differential Equations; Math 530 - Special Topics; Math 700 - Doctoral Dissertation.

Fall 2021: On sabbatical leave, three reading courses for my graduate students: Math 599 - Master Thesis; Math 600 - Doctoral Research; Math 700 - Doctoral Dissertation.

Spring 2022: On sabbatical leave, two reading courses for my graduate students: Math 530 - Special Topic; Math 600 - Doctoral Research; Math 700 - Doctoral Dissertation.

Fall 2022: Math 530 - Ordinary Differential Equations (graduate course); Math 470/515 - Probability, Theory and Applications (undergraduate and graduate course); Math 599 - Master Thesis; Math 600 - Doctoral Research; Math 700 - Doctoral Dissertation.

Spring 2023: Math 530 - Nonlinear Dynamical Systems (graduate course); Math 1350G - Intro to Stat; Math 700 - Doctoral Dissertation.

- **Courses taught at William and Mary** (2007-14, all undergraduate courses)

  Math 111 Calculus I

  Math 112 Calculus II

  Math 212 Multivariable Calculus

  Math 213 Multivariable Cal for Science & Math (4 hours lecture)

  Math 302 Introduction to Differential Equations

  Math 310 Mathematics Writing

  Math 345 Introduction to Mathematical Biology

  Math 410-01 Topics in Mathematical Biology

  Math 410-02 Topics in Differential equations

  Math 426 Topology

  Math 495 Honors - 1

  Math 496 Honors - 2

- **Courses taught at MBI** (2004-07)

  Computer simulation for the MBI Summer Education Program

  Led a project group of the Summer Education Program from July to August, 2006.

- **Courses taught/TAed at UC Riverside** (2001-04)
  I worked as TA in UC Riverside while I was a graduate student. UC is quarter system, and each academic year has three quarters.

  Graduate Courses:

  Real Analysis (Math 205C)

  Differential Topology (Math 209C).

  Undergraduate Courses:

  Math009A, Math009B, Math009C - First-Year Calculus

  Math010A, Math010B - Calculus of Several Variables

  Math023 - Applied Matrix Algebra

  Math113 - Applied Linear Algebra

  Math133 - Geometry

  Math138A, Math138B - Introduction to Differential Geometry

  Math171 - Introduction to Modern Algebra

  Math149B, Math149C - Probability and Mathematical Statistics

  Math146A, Math146B, Math146C - Ordinary and Partial Differential Equations

Students and Postdoctoral researchers/visitors

- **Masters and Ph.D Students** at NMSU

  Tuan Anh Phan, Fall 2015 — Fall 2020, Ph.D student, supported one year with my NSF grants; graduated in December 2020; in 2021 February, taking Postdoctoral Fellow at Institute for Modeling Collaboration and Innovation (IMCI) at University of Idaho after several tenure-track position interviews.

  Ulrich Kemmo Tsafack, Fall 2016 — 2018, Master.

  Yumi Maharjan, Fall 2020 — 2022, Master student.

  Donovan Simpson, Fall 2022 —, Master student.

  Farhana Sarower, Spring 2018 — Spring 2023, Ph.D student, supported summers with my NIH grant; graduated in Spring 2023; taking Assistant Professor of Instruction in the Department of Mathematics University of Texas at Austin among offers, visiting assistant professor in University of Texas at Tyler and instructor in Texas State University.

  Gia Minh Chau Hoang, Fall 2020 —, Ph.D student.

- **Summer research students supported by my NSF and NIH grants 2015-18** at NMSU: Tuan Phan, Ziwei Ma, Ulrich Tsafack, Eti Baffoe, Farhana Sarower, Atiqur Chowdhury, Jiefei Liu, Kathrine Sweebe, Sean De La Torre, Yvonne Vega.

- **Visiting scholars** at NMSU

Jiantao Zhao, March 2018 - Feb 2019, Associate Professor of Mathematics from Heinongjiang University, China, (supported by my NIH grants).

Ben Niu, March 2017 - Feb 2018, Associate Professor of Mathematics from Harbin Institute of Technology, China, (supported by my NIH grants).

Yuxiao Guo, March 2017 - Feb 2018, Associate Professor of Mathematics from Harbin Institute of Technology, China.

Hanchun Yang, Feb 2017 - May 2017, Professor from the Department of Mathematics in Yunnan University, (supported by my NSF grants).

Wei Wang, January 2016 - January 2017, Associate Professor from Xi'an Shiyou University, China.

- **Undergraduate research students** at NMSU

  Tumor modeling: Sean De La Torre, Yolanda Vega, Rigo Salazar, Jesus Rivas, Jiefei Liu

  Microglia modeling: Kathrine Sweebe, I wrote a proposal for Kathrine to apply for the New Mexico Alliance for Minority Participation (New Mexico AMP) Undergraduate Research Scholars (URS), and she was awarded to the program for the fall 2016 semester.

