

Christopher E. Miles

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CURRENT POSITION **Courant Instructor** (Assistant Professor)
Courant Institute of Mathematical Sciences, New York University 2018 – present

EDUCATION **University of Utah**, Salt Lake City, UT
Doctor of Philosophy (Ph.D.) in Mathematics 2018
Thesis: “Stochasticity in models of motor-mediated intracellular transport”
Advisor: James P. Keener

Lafayette College, Easton, PA
Bachelor of Science (B.S.) in Electrical & Computer Engineering 2013
Bachelor of Science (B.S.) in Mathematics
summa cum laude

PUBLICATIONS IN PROGRESS

1. S.D. Lawley, **C.E. Miles**, “Diffusive search for diffusing targets with fluctuating diffusivity and reactivity,” *submitted*.
2. S.D. Lawley, **C.E. Miles**, “How receptor surface diffusion and cell rotation enhance association rates,” *submitted*.

PUBLISHED

1. O. Osunbayo, **C.E. Miles**, B.J. Reddy, J.P. Keener, M.D. Vershinin, “Complex nearly immobile behavior of microtubule-associated cargos,” *Soft Matter*, 2019.
2. **C.E. Miles**, S.D. Lawley, J.P. Keener, “Analysis of non-processive molecular motor transport using renewal reward theory,” *SIAM Journal on Applied Mathematics*, **78**-5, 2511–2532, 2018.
3. **C.E. Miles**, J.P. Keener, “Jump locations of jump-diffusion processes with state dependent rates,” *Journal of Physics A: Mathematical & Theoretical*, **50**, 2017.
4. **C.E. Miles**, J.P. Keener, “Bidirectionality from cargo thermal fluctuations in motor-mediated transport,” *Journal of Theoretical Biology*, **424**:37-48, 2017.
5. **C.E. Miles**, I. Jouny, G. Gordon, “Exploring the connection between matroids and network coding theory,” *47th Annual Conference on Information Sciences and Systems (CISS)*, 1(6):20-22, 2013.

PRESENTATIONS TALKS

- Diffusing search for a diffusing target* Feb. 2019
Probability & Stochastics Seminar, Tulane University, New Orleans, LA
- Reaction speedup from receptor diffusion* Jan. 2019
AMS/MAA Joint Math Meetings (JMM), Baltimore, MD
- Nonprocessive motors: diffusivity & cooperativity* Nov. 2018
CIMS Biomath/Computational Bio Seminar, New York, NY
- A hop, skip, and jump-diffusion through some models of intracellular transport* Sept. 2017
Probability & Stochastics Seminar, Tulane University, New Orleans, LA
- Disentangling active from passive diffusion in observations of motor-mediated cargo* July 2017
Society of Mathematical Biology (SMB) Annual Conference, Salt Lake City, UT
- The Use of Matroids in Network Design* April 2013
IEEE Region 2 Student Activities Conference, Morgantown, WV
runner-up for best undergraduate paper
- Sensitivity Analysis of Polynomial Dynamical Systems* April 2013
National Conference on Undergraduate Research (NCUR), La Crosse, WI

	<i>Sensitivity Analysis Using Polynomial Dynamical Systems</i> 8th Annual UNCG Regional Mathematics & Statistics Conference, Greensboro, NC runner-up for best undergraduate paper	Nov. 2012
	POSTERS	
	<i>How receptor diffusion speeds up reactions</i> Gordon Research Conference on Stochastic Physics in Biology, Ventura, CA	May 2017
	<i>Jump Locations of State-Dependent Jump-Diffusion</i> SIAM Conference on Applications of Dynamical Systems, Snowbird, UT	May 2017
	<i>Bidirectional Motor Transport and Cargo Diffusion</i> SIAM Conference on the Life Sciences, Boston, MA graduate student poster award	July 2016
	<i>Sensitivity Analysis in Discrete Biological Models</i> NIMBioS Undergraduate Research Conference, Knoxville, TN	Nov. 2013
	<i>A Novel Method for Sensitivity Analysis of Polynomial Dynamical Systems</i> MAA/AMS Joint Mathematics Meetings, San Diego, CA	Jan. 2013
HONORS & FUNDING	Early Career Travel Award SIAM Conference on Applied Dynamical Systems	2018
	Science Communication Fellow Natural History Museum of Utah	2018-2019
	NSF Research Training Group Grant (RTG) in mathematical biology Provided to stimulate interdisciplinary research in the field of mathematical biology (Utah)	2013, 2016
	Wesley S. Mitman Prize in Mathematics Awarded to the graduate most outstanding in mathematics (Lafayette)	2013
	Finley W. & Ethelwyne H. Smith Electronic Engineering Prize Awarded to the electrical engineering graduate with the highest cumulative grade point average (Lafayette)	2013
	Benjamin F. Barge Oratorical Prize Awarded for writing and pronouncing during their thesis defense in the best manner (Lafayette)	2013
TEACHING	Full Instructor Department of Mathematics, New York University Math-UA 211: Math for Economics I Math-UA 123: Calculus III	Spring 2019 Fall 2018
	Department of Mathematics, University of Utah Math 3150: Partial Differential Equations Math 3140: Vector Calculus & Partial Differential Equations Math 1321: Accelerated Engineering Calculus II Math 2250: Differential Equations & Linear Algebra Math 1320: Engineering Calculus II Math 1310: Engineering Calculus I	Summer 2018 Summer 2016 Spring 2016 Fall 2015 Spring 2015 Fall 2014
	Lab Instructor Department of Mathematics, University of Utah Math 1180: Probability & Statistics for Biologists (R programming) Math 1170: Calculus for Biologists (R programming)	Spring 2017 Fall 2016
OUTREACH & EXPOSITION	<i>Markov Chains</i> Featured guest on United Methodist Podcast	Aug. 2018
	<i>Scientist in the Spotlight</i> General audience research talk at Natural History Museum of Utah	July 2018
	<i>Zombie outbreaks: How math can save us</i> Interactive workshop for local incarcerated youth	Sept. 2017
	<i>Hedging our bets using math: the Monty Hall problem</i> Interactive workshop for local high school students during <i>Science Day at the U</i>	August 2016

	<i>Biology's dear friend: randomness</i> General audience research talk during <i>Pi day</i> event, Leonardo Musuem of Utah	May 2016
	<i>Motor math</i> General audience research talk during <i>Nerd night</i> event, College of Science, University of Utah	May 2016
	<i>Dynamical systems: chaos, fractals, and predicting the future</i> Interactive workshop for local high school students during <i>Science Day at the U</i>	August 2015
WORKSHOPS	<i>Cell Modeling Hackathon</i>	Jan. 2019
ATTENDED	Quantitative Cell Biology Network (QCBNet) Workshop	
	<i>Agent-Based Modeling</i>	July 2018
	AMS Mathematical Research Community (MRC)	
SERVICE	Co-organizer , <i>Special Session on Agent-Based Modeling</i> , AMS/MAA JMM	Jan. 2018
	Poster judge , <i>MAA Undergraduate Poster Session</i> , AMS/MAA JMM	Jan. 2018
	Asst. organizer (webmaster) , <i>SMB Annual Conference</i> , Salt Lake City, Utah	July 2017
	Co-chair , Graduate student advisory committee, Dept. of Math., Univ. of Utah	2016-2017
	Member , Retention, promotion & tenure committee, Dept. of Math., Univ. of Utah	2015-2016
	Science fair judge , The McGillis School, grades 6-8	2015