

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
Thesis: “Network coding theory & matroid representability”
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*.
3. O. Osunbayo, **C.E. Miles**, B.J. Reddy, J.P. Keener, M.D. Vershinin, “Complex nearly immotile behavior of microtubule-associated cargos,” *in review*.

PUBLISHED

1. **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.
2. **C.E. Miles**, J.P. Keener, “Jump locations of jump-diffusion processes with state dependent rates,” *Journal of Physics A: Mathematical & Theoretical*, **50**, 2017.
3. **C.E. Miles**, J.P. Keener, “Bidirectionality from cargo thermal fluctuations in motor-mediated transport,” *Journal of Theoretical Biology*, **424**:37-48, 2017.
4. **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

- 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
- Sensitivity Analysis Using Polynomial Dynamical Systems* Nov. 2012
8th Annual UNCG Regional Mathematics & Statistics Conference, Greensboro, NC
runner-up for best undergraduate paper

POSTERS

- Jump Locations of State-Dependent Jump-Diffusion* May 2017
SIAM Conference on Applications of Dynamical Systems, Snowbird, UT

	<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	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
OUTREACH & EXPOSITION	<i>Markov Chains</i> United Methodist Podcast	Aug. 2018
	<i>Scientist in the Spotlight</i> Natural History Museum of Utah	July 2018
	<i>Polynomial Dynamical Systems: Math Bio Meets Algebraic Geometry</i> Graduate Student Colloquium, University of Utah	March 2016
	<i>How the Zebra Got Its Stripes: Mathematical Pattern Formation</i> Undergraduate Mathematics Colloquium, University of Utah	Oct. 2015
	<i>Some Integrals Are Impossible: A Foray into Differential Galois Theory</i> Graduate Student Colloquium, University of Utah	Oct. 2014
TEACHING	Full Instructor Department of Mathematics, New York University Math-UA 123: Calculus III	Fall 2018
	Department of Mathematics, University of Utah Math 3150: Partial Differential Equations	Summer 2018
	Math 3140: Vector Calculus & Partial Differential Equations	Summer 2016
	Math 1321: Accelerated Engineering Calculus II	Spring 2016
	Math 2250: Differential Equations & Linear Algebra	Fall 2015
	Math 1320: Engineering Calculus II	Spring 2015
	Math 1310: Engineering Calculus I	Fall 2014
	Lab Instructor Department of Mathematics, University of Utah Math 1180: Probability & Statistics for Biologists (R programming)	Spring 2017
	Math 1170: Calculus for Biologists (R programming)	Fall 2016
WORKSHOPS ATTENDED	<i>Agent-Based Modeling</i> AMS Mathematical Research Community (MRC)	July 2018

SERVICE	Co-organizer , <i>Special Session on Agent-Based Modeling</i> , AMS/MAA JMM	Jan. 2018
	Workshop presenter , <i>STEM for incarcerated youth program</i> , Univ. of Utah	Sept. 2017
	Asst. organizer (webmaster) , <i>SMB Annual Conference</i> , Salt Lake City, Utah	July 2017
	Presenter , <i>Pi Day</i> , Leonardo Museum, Salt Lake City, Utah	May 2016
	Presenter , <i>Nerd Night</i> , College of Science, Univ. of Utah	April 2016
	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
	Workshop presenter , Science Day at the U, grades 10-12	2015, 2016