- **Honors Students** at WM

  Fall 11 - Spring 12: Brian Waldman (math major)

  Fall 09 - Spring 10: Carolyn Ayers (biology major, with Randy Chambers)

  Fall 08 - Spring 09: Carolyn Troha (math major, with Dave Lutzer)

  Fall 08 - Spring 09: Daniel Hariprasad (math major, with Junping Shi)

- **Undergraduate research students** at WM

  4 summer research students:
  Kendall Stone (the summer of 2008), Thomas J Wallin (the summer of 2008), Se-Jun Lee (the summer of 2009), Dian Yang (the summer of 2010); with Dian, Kendall and Thomas published 2 papers

  6 joint summer research students:
  Ankit Patel (with Paul Heideman, the summer of 2008), Andrew Wilcox (with Oliver Kerscher, the summer of 2008), Jing Ao (with Paul Heideman, the summer of 2009), Walter Hickey (with Paul Heideman, the summer of 2009), Thomas FitzGibbon (with Matthew Wawarsik and Rex Kincaid, the summer of 2009), Alex Volpert (with Randy Chambers, the summer of 2010)

  3 class based research students:
  Will Jordan-Cooley (the fall of 2008), Albert Ng-Sui-Hing (the fall of 2011), Mengrui Ni (the fall of 2011)

  2 short-term summer visiting research students:
  Johnny Yohman and Jon Gallagher from Christopher Newport University.

4 current research students:
Jonathan Fischer, Patrick Blank, James Bieron, Joshua Clarington, each of them has a long-term project in mathematical biology, and they also currently registered my research preparation course, Math 410 - Topics in differential equations.

- **Postdoctoral researchers**

  Anne Fernando: Dr. Anne Fernando got her Ph.D. from Old Dominion University in November 2008. She got BS from University of Virginian, and MS from Georgia Tech. She was working with me from November 2008 to August 2009 as a postdoctoral researcher. In the summer of 2009, she also worked on modeling HIV treatments with my undergraduate research student Carolyn Ayers. Now she is a tenure-track assistant professor in Norfolk State University.

Other teaching related activities

(1) From 2008 to 2012, I have written 58 recommendation letters for my students in WM to apply for graduate schools, summer programs, and other fellowships. Those letters are available upon request.

(2) I wrote a proposal to apply for Mellon Teaching Fellows for two of my students for math 302 to Charles Center at WM and we got support from it in the spring of 2008. Each group leader had $500 award.

(3) Participated QEP/Mellon Project Assessment Seminars of WM, May 1-2, 2008.

(4) 2014 Fall, Wrote a recommendation letter for Ph.D candidate Zheng Wei to look for an academic job.

(5) 2016 February, wrote a recommendation letter for graduate student Brandy Kreider to look for an academic job.

(6) In 2016 spring, I wrote a proposal for Kathrine Sweebe to apply for the New Mexico Alliance for Minority Participation (New Mexico AMP) Undergraduate Research Scholars (URS), and she was awarded to the program for the fall 2016 semester. Kathrine conducted some research on the dynamics of microglia.

Professional service

Service for the Department of Mathematical Sciences and NMSU

(1) Graduate Study Committee, August 2014 - May 2016

(2) Ph.D Final Oral Dissertation Defense Committee for Zheng Wei, Spring of 2015

(3) Dean's Representative on Ph.D Final Oral Dissertation Defense Committee for Mohammad Mehdi Tabandeh Khorshid, Mechanical Engineering, Oct 28, 2016

(4) Dean's Representative on Masters Final Examination Committee for Elnaz Rezaianzadeh, Mechanical Engineering, Oct 28, 2016

(5) Ph.D Oral Comprehensive Examination Committee for Qianning Liu, Fall 2016

(6) Dean's Representative on Ph.D Oral Comprehensive Examination Committee for Mohammad Mehdi Tabandeh Khorshid, Mechanical Engineering, Spring 2016

(7) Ph.D Oral Comprehensive Examination Committee for Ziwei Ma, Spring 2016

(8) Ph.D Oral Comprehensive Examination Committee for Xiaonan Zhu, Spring 2016

(9) Ph.D Oral Comprehensive Examination Committee for Ihrahim Jawarneh, Spring 2016

(10) Masters Final Examination Committee for Ulrich Kemmo Tsafack, Spring 2016

(11) Host distinguished visitor Lou Gross from NIMBioS and University of Tennessee, Aug 30 - Sep 3, 2016

(12) Host distinguished visitor Philip Maini from University of Oxford, Feb 6 - 11, 2017

(13) Computer and Publics Committee, August 2016 - Spring 2018

(14) Serve as a Faculty Fellow for the undergraduate residents in Garcia Hall, Fall 2017 — Spring 2018

(15) Leading Recruit undergraduate students team for NMSU from Shaanxi (Shenmu, Xianyang, Xian), China, Summer 2018, a detailed report submitted to the dean of Arts and Sciences.

