

# ERICK ROSS

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## EDUCATION

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**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 (in progress)

GPA: 4.0

## RESEARCH INTERESTS

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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.

I also have some interests in dynamical systems, and in theoretical computer science.

## RESEARCH PAPERS

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- **Dimension Sequences for Modular Forms.** Erick Ross. *In preparation.*
- **Non-repetition of second coefficients of Hecke polynomials.** Archer Clayton, Helen Dai, Tianyu Ni, Erick Ross, Hui Xue, Jake Zummo. *Submitted 2024*
- **Asymptotics and sign patterns of Hecke polynomial coefficients.** Erick Ross, Hui Xue. *Canadian Mathematical Bulletin (2025)*
- **On the average size of the eigenvalues of the Hecke operators.** William Cason, Akash Jim, Charlie Medlock, Erick Ross, Hui Xue. *Archiv der Mathematik (2025)*
- **Nonvanishing of second coefficients of Hecke polynomials on the newspace.** William Cason, Akash Jim, Charlie Medlock, Erick Ross, Trevor Vilardi, Hui Xue. *To appear in the International Journal of Number Theory*
- **Signs of the second coefficients of Hecke polynomials.** Erick Ross, Hui Xue. *To appear in the Illinois Journal of Mathematics*
- **Newspaces with Nebentypus: An Explicit Dimension Formula, Classification of Trivial Newspaces, and Character Equidistribution Property.** Erick Ross. *Submitted 2024*

## RESEARCH TALKS

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- 05/2025 - **When exactly will the newspaces exist?** (Upcoming) *AFW (Automorphic Forms Workshop)*, University of North Texas.
- 04/2025 - **Asymptotic behavior of the Hecke coefficients** (Upcoming) *SERMON (SouthEastern Regional Meeting on Numbers) conference*, Georgia Southern University.
- 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

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### Instructor of Record at Clemson University

09/2023 - Present

- 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

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- 04/2025 - (Upcoming) Volunteering for the Clemson Calculus Challenge (high school math outreach).
- 03/2025 - Volunteered at the 2025 AMS Southeastern Sectional Meeting.
- 10/2024 - Served as a STEM judge for the VEX Robotics high school competition.
- Summer 2024 - Supervised a group of REU students at Clemson University.
- 03/2024 and 03/2025 - Curated the problemset for the Bob Jones University programming contest
- 10/2023 - Volunteered at the PANTS XXXVI conference.
- 09/2023 and 02/2025 - Served as a panelist for the Mathematical Sciences Symposium at Bob Jones University.
- 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

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- 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 IEEEExtreme Programming Contest.
- Advancement to the 2021 and 2024 ICPC North American Championships.
- Winner of the 2021 Mugs to Donuts x Jane Street Math Challenge.