Paulina Czarnecki

EDUCATION

Columbia University *expected 2025*
Applied Mathematics PhD

University of Michigan, Ann Arbor *May 2020*
Honors Mathematics - Mathematical Biology BS
Computer Science - Minor

RESEARCH EXPERIENCE

Dynamics and Data in the COVID-19 Pandemic Workshop *June 2020 - July 2020*
American Institute of Mathematics

- Participated in a 6-week NSF-funded summer school on the driving scientific questions of the pandemic, data analysis, and relevant mathematical models
- Worked with other graduate students to explore the relationship between air quality and disease transmission using Generalized Additive Models in R
- Advisors: Prof. Mary Lou Zeeman, Prof. Mary Silber, and Prof. Richard McGehee

Zochowski Lab *February 2017 – May 2020*
University of Michigan Biophysics

- Investigated synchrony in a scale free neuronal network under different levels of the neurotransmitter acetylcholine
- Developed simulations of modified Hodgkin Huxley neurons in Python and Matlab; implemented several measures to quantify activity
- Advisor: Prof. Michal Zochowski

AM-SURE Summer Research Program *May 2019 – August 2019*
NYU Courant Institute of Mathematical Sciences

- Participated in a 10-week NSF-funded research program
- Built a mathematical model of the electrophysiological workings of the Merkel cell, a cell that senses light touch in the skin
- Advisors: Dr. Jennifer Crodelle and Dr. Calina Copos

STEM Summer Research Study Abroad *June 2018 – August 2018*
University of Queensland Biology

- Participated in a 7-week research program
- Used GIS software to create a map of sea turtle habitat and its intersection with human activity
- Advisors: Prof. Noam Levin and Prof. Salit Kark

PRESENTATIONS AND PUBLICATIONS

Publications

Albrecht L., **Czarnecki P.**, Sakelaris B. *Investigating the Relationship Between Air Quality and COVID-19 Transmission.* Journal of Data Science.

Submitted for Review

Czarnecki P., Lin J., Aton S., Zochowski M. *Dynamical mechanisms underlying scale-free network reorganization in low acetylcholine states corresponding to slow wave sleep.* Submitted to Scientific Reports.

Presentations

Czarnecki P., Crodelle J., Copos C. *Building a Mathematical Model of the Merkel Cell.* Joint Mathematics Meetings, Denver, Colorado. January 2020.

Albrecht L., **Czarnecki P.**, Sakelaris B (speaker). *Investigating the Relationship Between Air Quality and COVID-19 Transmission.* Data Science Conference on COVID-19. August 2020.

TEACHING

Graduate Teaching Assistant *September 2020 - May 2021*
Columbia University APAM

- Fall 2020. APMA 4200: Partial Differential Equations. Responsible for grading assignments and exams, and holding twice-weekly office hours.
- Spring 2021. APMA 4300: Intro to Numerical Methods. Responsible for grading assignments and weekly office hours.

Grader *January 2019 - May 2020*
University of Michigan Mathematics

- Fall 2019 - Winter 2020. MATH 451: Advanced Calculus.
- Winter 2019. MATH 433: Differential Geometry.

ADDITIONAL EXPERIENCE

WISC Holistic Mentor *September 2020 - present*
Columbia University

- Meeting with an undergraduate student in STEM several times per semester to discuss academics and a potential future in graduate school.

Math Circle *September 2018 - May 2020*
University of Michigan

- Facilitating weekly meetings to help middle- and high- school students get involved with advanced mathematics.

Women in Math REU Panel *November 2019*
University of Michigan

- Panelist in an event to describe research opportunities for undergraduates, especially women, in math.

HONORS AND AWARDS

2020: University of Michigan Honors Critical Difference Grant (support for Joint Mathematics Meetings 2020).
NYU RTG funding (support for Joint Mathematics Meetings 2020).

2016: Regents Merit Scholarship

2016 - 2019: University Honors, four of seven semesters
(at least a 3.5 semester GPA when taking 14 credits)

SKILLS

Programming Languages

Matlab, Python, C++, R, HTML, JavaScript

Software

ArcGIS, Netlogo