Pamela B. Pyzza

pbpyzza@owu.edu
http://blog.owu.edu/pbpyzza/
(740) 203-4908

Institute Affiliation

Ohio Wesleyan University
Department of Mathematics and Computer Science
Science Center 390
61 S. Sandusky Street
Delaware, OH 43015

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)

Current Research Interests

- Integrate-and-Fire neuronal networks for modeling locust olfaction. Analyzing the interplay between slow and fast timescales and excitatory and inhibitory responses.
- Firing-rate neuronal models describing neuron population interactions in sensory and sleep systems.
- Neuron population models of sleep–wake and REM–Non-REM cycles with temperature effects on sleep behavior.
- Dynamic network models to simulate the spread of epidemics and implement various vaccination strategies.

Appointments

August 2015 – Present, Assistant Professor
Department of Mathematics and Computer Science, Ohio Wesleyan University
David O. Robbins Neuroscience Program Faculty Member

Publications

- J. Alstott, C. Klymko, P. B. Pyzza, M. Radcliffe. "Local Rewiring Algorithms to Increase Clustering and Grow a Small World" Under revision.
- J. Best, S. Bañuelos, G. Huguet, A. Prieto Langarica, P. B. Pyzza, 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

Spring 2017	Differential Equations Computational Neuroscience Basic Probability and Statistics
Fall 2016	Calculus I Multivariable Calculus Dynamical Systems in Neuroscience
Spring 2016	Calculus II Differential Equations Seminar: Mathematical Modeling
Fall 2015	Calculus I (2 Sections) Multivariable Calculus

Prior Teaching Experience

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

Academic Presentations

Talks

- (upcoming) SIAM Conference on Applications of Dynamical Systems (May 2017) Snowbird, UT; Individual and Population Models of Insect Olfaction
- (upcoming) 10^{th} 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
- *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 11^{th} AIMS Conference on Dynamical Systems, Differential Equations and Applications (July 2016) Orlando, FL; Idealized Models of Insect Olfaction
- *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:* 9$^{\text{th}}$ 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:* 4$^{\text{th}}$ 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

- (upcoming) Midwest Women in Mathematics Symposium (February 2017) IUPUI, Indianapolis, IN; Modeling the Effects of Temperature on Sleep Patterns
- 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

- (upcoming) SIAM Conference on Applications of Dynamical Systems (May 2017) Snowbird, UT; Computational Models of Neuronal Connectivity in the Brain
- (upcoming) 10^{th} 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

Workshops

- 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

Honors and Awards

SIAM Early Career Travel Award: 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
2015 Bill and Nancy Siegmann 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 at The 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; Fall 2011 – Summer 2014
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

Professional Memberships

- Society for Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)
- American Mathematical Society (AMS)
- Society for Neuroscience (SfN)
- Faculty for Undergraduate Neuroscience (FUN)