

Gaoyang (Bridget) Fan

CONTACT INFORMATION	University of Houston Department of Mathematics 3551 Cullen Blvd., PGH 618 Houston, TX 77204	gfan@central.uh.edu https://www.math.uh.edu/~gfan
RESEARCH INTERESTS	Applied Dynamical Systems; Mathematical Biology; Stochastic Processes; Bacterial Quorum Sensing; Biofilms; Gene Regulation; Synthetic Biology.	
EDUCATION	University of Utah Ph.D. in Mathematics, May 2020 Advisor: Paul C. Bressloff Montana State University M.S. in Mathematics, May 2015 Advisor: Tomáš Gedeon B.S. in Mathematics, Minor in Finance, May 2014	
PUBLICATIONS	B Freitas Magalhães*, G Fan *, E Sontag, K Josić and MR Bennett, <i>Bistability and Pattern Formation in a Synthetic Quorum-sensing Toggle Switch</i> , (In Preparation). 5. G Fan , G Russo and PC Bressloff, <i>Node-to-node and node-to-medium synchronization in quorum sensing networks affected by state-dependent noise</i> , SIAM J. Appl. Dyn. Syst. 18.4 (2019):1934-1953. 4. G Fan and PC Bressloff, <i>Modeling the role of feedback in the adaptive response of bacterial quorum sensing</i> , Bull Math Biol 81.5 (2019): 1479-1505. 3. G Fan and PC Bressloff, <i>Population Model of Quorum Sensing with Multiple Parallel Pathways</i> , Bull. Math. Biol. 79.11 (2017): 2599-2626. 2. C Xia, C Cochrane, J DeGuire, G Fan , E Holmes, M McGuirl, P Murphy, J Palmer, P Carter, L Slivinski, and B Sandstede, <i>Lagrangian Data Assimilation in Traffic-flow Models</i> , Physica D 346 (2017) 59-72. 1. G Fan , B Cummins and T Gedeon, <i>Convergence Properties of Post-translationally Modified Protein-Protein Switching Networks with Fast Decay Rates</i> , Bull. Math. Biol. 78.6 (2016): 1077-1120.	
HONORS AND AWARDS	University Graduate Research Fellowship	2019 – 2020
	Graduate Student Travel Assistance Award	Fall 2019
	RTG Lab Rotation, The Biodynamics Lab at UCSD	Summer 2019
	RTG Lab Rotation, IBM Research Lab in Ireland	Summer 2018
	NSF Research Training Grant (RTG) Fellowship	2017 – 2018
	RTG Lab Rotation, The Wai-Leung Ng Lab at Tufts University	Summer 2017
	Outstanding Graduating Seniors with Distinction	Fall 2014

	Montana INBRE Undergraduate Student Research Program Award	Summer 2013
	Montana State University President's Honor Roll (GPA: 4.0)	2012 – 2014
RESEARCH EXPERIENCE	Postdoctoral Research , University of Houston & Rice University Interdisciplinary Study on Cell-cell Communication in Spatially Heterogeneous Environment	2020 – Present
	Doctoral Research , University of Utah Quantitative Investigation of Quorum Sensing in Bacterial and Communication Networks	2015 – 2020
	Graduate Research Assistant , Montana State University Modeling Dynamic Signatures Generated by Regulatory Networks (DSGRN)	2014 – 2015
	REU , Brown University Transportation Traffic Flow Prediction Using Particle Filter	Summer 2014
	Undergraduate Research Assistant , Montana State University Boolean Network Model for Transcriptional Cell-cycle Oscillator in Yeast	2013 – 2014
TALKS AND POSTERS	<i>Synchronization in quorum-sensing networks with state dependent noise</i> Workshop on Higher-order Interaction Networks (Poster) Oxford, UK	Sep. 2019
	<i>Modeling the Role of Feedback in the Adaptive Response of Bacterial Quorum Sensing</i> SIAM Dynamical Systems Minisymposium Snowbird, UT	May 2019
	<i>How Do Bacteria Talk?</i> University of Utah Undergraduate Colloquium Salt Lake City, UT	Sep. 2018
	<i>A Mathematical Model of Parallel Quorum Sensing</i> SIAM Conference on Applications of Dynamical Systems (Poster) Snowbird, UT	May 2017
	<i>Boolean Network Model for Transcriptional Cell-cycle Oscillator in Yeast</i> Montana State University Student Research Celebration (Poster) Bozeman, MT	Apr. 2014
	<i>Boolean Network Model for Transcriptional Cell-cycle Oscillator in Yeast</i> Third Biennial Western Regional IDeA Scientific Conference (Poster) Honolulu, HI	Oct. 2013
TEACHING	Instructor of Record, Discrete Mathematics	Fall 2020
	Co-Organizer, MathBio Journal Club	2019 – 2020
	Instructor of Record, Calculus I	Spring 2019
	Instructor of Record, Intro to Differential Equations	Fall 2018
	Lab Instructor, Calculus/Stats for Biologists	2017 – 2018

	Instructor of Record, Precalculus	Fall 2016
	Lab Instructor, Calculus for Engineers I & II	2015 – 2016
	Instructor of Record, College Algebra	Fall 2014
SERVICE	Mentor for Directed Reading Program (DRP) Salt Lake City, UT	Spring 2019
	Mentor for AWM Mentoring Network Salt Lake City, UT	Spring 2019
	Mentor for Graduate Student Mentorship Program Salt Lake City, UT	2018 – 2019
	Tutor for Math to Excite (Middle School Girls Camp) Bozeman, MT	Fall 2012
GRADUATE COURSEWORK	<input type="checkbox"/> Mathematical Analysis <input type="checkbox"/> Abstract Algebra <input type="checkbox"/> Complex Variables <input type="checkbox"/> Ordinary Differential Equations <input type="checkbox"/> Partial Differential Equations <input type="checkbox"/> General Topology <input type="checkbox"/> Geometry & Algebraic Topology <input type="checkbox"/> Measure Theory	<input type="checkbox"/> Dynamical Systems <input type="checkbox"/> Analysis of Numerical Methods <input type="checkbox"/> Functional Analysis <input type="checkbox"/> Asymptotic and Perturbation Methods <input type="checkbox"/> Stochastic Processes in Cell Biology <input type="checkbox"/> Physiology <input type="checkbox"/> Bifurcation Theory <input type="checkbox"/> Mathematical Finance
PROFESSIONAL MEMBERSHIPS	Association for Women in Mathematics (AWM) Society for Industrial and Applied Mathematics (SIAM)	
SKILLS	MATLAB, Python, R, Maple, Mathematica, HTML, C++	
LANGUAGES	Mandarin Chinese: Native English: Fluent	