(16) Represent NMSU with associate provost Rod McSherry to visit Xianyang Normal University, Xian Polytechnic University, Shaanxi University of Chinese Medicine, Beijing University of Civil Engineering and Architecture, China Agriculture University in order to sign MOU, summer 2018, a detailed report submitted to the dean of Arts and Sciences.

(17) K-12 Liaison & High School Math Contest Committee, Fall 2018 - Spring 2019

(18) Organizing Undergraduate Mathematical Biology Seminar, Fall 2016 — Fall 2017

(19) Dean's Representative on Ph.D Final Defense Examination Committee for Thanh Nguyen, Computer Science, June 1, 2021

(19) Committee on Computer and Publicity of the Department, Fall 2020 — Spring 2021

(20) Departmental Representative of University Library, Fall 2020 — Spring 2021

(21) Department Tenure and Promotion Committee, Fall 2020 — Spring 2021

(22) Organizing Mathematical Biology Seminar (for graduate students and faculty), Fall 2016 — Present

(23) Organizing the departmental colloquium, Fall 2019 — Spring 2021

(24) Organizing the departmental colloquium, Fall 2022 — Present

(25) Graduate study committee, Spring 2023 — Present

(26) Host a reception for a logic job candidate (I was not on search committee), Spring 2020.

Service for the Department of Mathematics and WM

(1) Undergraduate Study Committee, August 2007- June 2008

(2) Honors Committee, August 2008 - June 2010

(3) Library Committee, August 2008 - June 2010

(4) PME mathematics club, August 2010 - June 2013

(5) Mathematics contests, August 2012 - June 2014

(6) Master Oral Exam Committee of Zheng Tong (Math) in fall 2008

(7) Master Thesis Defense Committee of Zheng Tong (Math) in spring 2009

(8) Honors thesis Committee of Tanner Crowder (Math) in spring 2008

(9) Honors thesis Committee of Yuanyuan Liu (Math) in spring 2010

(10) Honors thesis Committee of Nick Woods (Math) in spring 2012

(11) I served as math major advisor for 11 students from 2008 to 2012

(12) Hosted Special seminar at Mathematics Department for Yuexian Li from the University of British Columbia, Mar 26-28, 2008

(13) Hosted Jin Wang from the Old Dominion University in Mathematics Department regular seminar, Sept 26, 2008

(14) Hosted Jie Zhang from National Center for Biotechnology Information of NIH in Mathematics Department regular seminar, Nov 7, 2008

(15) Hosted Cissy Paterson Lecture and CSUMS Workshop main speaker, Philip Maini from University of Oxford, April, 2011

(16) Honors and Interdisciplinary Study Committee at the college, August 2008 - June 2010

(17) Honors thesis committee of Douglas Challener at Chemistry Department, spring, 2010

(18) Co-advised the Honor thesis of Carolyn Ayers in Biology Department with Randy Chambers, fall 2010

(19) Honors thesis committee of Amy Green at Chemistry Department, spring, 2012

(20) Honors thesis committee of Zach Nealy at Chemistry Department, spring, 2012

(21) Honors thesis committee of Katie Swanson at Biology Department, spring, 2012

(22) With Dan Cristol, initiated Biomath Lunch meeting for faculty in Mathematics, Biology, Applied Science and other departments in WM at fall 2007. It is currently still ongoing in different formats.

(23) With Dan Cristol, hosted Bio/Math special seminar at Biology Department for Ting Xie from Stowers Institute for Medical Research, April 16-19, 2008

(24) With Dan Cristol, hosted Bio/Math special seminar at Biology Department for Bai-Lian Larry Li from University of California, Riverside, October, 2007

(25) Freshman/sophomore - advising, I have advised 36 freshmen from 2008 to 2013. Specifically, I advised 6 freshmen in the fall of 2009 and spring of 2010; 4 freshmen in the fall of 2010 and spring 2011; 14 freshmen in the fall of 2011 and spring 2012; 12 freshmen in the fall of 2012 and spring 2013.

(26) Represented WM to attend Howard Hughes Medical Institute "Quantitative biology curriculum planning workshop"in July 2007 at East Tennessee State University, Jonson City, and 2008 at Chevy Chase MD

Other professional service for mathematics community

(1) Howard Hughes Medical Institute Subcommittee for Upper Division Courses and Majors in Quantitative Biology, July 2007 - July 2008.

(2) Program Committee for Statistical Data Mining and Machine Learning in Cancer Epidemiology and Cancer Bioinformatics of The Seventh International Conference on Machine Learning and Applications (ICMLA08), California.

(3) I agreed to stand for election of Life Sciences officer of Society of Industrial and Applied mathematics, and submitted my election statement, fall 2008.

(4) Outside Expert for Department of Mathematics in Southern University of Science and Technology, Shenzhen, China, 2019.

Professional Membership

American Mathematical Society

Society for Mathematical Biology

Society for Industrial and Applied Mathematics

Referees available upon request.