ERICK ROSS

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EDUCATION

Bob Jones University _09/2018 - 05/2022_
B.S. in Mathematics GPA: 4.0
B.S. in Computer Science GPA: 4.0

Clemson University _09/2022 - Present_
PhD in Mathematics under Hui Xue (in progress) GPA: 4.0

RESEARCH INERESTS

Modular forms (both theoretical and computational aspects). Explicit computations relating to modular forms. Trace formulas. Asymptotic behavior of the Hecke operators. Asymptotic behavior of Fourier coefficients of modular forms. Analytic number theory more generally.

I also have some interests in harmonic analysis, dynamical systems/ergodic theory, and in theoretical computer science.

RESEARCH PAPERS

- **Transcendence of zeros of modular forms.** David Aiken, Erick Ross, Dmitriy Shvydkoy, Hui Xue. _Submitted 09/2025._

- **Boundary CM points and class groups of small exponent.** David Aiken, Erick Ross, Dmitriy Shvydkoy, Hui Xue. _Submitted 09/2025._

- **Zeros of Even and Odd Period Polynomials** Grace Ko, Jennifer Mackenzie, Erick Ross, Hui Xue. _To appear in the Journal of Mathematical Analysis and Applications._

- **Proportion of Atkin-Lehner sign patterns and Hecke Eigenvalue Equidistribution.** Erick Ross, Alexandre Van Lidth, Martha Rose Wolf, Hui Xue. _Under revision with Mathematical Proceedings of the Cambridge Philosophical Society._

- **Hecke Eigenvalue Equidistribution over the Newspaces with Nebentypus.** Erick Ross. _Submitted 06/2025._

- **Cramér α-random primes and the Fundamental Theorem of Arithmetic.** Erick Ross. _Submitted 05/2025._

- **Dimension Sequences of Modular Forms.** Erick Ross. _Research in Number Theory (2025), 14pp._

- **Non-repetition of second coefficients of Hecke polynomials.** Archer Clayton, Helen Dai, Tianyu Ni, Erick Ross, Hui Xue, Jake Zummo. *Indagationes Mathematicae (2025), 22pp.*

- **Asymptotics and sign patterns of Hecke polynomial coefficients.** Erick Ross, Hui Xue. *Canadian Mathematical Bulletin, 68 (2025) 914-926.*

- **On the average size of the eigenvalues of the Hecke operators.** William Cason, Akash Jim, Charlie Medlock, Erick Ross, Hui Xue. *Archiv der Mathematik, 124 (2025) 255-263.*

- **Nonvanishing of second coefficients of Hecke polynomials on the newspace.** William Cason, Akash Jim, Charlie Medlock, Erick Ross, Trevor Vilardi, Hui Xue. *International Journal of Number Theory, 21 (2025) 1479-1512.*

- **Signs of the second coefficients of Hecke polynomials.** Erick Ross, Hui Xue. *Illinois Journal of Mathematics, 69 (2025) 323-351.*

- **Newspaces with Nebentypus: An Explicit Dimension Formula and Classification of Trivial Newspaces.** Erick Ross. *Journal of Number Theory, 278 (2026) 317-352.*

RESEARCH TALKS

- 03/2026 (upcoming) - **Hecke Eigenvalue Equidistribution over the Newspaces with Nebentypus.** *AMS (American Mathematical Society) Southeastern Sectional Meeting*, Georgia Southern University.

- 03/2026 (upcoming) - **Boundary CM points.** *Gainesville International Number Theory Conference*, University of Florida.

- 12/2025 (upcoming) - **Zeros of even and odd period polynomials lie on the circle of symmetry.** *PANTS (PAlmetto Number Theory Series) conference*, Clemson University.

- 11/2025 (upcoming) - **Dimension Sequences of Modular Forms.** *BARD (Bayou Arithmetic Research Day)*, Louisiana State University.

- 11/2025 (upcoming) - **Cramér α-random primes and the Fundamental Theorem of Arithmetic.** *MSS (Mathematical Sciences Symposium)*, Bob Jones University.

- 10/2025 - **What is the asymptotic behavior of the Hecke polynomial coefficients?** *Maine-Québec Number Theory Conference*, University of Maine.

