

Trajan Hammonds

Fine Hall, Washington Rd
Princeton, NJ 08544

trajanh@math.princeton.edu

Research Interests Analysis of automorphic forms, asymptotics of spherical functions, harmonic analysis

Employment **Aarhus University**, Aarhus, Denmark 2025-2026
Postdoctoral Researcher

Education **Princeton University**, Princeton, NJ 2020-2025
PhD in Mathematics
Advisor: Akshay Venkatesh

Carnegie Mellon University, Pittsburgh, PA 2016-2020
M.S. in Mathematics
Advisor : Steven J. Miller
B.S. in Mathematics

Independent University of Moscow, Moscow, Russia 2018
Study Abroad

Publications and Preprints • **Trajan Hammonds** Non-archimedean Relative Characters and the Orbit Method. [PhD thesis](#)

• Anshul Adve, and **Trajan Hammonds**. Optimal L^4 Estimates via Fourier Analysis. [preliminary draft](#). (2025)

• **Trajan Hammonds**, Seoyoung Kim, Steven J. Miller, Arjun Nigam, Kyle Onghai, Dishant Saikia, and Lalit Sharma. [k-Diophantine m-tuples in Finite Fields](#). Int. J. Number Theory 19 (2023) No. 4, 891-912

• Fatma Cicek, Giuliana Davidoff, Sarah Dijols, **Trajan Hammonds**, Aaron Pollack, and Manami Roy. [The completed standard L-function of modular forms on \$G_2\$](#) . Math. Z., **302**, (2022), 483-517

• **Trajan Hammonds**, Casimir Kothari, Noah Luntzlara, Steven J. Miller, Jesse Thorner, and Hunter Wieman. [Explicit Sato-Tate conjecture for primes in arithmetic progressions](#). Int. J. Number Theory 17 (2021) No. 8, 1905-1923

• **Trajan Hammonds**, Seoyoung Kim, Benjamin Logsdon, Álvaro Lozano-Robledo and Steven J. Miller. [Rank and bias in families of hyperelliptic curves via Nagao's conjecture](#). Journal of Number Theory, Volume 215, (2020), 339–361.

• **Trajan Hammonds**, Jeremy Johnson, Angela Patini, and Robert Walker. [Counting roots of polynomials over \$\(\mathbb{Z}/p\mathbb{Z}\)^2\$](#) . Houston Journal of Mathematics, Volume 44, Number 4 (2018), 1111–1119

Awards • NSF US Junior Oberwolfach Fellow (2023)
• Princeton University President's Fellowship (2020)
• AMS Math in Moscow Scholarship (2018)

Invited Talks • MIT PDE/Analysis Seminar, Cambridge, MA May 2025
• Johns Hopkins Junior Number Theory Days, Baltimore, MD Feb 2025
• Princeton/IAS Joint Number Theory Seminar, Princeton, NJ Dec 2024

Conferences and Workshops

- | | |
|--|------------------|
| • Pittsburgh Links.. Analysis and Number Theory, Pittsburgh, PA | March 2024 |
| • AIM Workshop : ..Automorphic Forms, Pasadena, CA | February 2024 |
| • CMI Workshop : ..Automorphic Forms, Oxford, UK | September, 2023 |
| • ArStAFANT Workshop, EPFL, Switzerland | June 2023 |
| • Oberwolfach Seminar : ...L-functions.. Oberwolfach, Germany | May 2023 |
| • Arizona Winter School : Unlikely Intersections, Tucson, AZ | March 2023 |
| • Automorphic Forms Summer School, Erdos Center, Hungary | September 2022 |
| • Masterclass on Relative Trace Formula, Copenhagen, Denmark | August 2022 |
| • Summmer School on the Langlands Program, IHES, France | July 2022 |
| • Arizona Winter School : Automorphic Forms Beyond GL2, Tucson, AZ | March 2022 |
| • ICTS Elliptic Curves and Special Values of L-functions, Virtual | August 2021 |
| • Hausdorff Summer School : Circle Method, Virtual | May-June 2021 |
| • Research in Number Theory, Virtual workshop | October 2020 |
| • UConn Number Theory Summer School, Virtual conference | June 2020 |
| • Bhargavology Learning Seminar, Stanford, Virtual seminar series | April-May 2020 |
| • Joint Mathematics Meetings, Denver, CO | January 2020 |
| • Duluth REU, University of Minnesota Duluth, Duluth, MN | June-August 2019 |
| Advisor : Joe Gallian | |
| • CBMS Conference on L-functions and Multiplicative Number Theory, University of Mississippi, Oxford, MS | May 2019 |
| • Automorphic Forms Workshop, Duquesne, Pittsburgh, PA | March 2019 |
| • Joint Mathematics Meetings, Baltimore, MD | January 2019 |
| • Quebec-Maine Number Theory Conference, Université Laval, Quebec City, Quebec, Canada | October 2018 |
| • SMALL REU, Williams College, Williamstown, MA | June-August 2018 |
| Advisors: Seoyoung Kim, Steven J. Miller, and Jesse Thorner | |
| • UConn Number Theory Summer School, University of Connecticut, Sorrs, CT | May-June 2018 |
| • Joint Mathematics Meetings, San Diego, CA | January 2018 |
| • MSRI Undergraduate Program, MSRI, Berkeley, CA | June-August 2017 |
| Advisors: J. Maurice Rojas and Federico Ardila | |

Teaching Experience

- Assistant Academic Coordinator, MathROOTS, MIT July 2025
- Gave lectures, wrote problem sets and solutions, wrote and graded exams, oversaw problem sessions, assisted in day-to-day operations, engaged in vertical mentoring.
- Academic Mentor, MathROOTS, MIT June–July 2024
- Gave lectures, oversaw problem sessions, assisted in day-to-day operations, engaged in vertical mentoring.
- Academic Mentor, MathROOTS, MIT June–July 2023
- Gave lectures, oversaw problem sessions, assisted in day-to-day operations, engaged in vertical mentoring.
- Teaching Assistant, BEAM (Bridge to Enter Advanced Mathematics) Discovery Program, Virtual July–August 2020
- Led activities, oversaw problem sessions, assisted in day-to-day operations, and co-TA'd the course *Count Without Counting*. Interacted with over fifty 6th graders daily.
- Teaching Assistant and Grader, Carnegie Mellon University August 2018–May 2020
- Gave recitations for Concepts of Mathematics (21-128, 4.66/5 Rating), Matrices and Linear Transformations (21-241, 4.52/5 Rating), Graded for Principles of Real Analysis I (21-355)
- Course Assistant/Grader, Art of Problem Solving August 2017–March 2019
- Online course assistant for Stretch Algebra, Intro to Number Theory, Precalculus and WOOT (Worldwide Online Olympiad Training)

**Activities and
Service**

- Member of Climate and Inclusion Committee (2023-Present)
- Group leader for Mentoring Möbius, Princeton University (2020–2022)
- Referee for *Journal of Number Theory*, *Essential Number Theory*