

Pamela B. Pyzza

pyzza1@kenyon.edu

<https://works.bepress.com/pamela-pyzza/>

Affiliation

Kenyon College
Department of Mathematics and Statistics
Hayes Hall 309B
103 College Road
Gambier, OH 43022

Education

Ph.D. Rensselaer Polytechnic Institute, Mathematics (August 2015)

thesis: *Idealized Models of Insect Olfaction*

co-advisors: Gregor Kovačič and David Cai

M.S. Rensselaer Polytechnic Institute, Applied Mathematics (May 2010)

B.S. Rensselaer Polytechnic Institute, Mathematics, Psychology (minor) (May 2009)

Research Interests

My interests include dynamics of complex networks with applications in biological and social sciences. Specifically, I focus on research questions in neuroscience, epidemiology, and related biological areas.

Appointments

July 2020 – Present, Assistant Professor

Department of Mathematics and Statistics, Kenyon College

August 2015 – July 2020, Assistant Professor

Department of Mathematics and Computer Science, Ohio Wesleyan University

David O. Robbins Neuroscience Program Faculty Member

Publications

- **PBP**, K.A. Newhall, D. Zhou, G. Kovačič, D. Cai. “Network Mechanism for Insect Olfaction.” 2019. *Preprint. arXiv:1908.11865*

- J. Crodelle, K.A. Newhall, **PBP**, G. Kovačič. “Coarse-grained Descriptions of Oscillations in Neuronal Network Models.” Accepted for publication in *Communications in Mathematical Sciences* (2019).
- J. Best, S. Bañuelos, G. Huguet, A. Prieto Langarica, **PBP**, S. Wilson. “Modeling the Long Term Effects of Thermoregulation on Human Sleep” Submitted to *The Journal of Theoretical Biology*. *In Review*.
- J. Alstott, C. Klymko, **PBP**, M. Radcliffe. “Local Rewiring Algorithms to Increase Clustering and Grow a Small World.” *Journal of Complex Networks*, vol. 7, Issue 4, August 2019, pp. 564–584, <https://doi.org/10.1093/comnet/cny032>.
- J. Best, S. Bañuelos, G. Huguet, A. Prieto Langarica, **PBP**, M. H. Schmidt, S. Wilson. “Effects of Thermoregulation on Human Sleep Patterns: A Mathematical Model of Sleep–Wake Cycles with REM–NREM Subcircuit” in *Applications of Dynamical Systems in Biology and Medicine*, vol. 158, T. Jackson, A. Radunskaya, Eds. New York: Springer, 2015, pp. 123–147.

Teaching Experience

Kenyon College 2020 - present

Department of Mathematics and Statistics

Calculus I

Principles of Applied Mathematics

Ohio Wesleyan University 2015 - 2020

Department of Mathematics and Computer Science

Neuroscience Program

Calculus I (in-person and online)

Calculus II

Multivariable Calculus

Differential Equations

Dynamical Systems in Neuroscience

Mathematical Modeling

Introduction to Computer Science & Programming

Computational Neuroscience

Topological Data Analysis & Neuroscience

Basic Probability and Statistics

Course Instructor:

Calculus I at Skidmore College; Spring 2015

Calculus I at Skidmore College; Fall 2014

Calculus I at Rensselaer Polytechnic Institute; Summer 2012

Linear Algebra at SUNY Empire State College CDL; Spring 2012

Teaching Assistant & Research Mentor: Computational Science Training for Undergraduates in the Mathematical Sciences Program (CSUMS); Summer 2011
Undergraduate Mentor for CSUMS; Fall 2009

Course Grader: Fundamentals of Applied Mathematics (FOAM); Fall 2009

Curriculum Developer: Linear Algebra at SUNY Empire State College CDL; Fall 2011
RPI Precalculus Program; Summer 2008

