

# Paulina Czarnecki

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## EDUCATION

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### 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

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### 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

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### Publications

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

<b>Women in STEM at Columbia (WISC) Holistic Mentor</b> Columbia University	<i>September 2020 - September 2023</i>
<b>WISC Girls' Science Day Volunteer</b> Columbia University	<i>November 2021, April 2022</i>
<b>Math Circle Volunteer</b> University of Michigan	<i>September 2018 - May 2020</i>
<b>Women in Math REU Panelist</b> University of Michigan	<i>November 2019</i>

## HONORS AND AWARDS

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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