Stephen Cook

University of California, Santa Cruz
Department of Mathematics
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My Website

Research Interests

- Functional analysis and operator theory
- Stochastic analysis
- Financial mathematics
- Computational sciences and machine learning
- Mathematical modeling
- Riemann-Hilbert problems

Education

The University of California, Santa Cruz

- PhD, Mathematics (Expected Graduation: 2030)

California Polytechnic State University, San Luis Obispo

- M.S., Mathematics (2025).
- Advisor: Dr. Ryan Tully-Doyle.
- Master's Thesis: **Topiarism: The Kernel Embedding of Distributions Applied to Modern Portfolio Theory**.

California Polytechnic State University, San Luis Obispo

- B.S., Applied Mathematics, 3.97 GPA, *Summa cum laude* (2024).
- Minor: Computer Science.

Publications

1. **Condensed Ricci Curvature on Paley Graphs and their Generalizations** (joint with Vincent Bonini, Daniel Chamberlin, Parthiv Seetharaman, and Tri Tran). To appear in *Involve - a Journal of Mathematics*. arXiV.

Research Experience

Research Assistant - *California Polytechnic State University*

(June 2024 - June 2025)

- Advisor: Dr. Ryan Tully-Doyle.
- Related fields: Reproducing kernel Hilbert spaces, measure theory, Markowitz portfolio theory.

Frost Research Associate - *California Polytechnic State University*

(March 2023 - June 2024)

- Advisor: Dr. Vincent Bonini.
- Related fields: Riemannian geometry, number theory, algebraic graph theory, finite field theory.

Poster Sessions

1. *Condensed Ricci Curvature on Paley Graphs and their Generalizations* (joint with Daniel Chamberlin, Parthiv Seetharaman, and Tri Tran), Cal Poly, San Luis Obispo, Frost Poster Symposium, May 2024.
2. *Condensed Ricci Curvature on Paley Graphs and their Generalizations* (joint with Daniel Chamberlin, Parthiv Seetharaman, and Tri Tran), Moscone Center, Joint Mathematics Meetings, January 2024.
3. *Condensed Ricci Curvature on Paley Graphs and their Generalizations* (joint with Daniel Chamberlin, Parthiv Seetharaman, and Tri Tran), Cal Poly, San Luis Obispo, Math Summer Research Poster Symposium, October 2023.

Other Conferences

1. Joint Mathematics Meetings, Seattle Convention Center, January 2025.
2. Math Summer Research Poster Symposium, Cal Poly, San Luis Obispo, October 2024.

Awards

1. Outstanding Graduate Student Award - California Polytechnic State University (May 2025)
2. Lawrence and Ruth Renihan Scholarship - California Polytechnic State University (May 2024).
3. Scholarship for the Advancement of Science and Technology - California Polytechnic State University (May 2024).
4. Charles J. Hankes Excellence in Math Award - California Polytechnic State University (May 2023).
5. Scholarship for the Advancement of Science and Technology - California Polytechnic State University (May 2022).

Work Experience

Jr. Software Developer - *Amazon*

January 2022 - January 2023.

Teaching Experience

University of California, Santa Cruz

1. Teaching Assistant; Precalculus (Winter 2026).
2. Teaching Assistant; Precalculus (Fall 2025).

California Polytechnic State University, San Luis Obispo

1. Teaching Associate; Precalculus (Winter 2025).
2. Teaching Assistant; Precalculus (Fall 2024).
3. Grader; Multivariate Calculus (Spring 2023).
4. Tutor; Precalculus, Calculus, Computer Science (Fall 2022).

Coding Skills

- Python, Numpy, Tensorflow, Keras (expert)
- Matlab (proficient)
- Java (proficient)
- C (proficient)

Volunteer Experience

Cal Poly Mustang Marching Band

- Section Leader (June 2022 - June 2024).
- Slack Administrator (June 2023 - June 2024).

Other Affiliations

- Cal Poly Mustang Band (September 2020 - June 2024).
- Cal Poly Brass Quintet (January 2021 - June 2021, September 2023 - Present).
- Cal Poly Wind Ensemble (September 2020 - Present).
- Cal Poly Symphony (January 2024 - May 2024).