

Vivian Kuperberg

Curriculum Vitae

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Education

- 2017–2022 **Ph.D.**, *Stanford University*, Mathematics
advised by Kannan Soundararajan
- 2013–2017 **B.A.**, *Cornell University*, Mathematics
Summa Cum Laude

Employment

- 2023–2026 **Hermann Weyl Instructor**, *ETH Zürich*, Current
- 2023–2024 **NSF Postdoctoral Research Fellow**, *ETH Zürich*
- 2022–2023 **NSF Postdoctoral Research Fellow**, *Tel Aviv University*

Preprints

- N. Kimmel and V. Kuperberg, Positive density for consecutive runs of sums of two squares, 2024. [arXiv:2406.04174](https://arxiv.org/abs/2406.04174).
- V. Kuperberg and M. Lalín, Arithmetic constants for symplectic variances of the divisor function, 2024. [arXiv:2410.17939](https://arxiv.org/abs/2410.17939).
- T. Bloom and V. Kuperberg, Odd moments and adding fractions, 2023. [arXiv:2312.09021](https://arxiv.org/abs/2312.09021).

Publications

- M. Afifurrahman, V. Kuperberg, A. Ostafe, and I. Shparlinski, Statistics of ranks, determinants and characteristic polynomials of rational matrices, 2024. (accepted to *Forum Mathematicum*), [arXiv:2401.10086](https://arxiv.org/abs/2401.10086).
- R. de la Bretèche and V. Kuperberg, Lower bounds on weighted moments of primes in short intervals in number fields, 2024. (accepted to the *Israel Journal of Mathematics*), [2305.02662](https://arxiv.org/abs/2305.02662).
- N. Kimmel and V. Kuperberg, Consecutive runs of sums of two squares, *Journal of Number Theory* **264** (2024), 135–147.
- V. Kuperberg, Odd moments in the distribution of primes, 2024. (accepted to *Algebra & Number Theory*), [arXiv:2109.03767](https://arxiv.org/abs/2109.03767).
- V. Kuperberg, Sums of singular series along arithmetic progressions and with smooth weights, *International Journal of Number Theory* **0** (2024), 1–22.
- V. Kuperberg and M. Lalín, Symplectic conjectures for sums of divisor functions and explorations of an orthogonal regime, 2024. (accepted to the *Transactions of the American Mathematical Society*), [arXiv:2212.04969](https://arxiv.org/abs/2212.04969).

V. Kuperberg, Sums of singular series with large sets and the tail of the distribution of primes, *The Quarterly Journal of Mathematics* **74** (2023), 1457–1479. [arXiv:2210.09775](#).

V. Kuperberg, On pseudo-polynomials divisible only by a sparse set of primes and α -primary pseudo-polynomials, *Journal of Number Theory* (2022),. [arXiv:2006.02527](#).

V. Kuperberg and M. Lalin, Sums of divisor functions and von Mangoldt convolutions in $\mathbb{F}_q[T]$ leading to symplectic distributions, *Forum Mathematicum* **34** (2022), 711–747. [arXiv:2107.01437](#).

V. Kuperberg, B. Rodgers, and E. Roditty-Gershon, Sums of singular series and primes in short intervals in algebraic number fields, *Ramanujan Journal* **58** (2022), 291–317. [arXiv:2001.09513](#).

S. Kailasa, V. Kuperberg, and N. Wawrykow, Chip-firing on trees of loops, *Electronic Journal of Combinatorics* **25** (2018),. [arXiv:1706.04164](#).

M. Kassabov, V. Kuperberg, and T. Riley, Soficity and variations on Higman’s group, *Journal of Combinatorial Algebra* (2018),. [arXiv:1712.017191](#).

R. Connelly, M. Funkhouser, V. Kuperberg, and E. Solomonides, Packings of equal disks in a square torus, *Discrete & Computational Geometry* **58** (2017), 614–642. [arXiv:1512.08762](#).

V. Kuperberg, Hadamard matrices modulo p and small modular Hadamard matrices, *Journal of Combinatorial Designs* **24** (2016), 393–405. [arXiv:1409.0148](#).

Awards

- 2022–2024 **NSF Mathematical Sciences Postdoctoral Research Fellow**
- 2022 **Pólya Teaching Fellow**, *Stanford Mathematics Department*
- 2017–2022 **NSF Graduate Research Fellowship in Mathematics**
- 2017 **Kieval Prize**, *Cornell University Department of Mathematics*
- 2017 **Merrill Presidential Scholar**, *Cornell University*
- 2017 **Arts and Sciences Exceptional Senior**, *Cornell University*
- 2016 **Phi Beta Kappa Honor Society**, *Cornell University*
- 2015–2017 **Rawlings College Presidential Research Scholar**, *Cornell University*

Teaching

- 2025 **Instructor**, *ETH Zürich*
The distribution of prime numbers (undergraduate course, upcoming Spring 2025)
- 2024 **Teaching Assistant**, *ETH Zürich*
Number Theory I
- 2023 **Instructor**, *Tel Aviv University*
Sieve Theory Student Reading Seminar
- 2019–2021 **Teaching Assistant**, *Stanford University*
Math 51 (Winter 2019); Math 62 (Winter 2021)
- 2018–2020 **Course Assistant**, *Stanford University*, *Stanford University*
Math 171 (Fall 2018); Algebra Qual Prep Seminar (Winter 2020); Math 210 (Fall 2020)