Research Students Mentorship

Sum. 2019 Michelle De Oliveira (Wheaton College '21), Natalie Huebschman (OWU '21), Reid Matheison (Asbury University '21)
The Anti-Vaccination Movement's Effects on World Health
Presented work at the 2019 Ohio College Summer Research Symposium & 2019 Patricia Belt Conrades Summer Science Research Symposium

S 2019 Joseph Emerson (OWU '19)
Member of Honors Committee
Effects of network structure and interventions in full-hemisphere epilepsy model
Completing Ph.D. in Computational Neuroscience at the University of Minnesota

Sum. 2017 Tania Luo (University of Nevada, Reno '18), Lizheyin Wu (OWU '19)
Modeling the Spread of HPV Through a Network
Presented work at the 2017 Ohio College Summer Research Symposium & 2018 Ohio Wesleyan Student Symposium

Sum. 2017 Sneha Shinde (Dublin Jerome High School '19)
Independent study and programming experience in computational neuroscience

Sum. & F 2016 Xuzhou He (OWU '17)
Dynamics of Integrate-and-Fire Model, of Hippocampal Circuit
Presented work at the 2016 Ohio College Summer Research Symposium & 2016 Patricia Belt Conrades Summer Science Research Symposium

Academic Presentations

Talks

- Society for Mathematical Biology Annual Meeting (July 2019) Montreal, Canada; Idealized Models of Insect Olfaction
- 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2018) Athens, GA;

- *Invited Talk:* Mathematics Colloquium (April 2019) Morehouse College; Atlanta, GA; Modeling Insect Olfaction: How Bugs Smell
- *Invited Talk:* Mathematics Colloquium (February 2018) Oberlin College; Oberlin, OH; Modeling Insect Olfaction: How Bugs Smell
- *Invited Talk:* Mathematics Biosciences Institute Visitor Seminar (February 2018) The Ohio State University; Columbus, OH; Idealized Models of Insect Olfaction
- *Invited Talk:* Mathematics Colloquium (February 2018) University of Dayton; Dayton, OH; Idealized Models of Insect Olfaction: How Bugs Smell
- SIAM Conference on Applications of Dynamical Systems (May 2017) Snowbird, UT; Individual and Population Models of Insect Olfaction
- 10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2017) Athens, GA; Modeling the Effects of Temperature on Sleep Patterns
- *Invited Talk:* Women in STEM Seminar (March 2017) Ohio Wesleyan University, Delaware, OH; Modeling the Effects of Temperature on Sleep Patterns
- *Contributed Talk:* Joint Mathematics Meetings (January 2017) Atlanta, GA; Idealized Models of Insect Olfaction
- *Invited Talk:* Mathematics Seminar (November 2016) Kenyon College; Gambier, OH; Modeling the Effects of Temperature on Sleep Patterns
- *Invited Talk:* Women in Mathematics Lecture Series (November 2016) University of Akron; Akron, OH; Modeling Insect Olfaction: How Bugs Smell
- *Invited Talk:* Neuroscience Seminar (November 2016) Kenyon College; Gambier, OH; Modeling Insect Olfaction: How Bugs Smell
- SIAM Conference on Applied Mathematics Education (September 2016) Philadelphia, PA; Variations in Mentorship at Dissimilar Institutions
- *Invited Talk:* SIAM Conference on the Life Sciences (July 2016) Boston, MA; Effects of Thermoregulation on Human Sleep Patterns
- SIAM Annual Meeting (July 2016) Boston, MA; Firing-Rate Model of Locust Antennal Lobe
- *Invited Talk:* The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications (July 2016) Orlando, FL; Idealized Models of Insect Olfaction
- *Invited Talk:* Women in Science Seminar (April 2016) Ohio Wesleyan University, Delaware, OH; How Bugs Smell

