Bin Xu

CONTACT INFORMATION	Department of Applied and Computational Mathematics and Statistics University of Notre Dame B17 Hayes-Healy Center Notre Dame, IN 46556 Email: bxu2@nd.edu `http://sites.nd.edu/binxu`

RESEARCH INTERESTS

Mathematical Biology, Applied Mathematics

- Pattern Formation, Biochemical Oscillators
- Applied Partial Differential Equations
- Stochastic Modeling and Analysis

EMPLOYMENT

Department of Applied and Computational Mathematics and Statistics, Notre Dame

    Postdoctoral Research Associate, July 2017– present

EDUCATION

University of Utah, Salt Lake City

    Ph.D., Mathematics, 2012–2017
- Advisor: Paul Bressloff
- Dissertation Title: Mathematical models of cell polarization

University of Science and Technology of China

    M.S., Mathematics, 2009–2012
- Advisor: Xing Liang
- Dissertation Title: Spreading speeds of N-season spatially periodic integro-difference models

    B.S., Mathematics, 2005–2009

PUBLICATIONS

9. F Paquin-Lefebvre, B Xu, K DiPietro, A Lindsay, and A Jilkine. Pattern formation in a coupled membrane-bulk reaction-diffusion model for intracellular polarization and oscillations. *Journal of Theoretical Biology* 497, 110242, 2020.

8. MJ Panaggio, MV Ciocanel, L Lazarus, CM Topaz, B Xu. Model reconstruction from temporal data for coupled oscillator networks. *Chaos* 29, 103116, 2019.

7. B Xu, HW Kang, and A Jilkine. Comparison of deterministic and stochastic regime in a model for Cdc42 oscillations in fission yeast. *Bulletin of Mathematical Biology*, 81(5), 1268–1302, 2019.

6. B Xu and A Jilkine. Modeling the dynamics of Cdc42 oscillation in fission yeast. *Biophysical Journal*, 114(3), 711–722, 2018. **Winner of the 2018 Biophysical Journal Paper of the Year Award.**

5. B Xu and PC Bressloff. A theory of synchrony for active compartments with delays coupled through bulk diffusion. *Physica D* 341, 45–59, 2017.

4. B Xu and PC Bressloff. A PDE-DDE model for cell polarization in fission yeast. *SIAM Journal on Applied Mathematics*, 76(5), 1844-1870, 2016.

3. B Xu and PC Bressloff. Model of growth cone membrane polarization via microtubule length regulation. *Biophysical Journal*, 109(10), 2203-2214, 2015.

2. PC Bressloff and B Xu. Stochastic active-transport model of cell polarization. *SIAM Journal on Applied Mathematics*, 75(2), 652-678, 2015.

1. WW Ding, X Liang, and B Xu. Spreading speeds of N-season spatially periodic integro-difference models. *Discrete and Continuous Dynamical Systems*, 33(8), 3443-3472, 2013.

AWARDS	Biophysical Journal Paper of the Year Award	2018
	Graduate Student Travel Assistance Award, University of Utah	2016

WORKSHOP AND CONFERENCE PARTICIPATION	Collaborative Workshop for Women in Mathematical Biology IPAM, CA	June 2019
	SIAM Conference on Applications of Dynamical Systems Snowbird, UT	May 2019
	Conference on Multiscale Modeling in Biology Minneapolis, MN	May 2019
	NIMBioS Tutorial Network Modeling Knoxville, TN	February 2019
	Dynamics Days US 2019 Evanston, IL	January 2019
	Collective Behavior and Emergent Phenomena in Biology at MBI Columbus, OH	September 2018
	Agent-based Modeling in Biological and Social Systems West Greenwich, RI	June 2018
	Joint Mathematical Meetings San Diego, CA	January 2018
	Control of Cellular and Molecular Systems at MBI Columbus, OH	October 2017
	CompuCell3D and SBW Training Workshop Bloomington, IN	July 2017
	Joint Mathematical Meetings Atlanta, GA	January 2017
	Modeling and Analysis of PDE Models of Biological Processes Beijing, China	October 2011
	Nonlinear Reaction-Diffusion Equations Summer School Shanxi, China	July 2011

INVITED TALKS	Clarkson University Mathematics Colloquium Potsdam, NY	January 2020
	Biophysical Society Annual Meeting Baltimore, MD	March 2019
	Riverside Mathematics Workshop for Excellence and Diversity Riverside, CA	October 2018
	Mathematics of the Cell: Mechanical and Chemical Signaling across Scales Banff, Canada	August 2018
	International Symposium on Biomathematics and Ecology Education and Research Normal, IL	October 2017

Posters		
	Southeast Center for Mathematics and Biology Annual Symposium Atlanta, GA	January 2019
	Annual Conference on Quantitative Approaches in Biology Evanston, IL	November 2018
	Symposium on Multiscale Cell Fate Irvine, CA	October 2018
	Colleges of Science & Engineering Joint Annual Meeting Notre Dame, IN	December 2017
	SIAM Conference on Life Sciences Boston, MA	July 2016
	SIAM Conference on Applications of Dynamical Systems Snowbird, UT	May 2015

Certificate Striving for Excellence in Teaching Certificate, Kaneb Center, Notre Dame

Teaching

Instructor, University of Notre Dame

- **Applied Linear Algebra** Spring 2020
  Undergraduate course on systems of linear equations

- **Mathematical and Computational Modeling** Fall 2019
  Undergraduate course on difference and differential equation models Fall 2018

- **Numerical Analysis** Spring 2019
  Undergraduate course on numerical methods for nonlinear equations, Spring 2018
  systems of linear equations, and ordinary differential equations Fall 2017

Instructor, University of Utah

- **Calculus I** Fall 2016
  Undergraduate course on calculus for engineering majors

- **Business Calculus** Summer 2016
  Undergraduate course on calculus for business majors Spring 2016

- **Business Algebra**
  Mathematical course including functions and equations for business majors Fall 2015

Teaching Assistant, University of Utah

- **Differential Equations and Linear Algebra** Spring 2015
  Mathematical course on differential equations and linear algebra Spring 2014
  for engineering majors

- **Engineering Calculus II** Fall 2014
  Mathematical course for engineering majors

Grader, University of Utah

- **Calculus for Biologists** Spring 2013

Teaching Assistant, University of Science and Technology of China

- **Linear Algebra** 2011 academic year
  Standard undergraduate course for mathematics majors

- **Ordinary Differential Equations** Fall 2010
  Standard undergraduate course for mathematics majors

- **Theory of Complex Analysis** Fall 2009
  Undergraduate course for engineering majors

SKILLS	MATLAB, Maple, XPPAUT, DDE-BIFTOOL, LaTeX, MS Office, Adobe Illustrator

SERVICE

Minisymposium Co-organizer

- SIAM Conference on Life Sciences, Minneapolis   August 2018
  MS: Models of Spatiotemporal Phenomena in Cell Biology
  Co-organizer: Alexandra Jilkine

- SIAM Conference on Applications of Dynamical Systems, Snowbird   May 2017
  MS: Modeling of intracellular transport and cell organization
  Co-organizer: Veronica Ciocanel

Reviewer for Journal of Theoretical Biology
Reviewer for SIAM Journal on Applied Mathematics

PROFESSIONAL
MEMBERSHIP

Society for Industrial and Applied Mathematics (SIAM)
American Mathematical Society (AMS)
Biophysical Society