Paulina Czarnecki

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EDUCATION

Columbia University
Applied Mathematics – Masters of Science, Philosophy *February 2022, 2024*
Applied Mathematics – Doctor of Philosophy *expected 2025*

University of Michigan, Ann Arbor *May 2020*
Honors Mathematics – Bachelor of Science
Computer Science – Minor

RESEARCH EXPERIENCE

Doctoral Research *May 2021 – present*
Columbia University Applied Physics and Applied Mathematics
- Advisors: Prof. Robert Pincus and Prof. Lorenzo Polvani

Dynamics and Data in the COVID-19 Pandemic Workshop *June 2020 – July 2020*
American Institute of Mathematics
- Advisors: Prof. Mary Lou Zeeman, Prof. Mary Silber, and Prof. Richard McGehee

Undergraduate Research *February 2017 – May 2020*
University of Michigan Biophysics
- Advisor: Prof. Michal Zochowski

AM-SURE Summer Research Program *May 2019 – August 2019*
NYU Courant Institute of Mathematical Sciences
- Advisors: Dr. Jennifer Crodelle and Dr. Calina Copos

STEM Summer Research Study Abroad *June 2018 – August 2018*
University of Queensland Biology
- Advisors: Prof. Noam Levin and Prof. Salit Kark

PRESENTATIONS AND PUBLICATIONS

Publications

Czarnecki P., Pincus R., Polvani L. (In prep). *A Simple Analytical Model for Instantaneous Radiative Forcing by Optically Thin Gases.*

Buehler S. A., Larsson R., Lemke O., Pfreundshuh S., Brath M., Adams I., Fox S., Roemer F., **Czarnecki P.**, Eriksson P. (Submitted). *The Atmospheric Radiative Transfer Simulator ARTS, Version 2.6 – Deep Python Integration.* Journal of Quantitative Spectroscopy and Radiative Transfer.

Czarnecki P., Pincus R., Polvani L. (2023). *Sparse, Empirically Optimized Quadrature for Broadband Radiative Calculations.* Journal of Advances in Modeling Earth Systems.

Albrecht L., **Czarnecki P.**, Sakelaris B. (2021). *Investigating the Relationship Between Air Quality and COVID-19 Transmission.* Journal of Data Science.

Czarnecki P., Lin J., Aton S., Zochowski M. (2021). *Dynamical mechanisms underlying scale-free*

network reorganization in low acetylcholine states corresponding to slow wave sleep. Frontiers in Network Physiology.

Invited Presentations

Czarnecki P., Brath, M., Pincus R., Polvani L. *Sparse, Empirically Optimized Quadrature for Broadband Spectral Integration*. SIAM CSE, Fort Worth, Texas. March 2025.

Czarnecki P., Pincus R., Polvani L. *A Simple Analytical Model for Radiative Forcing by Optically-Thin Gases*. Equilibrium Climate Sensitivity (ECS) Symposium, Online. July 2024.

Contributed Posters and Presentations

Czarnecki P., Pincus R., Polvani L. *A Simple Analytical Model for Instantaneous Radiative Forcing by Optically-Thin Gases*. AGU, Washington, D.C., US. December 2024.

Czarnecki P., Pincus R., Polvani L. *A Simple Model for Instantaneous Radiative Forcing by Optically-Thin Gases*. Poster. Cloud Feedback Model Intercomparison Project, Boston, US. June 2024.

Czarnecki P., Brath M., Kluft L., Larsson R., Buehler S., Polvani L., Pincus R. *Sparse, Empirically Optimized Quadrature for Radiative Calculations in a Radiative-Convective Equilibrium Model*. Poster. American Geophysical Union, San Francisco, US. December 2023.

Czarnecki P., Pincus R., Polvani L. *Sparse, Empirically Optimized Quadrature for Radiative Fluxes and Heating Rates*. CERES Team Meeting, NASA GISS, NYC. October 2023.

Czarnecki P., Pincus R., Polvani L. *Sparse, Empirically Optimized Quadrature for Radiative Fluxes and Heating Rates*. Joint Seminar, Max Planck Institute for Meteorology, Hamburg, Germany. July 2023.

Czarnecki P., Pincus R., Polvani L. *Alternatives to Correlated-K Distributions for Radiative Transfer Calculations*. International Radiation Symposium, Thessaloniki, Greece. July 2022.

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 – September 2023*
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.
- Fall 2021-23. EESCGU 4008: Intro to Atmospheric Science. Responsible for grading assignments and holding 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.

OUTREACH

Pen Pal *September 2023 – present*
Letters to a Pre-Scientist

LDEO Open House Volunteer *October 2023*
Columbia University

Women in STEM at Columbia (WISC) Holistic Mentor *September 2020 – September 2023*
Columbia University

WISC Girls' Science Day Volunteer *November 2021, April 2022*
Columbia University

Math Circle Volunteer *September 2018 – May 2020*
University of Michigan

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

HONORS AND AWARDS

2023: AIM Travel Award (support for SIAM Data Science Meeting 2023).

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