- 09/2025 - **Asymptotics and Sign Patterns for the Hecke Polynomial Coefficients.** *GSS (Graduate Student Seminar)*, Clemson University.

- 05/2025 - **When exactly will the newspaces exist?** *AFW (Automorphic Forms Workshop)*, University of North Texas.

- 03/2025 - **When precisely will the newspaces of modular forms exist?** *AMS (American Mathematical Society) Southeastern Sectional Meeting*, Clemson University.

- 03/2025 - **How large can we expect the newspaces to be?** *GSS (Graduate Student Seminar)*, Clemson University.

- 12/2024 - **How large are the eigenvalues of the Hecke operators?** *PANTS (PAlmetto Number Theory Series) conference*, University of South Carolina.

- 09/2024 - **Nonvanishing of second coefficients of Hecke polynomials on the newspace.** *PANTS (PAlmetto Number Theory Series) conference*, Wake Forest University.

- 09/2024 - **How large are the Hecke eigenvalues and corresponding Fourier coefficients?** *GSS (Graduate Student Seminar)*, Clemson University.

- 05/2024 - **Nonvanishing of the Second Coefficient of General Hecke Polynomials.** *AFW (Automorphic Forms Workshop)*, Oklahoma State University.

- 04/2024 - **Eigenbasis Decomposition of Hecke Eigenform Products via the Rankin-Selberg Method.** *SERMON (SouthEastern Regional Meeting on Numbers) conference*, Wofford College.

- 02/2024 - **From Tori to Elliptic Curves.** *DECAL (Data sECurity and mAchine Learning) Research Workshop*, Clemson University.

TEACHING EXPERIENCE

Instructor of Record at Clemson University *09/2023 - Present*

- Fall 2025 - MATH 2070: Business Calculus II.

- Spr. 2025 - MATH 2070: Business Calculus II.

- Fall 2024 - MATH 1060: Calculus of One Variable I.

- Spr. 2024 - MATH 1020: Business Calculus I.

- Fall 2023 - MATH 1040: Precalculus and Introductory Differential Calculus.

Teaching Assistant at Clemson University *09/2022 - 05/2023*

- Spr. 2023 - MATH 3110: Linear Algebra.

- Fall 2022 - STAT 2300: Statistical Methods I.

SERVICE

- 03/2026 (upcoming) - Organizing a Special Session on Modular Forms at the 2026 AMS Sectional Meeting.

- 09/2025 - Served as a speaker at the Clemson University Math Club.

- Summer 2025 and Summer 2024 - Supervised REU students at Clemson University.

- Summer 2025 - Volunteered as a mathematics tutor for high school students.

- 04/2025 - Volunteered at the Clemson Math-In (a service to help Clemson undergraduates struggling in math).
- 04/2025 - Volunteered at the Clemson Calculus Challenge (a high school mathematics outreach).
- 04/2025 - Served as a speaker at the Mathematical Sciences Symposium at Bob Jones University.
- 03/2025 - Volunteered at the 2025 AMS Southeastern Sectional Meeting.
- 03/2025 and 03/2024 - Curated the problemset for the Bob Jones University programming competition.
- 02/2025 and 09/2023 and 09/2021 - Served as a panelist for the Mathematical Sciences Symposium at Bob Jones University.
- 10/2024 - Served as a STEM judge for the VEX Robotics high school competition.
- 10/2023 - Volunteered at the PANTS XXXVI conference.
- Spring 2022 - Organized a competitive programming seminar at Bob Jones University.
- Fall 2021 - Organized a Putnam exam preparation seminar at Bob Jones University.

UNDERGRADUATE AWARDS

- Highest Academic Achievement Award at Bob Jones University. (Awarded to the Senior graduating with the most credits with a 4.0 GPA.)
- Mathematics Award and Computer Science Award at Bob Jones University.
- Winner of the 2021 and 2022 Scholastic Bowls at Bob Jones University.
- Winner of the 2021 and 2022 CCSCSE Programming Contests.
- Second in the U.S. at the 2020 IEEExtreme Programming Contest.
- Advancement to the 2021 and 2024 ICPC North American Championships.
- Winner of the 2021 Mugs to Donuts x Jane Street Math Challenge.