- *Invited Talk:* Applied Math Seminar (November 2015) The Ohio State University; Columbus, OH; Idealized Models of Insect Olfaction
- *Invited Talk:* Mathematics/Computer Science Colloquium Series (October 2015) College of Wooster; Wooster, OH; Modeling Insect Olfaction: How Bugs Smell
- SIAM Conference on Applications of Dynamical Systems (May 2015) Snowbird, UT; Integrate-and-Fire Model of Insect Olfaction
- *Invited Talk:* Applied Math Days (April 2015) Rensselaer Polytechnic Institute; Troy, NY; Integrate-and-Fire Model of Insect Olfaction
- *Invited Talk:* 9th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2015) Athens, GA; Integrate-and-Fire Model of Insect Olfaction & Effects of Thermoregulation on Human Sleep Patterns
- *Invited Talk:* School of Arts & Sciences: Friday Forum Seminar Series (February 2015) Albany College of Pharmacy and Health Sciences; Albany, NY; Modeling Insect Olfaction: How Bugs Smell
- *Contributed Talk:* Joint Mathematics Meetings (January 2015) San Antonio, TX; Integrate-and-Fire Model of Insect Olfaction
- *Invited Talk:* Siena Mathematics Department Colloquium (November 2014) Siena College; Loudonville, NY; Neuronal Network Models of Sensory Processes
- SIAM Conference on the Life Sciences (August 2014) Charlotte, NC; Integrate-and-Fire Model of Insect Olfaction
- *Invited Talk:* SIAM Annual Meeting (July 2014) Chicago, IL; Integrate-and-Fire Model of Insect Olfaction
- *Invited Talk:* 4th New York Conference on Applied Mathematics (November 2013) Cornell University; Ithaca, NY; Integrate-and-Fire model of Insect Olfaction
- Applied Math Days (April 2011) Rensselaer Polytechnic Institute; Troy, NY; Vaccinating Against the HPV in a Dynamic Social Network
- *Invited Talk:* SIAM Conference on the Life Sciences (July 2010) Pittsburgh, PA; Vaccinating Against the HPV in a Dynamic Social Network
- SAMSI Working Group on Networks (November 2009) Research Triangle Park, NC; Vaccinating Against HPV in a Dynamic Social Network
- *Invited Talk:* SIAM Annual Meeting (July 2009) Denver, CO; Vaccinating Against HPV in a Dynamical Social Network
- *Contributed Talk:* Hudson River Undergraduate Math Conference (April 2009) Schenectady, NY; Vaccinating Against HPV in a Dynamic Network

Posters

- SIAM Workshop on Network Science (May 2019) Snowbird, UT; Idealized Models of Insect Olfaction
- Midwest Women in Mathematics Symposium (February 2017) IUPUI, Indianapolis, IN; Temperature Effects on Human Sleep Patterns: A Mathematical Model of Sleep Regulation
- Society for Neuroscience: Neuroscience 2015 (October 2015) Chicago, IL; Integrate-and-Fire and Firing-Rate Models for Insect Olfaction
- 9th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2015) Athens, GA; Effects of Thermoregulation on Human Sleep Patterns
- Joint Mathematics Meetings (January 2015) San Antonio, TX; Effects of Thermoregulation on Human Sleep Patterns: A Model of Sleep-Wake Cycles with REM-NREM Sub-Circuit
- SIAM Conference on the Life Sciences (August 2014) Charlotte, NC; Temperature Effects on REM/Non-REM Sleep Dynamics
- 8th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (March 2013) Athens, GA; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- 1st Annual Graduate Student Symposium (April 2013) Rensselaer Polytechnic Institute, Troy, NY; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- 3rd New York Conference on Applied Mathematics (October 2012) Rensselaer Polytechnic Institute; Troy, NY; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- SIAM Life Sciences (August 2012) San Diego, CA; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- SIAM Nonlinear Waves and Coherent Structures (June 2012) Seattle, WA; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- SIAM Uncertainty Quantification (April 2012) Raleigh, NC; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- Applied Math Days (April 2012) Rensselaer Polytechnic Institute; Troy, NY; Random and Regular Dynamics of Stochastically Driven Neuronal Networks
- 2nd New York Conference on Applied Mathematics (April 2011) University at Buffalo, Buffalo, NY; Vaccinating Against HPV in a Dynamic Social Network
- SAMSI Complex Networks Program Opening Workshop (August 2010) Research Triangle Park, NC; Vaccinating Against HPV in a Dynamical Network

