Cade Ballew

ballew@uw.edu
cade-b.github.io

Education

University of Washington

- Ph.D. in Applied Mathematics 2021–2026 (Expected)
  - Advisor: Tom Trogdon.
- M.S. in Applied Mathematics 2021–2022

Rice University

- B.A., *magna cum laude* 2017–2021
  - Majors: Computational and Applied Mathematics; Mathematical Economic Analysis
  - Minor: Mathematics

Publications and Preprints

Publications

1. C. Ballew and T. Trogdon. A Riemann–Hilbert approach to computing the inverse spectral map for measures supported on disjoint intervals. *Studies in Applied Mathematics*, 152(1):31–72, 2024.

Preprints

1. C. Ballew and T. Trogdon. The Akhiezer iteration. *arXiv preprint 2312.02384*, 2023.

Software

1. C. Ballew and T. Trogdon. https://github.com/cade-b/RecurrenceCoefficients.jl, 2023.

Invited Talks

5. *Numerical solutions of Riemann–Hilbert problems on disjoint intervals.* Integrable Systems and Random Matrix Theory Seminar, University of Michigan, October 2024.
4. *Orthogonal polynomials and Geronimus's theorem.* Arbeitsgemeinschaft on Quantum Signal Processing and Nonlinear Fourier Analysis, Oberwolfach Research Institute for Mathematics, October 2024.
3. *Applications of numerical solutions of Riemann–Hilbert problems on disjoint intervals.* SIAM Conference on Nonlinear Waves and Coherent Structures, Baltimore, MD, June 2024.
2. *Numerical solutions of Riemann–Hilbert problems on disjoint intervals.* CMS Summer Meeting, University of Saskatchewan, June 2024.
1. *Computing with orthogonal polynomials on disconnected domains.* SIAM PNW Biennial Meeting, Western Washington University, October 2023.

Posters

2. *Computing with orthogonal polynomials for integrable systems: A Riemann-Hilbert approach.* SIAM Conference on Nonlinear Waves and Coherent Structures, Baltimore, MD, June 2024.

1. *Computing with orthogonal polynomials on disconnected domains: A Riemann–Hilbert approach.* Workshop on complex analysis: techniques, applications and computations, Isaac Newton Institute, July 2023.

Conference organization

2. Session co-organizer, Joint Mathematics Meetings 2025, AMS Special Session on "Recent Advancements in Integrable Systems and Orthogonal Polynomials", Seattle, WA, January 2025.

1. Session co-organizer, SIAM PNW Biennial Meeting, Session on "Scientific Computing and Numerical Analysis", Western Washington University, Bellingham, WA, October 2023.

Teaching Experience

University of Washington

- Instructor of Record, AMATH 353 (Partial Differential Equations and Waves), Summer 2024.
- Teaching Assistant, AMATH 567 (Applied Complex Analysis), Autumn 2023, Autumn 2024.
- Teaching Assistant, CFRM 507 (Optimization Methods in Finance), Autumn 2021, Autumn 2022.

Rice University

- Grader, CAAM 336 (Differential Equations in Science and Engineering), Spring 2019.

Service

- SIAM UW Student Chapter
  - Vice President 2022–2023
  - Outreach Coordinator 2023–2024
- Numerical Analysis Research Club
  - Student organizer Spring 2023, Autumn 2023

Awards

- Wan Fellowship 2021–2024
- Phi Beta Kappa 2021
- Peter Mieszkowski Prize for Honors Program Research 2021
- Malcolm Gillis Award in Mathematical Economic Analysis 2021
- Honors in Economics 2021
- Louis J. Walsh Scholarship 2020–2021
- Michael D. Maher RISE Award in Economics 2020
- Rice University President's Honor Roll (5 semesters)