

Claire Valva

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Education

Courant Institute of Mathematical Sciences, New York University <i>PhD student in Atmosphere Ocean Science and Mathematics (AOSM)</i>	New York, NY 2020 – 2025 (expected)
University of Chicago <i>BS in Geophysical Sciences, Mathematics</i>	Chicago, IL 2016 – 2020

Publications

- **C. Valva**, Giannakis, D. (2024). Physics-informed spectral approximation of Koopman operators, arXiv:2408.05663
- **C. Valva**, Gerber, E.P. (2024). The QBO, the annual cycle, and their interactions: Isolating periodic modes with data-driven Koopman analysis, arXiv:2407.17422
- **C. Valva**, Giannakis, D. (2024). Consistent Spectral Approximation of Koopman Operators Using Resolvent Compactification. *Nonlinearity*, 10.1088/1361-6544/ad4ade
- Parker, J. P., **C. Valva** (2023) Koopman analysis of the periodic Korteweg–de Vries equation. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 10.1063/5.0137088, *Editor's Choice*
- Lloret, J., **C. Valva**, I. Valiela, J. Rheuban, R. Jakuba, D. Hanacek, K. Chenoweth, E. Elmstrom (2022). Decadal trajectories of land-sea couplings: Nitrogen loads, sources, and interception in SE New England watersheds, discharges to estuaries and effects on water quality. *Estuarine, Coastal and Shelf Science*, 10.1016/j.ecss.2022.108057
- **Valva, C.**, N. Nakamura (2021). What controls the probability distribution of local wave activity in the midlatitudes? *Journal of Geophysical Research: Atmospheres*, 126, 10.1029/2020JD034501.

Awards

Outstanding Student Poster Presentation Award, Conference on Atmospheric and Oceanic Fluid Dynamics	2024
Bella Manel Award, NYU Courant	2024
Dean's conference fund, NYU GSAS	2022, 2023
SIAM Student Travel Grant	2022, 2024
Dean's conference fund, NYU GSAS	2022, 2023
Geophysical Fluid Dynamics Fellow (Woods Hole Oceanographic Institute)	2022
National Science Foundation Graduate Research Fellowship	2020
Departmental honors in mathematics, geophysical sciences, University of Chicago	2020
Dean's Fund Recipient for research-related travel, University of Chicago	2018

Skills

Fluent in Julia, Python, MATLAB, R, and \LaTeX with experience in HTML, Jekyll, Javascript, Markdown, C++, and Fortran.

Research and Workshops

Doctoral Researcher , Center for Atmosphere Ocean Science, Courant Institute – Advised by Prof. Dimitrios Giannakis and Prof. Ed Gerber.	2020 – present
Geophysical Fluid Dynamics Fellow , Woods Hole Oceanographic Institution – Advised by Dr. Jeremy Parker (EPFL) and Prof. Peter Schmid (KAUST).	2022
College Research Fellow , University of Chicago – Advised by Prof. Noboru Nakamura.	2018 – 2020

Selected Presentations

* indicates invited presentation

- **Valva, C.**, E. P. Gerber, D. Giannakis, (2024). Capturing Tropical Climate Oscillations with Data-Driven Koopman Modes. *24th Conference on Atmospheric and Oceanic Fluid Dynamics* — Received outstanding student poster presentation award.
- **Valva, C.**, D. Giannakis, E. P. Gerber (2024). Consistent Spectral Approximation of Koopman Operators: Applications to Climate Dynamics. *SIAM Conference on Mathematics of Planet Earth*
- ***Valva, C.**, D. Giannakis (2023). Consistent Spectral Approximation of Koopman Operators Using Resolvent Compactification. *Dartmouth College functional analysis seminar*
- ***Valva, C.**, E. P. Gerber (2023). A data-driven analysis of the Quasi-Biennial Oscillation with Koopman modes. *NOAA Physical Sciences Laboratory: Atmosphere-Ocean Processes and Predictability Seminar*

Service and Outreach

Reviewer for <i>Quarterly Journal of the Royal Meteorological Society</i> , <i>Journal of Nonlinear Sciences</i> , <i>Mathematical Reviews (MathSciNet)</i>	2023 - present
Reviewer for <i>Journal of Emerging Investigators</i> , a journal serving high and middle school students	2024 – present
<i>Speculating the Environment</i> Pratt Institute STEAMplant workshop speaker, link.	Fall 2022
Courant Diversity Equity and Inclusion (DEI) journal club discussion leader	2021 – 2024

Teaching

Recitation leader for New York University undergraduates: Ordinary Differential equations	Spring 2024
Recitation leader for New York University undergraduates: Real Analysis	Fall 2023
Recitation leader for New York University undergraduates: Intro to Mathematical Simulation	Spring 2023
Teaching Assistant for Columbia University's Summer Immersion Program	Summer 2021
Course assistant (VCA) for undergraduate calculus sequence at the University of Chicago	Fall 2017