- SIAM Nonlinear Waves and Coherent Structures (August 2010) Philadelphia, PA; Vaccinating Against HPV in Dynamical Social Network
- SIAM Annual Meeting (July 2010) Pittsburgh, PA; Vaccinating Against HPV in Dynamical Social Network
- SAMSI Workshop on Molecular Motors, Neuron Models, and Epidemics on Networks (April 2010) Research Triangle Park, NC; Vaccinating Against HPV in a Dynamical Social Network
- SIAM Annual Meeting (July 2009) Denver, CO; Vaccinating Against HPV in a Dynamical Social Network

Session Co-Organizer

- Society for Mathematical Biology Annual Meeting (July 2019) Montreal, Canada; Mathematical Neuroscience Subgroup Minisymposium
- 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2018) Athens, GA; Scientific Program Committee member
- AMS Sectional Meeting (March 2018) Columbus, OH; Special Session on Mathematical Modeling of Neuronal Networks
- JMM 2018 Project NExT Sessions (January 2018) San Diego, CA
- SIAM Conference on Applications of Dynamical Systems (May 2017) Snowbird, UT; Computational Models of Neuronal Connectivity in the Brain
- 10th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory (April 2017) Athens, GA; Nonlinear dynamics in Mathematical Biology and Neuroscience
- SIAM Conference on Applied Mathematics Education (September 2016) Philadelphia, PA; Approaches to Mentorship in Undergraduate Research
- SIAM Conference on the Life Sciences (July 2016) Boston, MA; Modeling Olfactory Systems
- SIAM Annual Meeting (July 2016) Boston, MA; Modeling of Synchronous and Correlated Behavior in Neuronal Networks
- SIAM Conference on Applications of Dynamical Systems (May 2015) Snowbird, UT; Mechanisms for Computations in Neuronal Networks
- SIAM Conference on the Life Sciences (August 2014) Charlotte, NC; Mathematical Modeling of Sleep Patterns in Humans

Conference Co-Organizer

- Midwest/Great Lakes Undergraduate Research Symposium in Neuroscience – mGluRs (September 2018) Ohio Wesleyan University, Delaware, OH
- Midwest/Great Lakes Undergraduate Research Symposium in Neuroscience – mGluRs (September 2017) Ohio Wesleyan University, Delaware, OH

Workshops and Programs

- TGDA+Neuroscience Curriculum Design Workshop (July 2019) Mathematical Biosciences Institute, OSU, Columbus, OH
Followed a backward course-design approach to developing an inclusive and effective summer research experience for students as the culminating event to their course in Topological Data Analysis with a neuroscience focus.
- OWU Math/CS/Physics REU Program: L^AT_EX and XPP Tutorials (Summer, 2017–2019)
Coordinated tutorials for REU and Summer Science students involving computational and formatting tools.
- MAA Minicourse: Introduction to WeBWorK (August 2019) MathFest, Cincinnati, OH
Participated in minicourse in order to establish a working understanding of WeBWorK to implement in Calculus I.
- Female Faculty at Liberal Arts collages: MathEmatics (February 2019) Denison University, Granville, OH
- Project NExT Workshops: MathFest (July 2017) Chicago, IL; JMM (January 2018) San Diego, CA
- Research Mentor Training Program (July 2017) Online via The Center for the Integration of Research, Teaching and Learning, University of Wisconsin-Madison
Designed to improve the efficiency and effectiveness of your mentoring
- Mathematics Research Communities: Network Science (June 2014) Snowbird, UT
Algorithms with the goal to improve to the clustering coefficient of a network with few edge changes
- Spring Opportunities for Women in the Mathematical Sciences (April 2014) NIMBioS
- WhAM! Workshop for Women in Math Biology (September 2013) IMA
Temperature effects on sleep in humans, including REM–Non-REM sleep behavior

