Trajan Hammonds

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Princeton, NJ 08544

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Industry Interests Deep learning, mechanistic interpretability, time series forecasting

Coursework Probability, Statistical and Machine Learning, Deep Learning, Algorithms for Big Data

Employment

Aarhus University, Aarhus, Denmark — 2025-2026
Postdoctoral Researcher

Massachusetts Institute of Technology, Cambridge, MA — 2026-2029
NSF Postdoctoral Fellow

Education

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

Carnegie Mellon University, Pittsburgh, PA — 2016-2020
M.S. in Mathematics
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 $G2$. *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 hyperellipitic 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 $(Z/pZ)^2$. *Houston Journal of Mathematics*, Volume 44, Number 4 (2018), 1111–1119

Skills

• Languages : Python, C, HTML
• Libraries and Tools: PyTorch, NumPy, Pandas, SciPy, Matplotlib, PyPortfolioOpt

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*