

# RAHUL DALAL

dalal@jhu.edu · 301 Krieger Hall · math.jhu.edu/~dalal

## POSITIONS

---

### Johns Hopkins University

NSF Postdoctoral Fellow/J.J. Sylvester Assistant Professor

**Sponsoring Scientist:** Yiannis Sakellaridis

Baltimore, MD

Fall 2021–Spring 2024

## EDUCATION

---

### UC Berkeley

Ph.D. in Mathematics

**Advisor:** Sug Woo Shin

**Thesis:** “Statistics of Certain Automorphic Representations through the Stable Trace Formula”

Berkeley, CA

Graduated: May 2021

### Harvard University

A.B. in Mathematics, *magna cum laude*

**Senior Thesis:** “Edge Universality for Random Matrices through the Method of Steepest Descent”

Cambridge, MA

Graduated: June 2015

## RESEARCH INTERESTS

---

- Automorphic Representations
- Trace formulas
- Endoscopy
- Langlands program

## PUBLICATIONS/PREPRINTS

---

- *Statistics of Cohomological Automorphic Representations on Unitary Groups via the Endoscopic Classification* (w/Mathilde Gerbelli-Gauthier), 95 pages
- *Counting Discrete, Level-1, Quaternionic Automorphic Representations on  $G_2$* , 28 pages, submitted
- *Sato-Tate Equidistribution for Families of Automorphic Representations through the Stable Trace Formula*, Algebra & Number Theory 16 (2022), no. 1, 59-137

## AWARDS AND FELLOWSHIPS

---

- NSF Postdoctoral Fellowship in Mathematics 2021
- UC Berkeley nominee for Schmidt Science Fellowship 2020
- Putnam honorable mention 2014

## TALKS

---

- IIT Bombay “Explicit Trace Formulas and Statistics of Families of ‘Nice’ Automorphic Representations”, Jan 18th 2023
- Tata Institute for Fundamental Research “Applications of the Endoscopic Classification to Statistics of Cohomological Automorphic Representations on Unitary Groups”, Jan. 16th 2023
- Boston College Rep. Thy. Seminar “Applications of the Endoscopic Classification to Statistics of Cohomological Automorphic Representations on Unitary Groups”, Nov. 17th 2022
- Princeton/IAS NT Seminar “Applications of the Endoscopic Classification to Statistics of Cohomological Automorphic Representations on Unitary Groups”, Nov. 3rd 2022, [video link]
- UMD Rep. Thy. Seminar “Applications of the Endoscopic Classification to Statistics of Cohomological Automorphic Representations on Unitary Groups”, Oct. 24 2022
- CLAP I workshop on the Langlands Program “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Aug. 13th 2022
- ESI workshop Minimal Reps. and the Theta Correspondence “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Apr. 14th 2022 [video link]
- 45th Midwest Rep. Theory Conference “Bounding Orbital Integrals through the Metric Geometry of Bruhat-Tits buildings”, Mar 11th., 2022
- UCSD NT Seminar “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Oct 28nd, 2021
- UVA NT Seminar “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Oct 22nd, 2021
- Duke NT Seminar “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Oct 13th, 2021
- Johns Hopkins NT Seminar “Counting level-1, quaternionic automorphic representations on  $G_2$ ”, Sept. 15th, 2021
- Johns Hopkins Jr. Number Theory Days “Statistics of Aut. Reps through Simplified Trace Formulas”, Dec 4th 2020
- NUS NT/rep. thy. seminar “Statistics of Aut. Reps through Simplified Trace Formulas”, Nov 5th 2020 [video link]
- POINT online contributed talk series, “Statistics of Aut. Reps through Simplified Trace Formulas”, Jul 27th 2020
- CARTOON online conference, “Statistics of Aut. Reps through Simplified Trace Formulas”, May 31st 2020 [video link]
- UW Madison NT/rep. thy. seminar, “Statistics of Aut. Reps through the Stable Trace Formula”, Apr 9th 2020
- UC Berkeley NT/arith. geom. seminar “Statistics of Aut. Reps through the Stable Trace Formula”, Apr 6th 2020
- Stanford student arith. geom. seminar, “Equidistribution in Families of Automorphic Representations”, Apr 23rd, 2019