Funding and Honors

- 2018 NSF CCF No.1839356 (PI Janet Best, OSU)
TRIPODS+X:EDU: An MBI TGDA+Neuro Program for Undergraduates.
 Awarded \$199,983.00 over 3 years.
- 2018 Thomas E. Wenzlau Grant
supported travel, lodging, and conference costs for the 11th IMACS Conference in Athens, GA and to present at Morehouse College in Atlanta, GA.
- 2017 Thomas E. Wenzlau Grant
supported a Sabbatical Scholarship Project at the Mathematical Biosciences Institute at The Ohio State University.
- 2017 Project NExT (New Experiences in Teaching) Fellow, Blue '17 Cohort
- SIAM Early Career Travel Award: Workshop on Network Science 2019,
 Applied Mathematics Education 2016
- SIAM Conference Student Travel Awards:
 Life Sciences 2014, 2012, Annual Meeting 2014, Dynamical Systems 2015, 2013,
 Nonlinear Waves and Coherent Structures 2012, Uncertainty Quantification 2012
- 2017 Early Career Travel Award: 10th IMACS International Conference on
 Nonlinear Evolution Equations and Wave Phenomena
- 2015 Bill and Nancy Siegmund Applied Mathematical Modeling Prize RPI '14
*for work that best exemplifies elegance in the pillars of Applied Mathematics:
 problem formulation, problem solution and solution interpretation*
- 2014 SIAM Conference on the Life Sciences 2014 Poster Award
- 2013 Student Paper Award: 8th IMACS International Conference on
 Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory
- 2012 SIAM Student Chapter Certificate of Recognition for Exceptional Service
- 2011 National Science Foundation Graduate Research Fellowship (NSF GRF)
- 2011 National Defense Science and Engineering Graduate (NDSEG) Fellowship;
- 2011 Ralph Ernest Huston Prize RPI '73
for demonstrating unusual promise and ability as a teacher
- 2010 Founders Award of Excellence
*for having the qualities of creativity, discovery, leadership, and the values
 of pride and responsibility at Rensselaer*
- 2010 Graduate Assistance in Areas of National Need Fellowship (GAANN);
 Fall 2010 – Summer 2011
- 2009 Carlton E. Lemke Rensselaer Fellowship in Mathematics; Fall 2009 – Summer 2010
- 2009 Ellis and Karin Chingos '37 Rensselaer Graduate Fellowship Program
- 2009 Rensselaer Graduate Fellowship
- 2009 George H. Handelman Award for Graduate Study in Applied Math RPI '00
*for showing promise in applied mathematics and being admitted to a
 graduate program in applied mathematics*

University Service

- Member of Academic Conduct Review Board, *2019 - 2020*
- Faculty Registration Guide for StART Registration Program, *2019*
- Faculty Co-Advisor of Phi Eta Sigma National Honors Society, *2018 - 2020*
- Faculty Advisor of Wesleyan Council on Student Affairs, *2017 - 2020*
- Faculty Partner for OWU Women's Field Hockey Team, *2017 - 2020*
- Science Lecture Series Organizer, *2016 - 2020*
- Departmental Colloquium Organizer, *2016 - 2017*
- Faculty Member of the David O. Robbins Neuroscience Program, *2015 - 2020*

Journal Referee

- Journal of Theoretical Biology (2018)
- Scientific Reports – Nature (2016)

Professional Memberships

- Society for Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)
- American Mathematical Society (AMS)
- Mathematical Association of America (MAA)
- Society for Mathematical Biology (SMB)
- Pi Mu Epsilon, National Mathematics Honor Society
- *Past Member:*
Society for Neuroscience (SfN)
Faculty for Undergraduate Neuroscience (FUN)