## CONFERENCES ATTENDED

---

- Masterclass on the Relative Trace Formula (participant), U. of Copenhagen, Aug 2022
- CLAP workshop in the Langlands Program (speaker), HCM Bonn, Aug 2022
- Isaac Newton Institute workshop on Automorphic Reps. and Physics (participant), INI Cambridge, Aug 2022
- IHES summer school on the Langlands Program (participant), IHES, July 2022
- ESI workshop on Minimal Representations and the Theta Correspondence (speaker), ESI Vienna, April 2022
- 45th Midwest Representation Theory Conference (speaker), U. of Michigan, March 2022
- Arizona Winter School on Automorphic Forms beyond  $GL_n$  (participant), U. of Arizona, March 2022
- CIRM workshop on Periods, Functoriality, and  $L$ -functions, CIRM, Jan 2022
- BIRS workshop on Basic Functions, Orbital Integrals, and Beyond Endoscopy (participant), online, November 2021
- Automorphic Project and Research Seminar (participant), online, Spring 2021, Fall 2021
- Junior Number Theory Days (speaker), online, December 2020
- Paul J. Sally Jr. Midwest Representation Theory Conference (participant), online, October 2020
- CARTOON conference (speaker), online May 2020
- Arizona Winter School on Non-Abelian Chabauty (participant), U. of Arizona, March 2020
- Arizona Winter School on Topology and Arithmetic (participant), U. of Arizona, March 2019
- Endoscopy and Beyond (participant), Institute for Mathematical Sciences Singapore, December 2018-January 2019
- Arizona Winter School on Iwasawa Theory (participant), U. of Arizona, March 2018
- Arizona Winter School on Perfectoid Spaces (participant), U. of Arizona, March 2017
- Paul J. Sally Jr. Midwest Representation Theory Conference (participant), Purdue University, October 2017

---

## CONFERENCES AND SEMINARS ORGANIZED

- Bay Area Graduate Math Conference (BYGMAC), UC Berkeley, May 2019  
Conference to promote interaction between grad students at various bay area schools, co-organized
- Berkeley Undergraduate Number Theory Conference, UC Berkeley, Apr 2018, Nov 2020  
Conference to introduce interested undergrads to more advanced number theory topics, co-organized
- Many Cheerful Facts graduate student colloquium, Fall 2018, Spring 2019, Fall 2019  
seminar aimed at younger graduate students, co-organized
- Berkeley student number theory seminar, Fall 2018  
seminar, co-organized
- Graduate student seminar on Bruhat-Tits theory, Spring 2018  
learning seminar, co-organized
- Graduate student seminar on algebraic groups, Spring 2017  
learning seminar, co-organized
- Mini-course on representations of  $p$ -adic groups, Spring 2016  
4-lecture series

---

## SERVICE

- Berkeley Math Graduate Student Association—officer (Spring 2016–Fall 2020)
- Harvard Undergraduate Council—house representative (Spring 2013–Spring 2015)
- Harvard math survey on undergraduate climate—helped with survey design (Spring 2013)

---

## MENTORING

- Espen Slettnes, UC Berkeley Directed Reading Program, Fall 2017
- Qiyi Zhao, UC Berkeley Directed Reading Program, Spring 2016

---

## TEACHING

### Johns Hopkins University

*J.J. Sylvester Assistant Prof.*

- Math 304, Elementary Number Theory (current)

**Baltimore, MD**

Fall 2022-present

### University of California, Berkeley

*Graduate Student Instructor (GSI)*

- Math 104, Introduction to Analysis (Spring 2021)
- Math 254b, Class Field Theory (Spring 2020)
- Math 250b, Commutative Algebra (Spring 2020)
- Math 55, Discrete Mathematics (Spring 2019)
- Math 54, Linear Algebra and Differential Equations (Spring 2016, Spring 2018)
- Math 53, Multivariable Calculus (Fall 2016, Spring 2017)
- Math 1A, Calculus I (Fall 2015)

**Berkeley, CA**

Fall 2015- Spring 2021

### Ross Mathematics Program

*Counselor*

**Columbus, OH**

Summer 2011, 12