- 2016–2022 **Staff member**, *Canada/USA Mathcamp*
Academic coordinator (2022), instructor (2018, 2021), undergraduate counselor (2016, 2017).
- 2014–2017 **Tutor**, *Cornell University Math Support Center*
Tutor (Fall 2014–Spring 2017), Head Tutor (Spring 2015–Spring 2017)
- 2015 **Undergraduate Researcher**, *Cornell SPUR Program*
- 2014 **Undergraduate Researcher**, *University of Minnesota, Duluth REU*

Other professional experience

- 2022–present **MathSciNet Reviewer**
Referee, including for *Journal d'Analyse Mathématique*, *Communications of the AMS*, *Mathematische Annalen*, *The Ramanujan Journal*

Service and Community Engagement

- 2019–2022 **Stanford Graduate Math Outreach Organization**, Directed Reading Program
President and Mentor
- 2019–2022 **Stanford Department of Mathematics**, Wellness Representative
- 2018–2022 **Canada/USA Mathcamp**, Hiring committee member
- 2017–2022 **Stanford Women in Math Mentoring Program**, Mentor
- 2015–2017 **Cornell Undergraduate Math Club**, Vice President (Fall 2015–Spring 2016),
President (Fall 2016–Spring 2017)

Talks and Presentations

- 2024 **Arithmétique en Plat Pays**, *Upcoming*, TBA
- 2024 **Developments in Modern Mathematics at the University of Göttingen**,
Plenary talk, Consecutive primes
- 2024 **Developments in Modern Mathematics at the University of Göttingen**,
Research talk, Sums of odd-ly many fractions and the distribution of primes
- 2024 **Heilbronn Number Theory Seminar**, Consecutive sums of two squares in
arithmetic progressions
- 2024 **AIM FRG graduate student seminar**, Sums of odd-ly many fractions
- 2024 **CRG: L-functions in Analytic Number Theory Seminar**, Consecutive sums
of two squares in arithmetic progressions
- 2024 **University of Gothenburg Algebraic Geometry and Number Theory Sem-
inar**, Sums of odd-ly many fractions and the distribution of primes
- 2024 **Institut Mittag-Leffler Analytic Number Theory Workshop**, Sums of odd-ly
many fractions and the distribution of primes
- 2024 **Rencontres de théorie analytique des nombres**, Les sommes de deux nombres
carrés consécutives dans les progressions arithmétiques
(in French)
- 2023 **Georgia Tech Number Theory Seminar**, Sums of odd-ly many fractions and
the distribution of primes
- 2023 **Virtual Brazilian Analytic Number Theory Seminar**, Consecutive sums of
two squares in arithmetic progressions

- 2023 **ITS Algebraic Geometry and Number Theory Seminar**, Sums of odd-ly many fractions and the distribution of primes
- 2023 **ETH Zürich Number Theory Seminar**, Consecutive sums of two squares in arithmetic progressions
- 2023 **Tel Aviv University Number Theory Seminar**, Consecutive sums of two squares mod q
- 2023 **Oxford University Number Theory Seminar**, Sums of arithmetic functions over $\mathbb{F}_q[T]$ and non-unitary distributions
- 2023 **Göttingen Oberseminar Zahlentheorie**, Sums of singular series and the distribution of primes
- 2022 **Tel Aviv University Number Theory Seminar**, Sums of arithmetic functions over $\mathbb{F}_q[T]$ and non-unitary distributions
- 2022 **Andrew Granville's 60th birthday conference**, Sums of singular series and the distribution of primes
- 2022 **Canadian Math Society Summer Meeting**, Sums of singular series and the distribution of primes
- 2022 **University of Illinois at Urbana-Champaign Number Theory Seminar**, Odd moments in the distribution of primes
- 2022 **AIM FRG graduate student seminar**, The Hardy–Littlewood k -tuple conjecture and intervals with many primes
- 2021 **Junior Number Theory Days 2021**, Odd moments in the distribution of primes
- 2021 **Carnegie Mellon Undergraduate Math Club**, On pseudopolynomials
- 2021 **UC Irvine number theory seminar**, Odd moments in the distribution of primes
- 2021 **University of Montréal number theory seminar**, Odd moments in the distribution of primes
- 2021 **Ole Miss number theory seminar**, Odd moments in the distribution of primes
- 2021 **Boston university number theory seminar**, Odd moments in the distribution of primes
- 2021 **AIM graduate student seminar**, *The second moment of quadratic twists of modular L -functions*
- 2021 **Stanford/Caltech Analytic Number Theory student seminar**, *Supercuspidal representations of $\mathrm{GL}_2(\mathbb{F}_q)$*
- 2020 **Stanford Analytic Number Theory student seminar**, *Entries of the character table of S_N that are multiples of a given prime*
- 2020 **Stanford Analytic Number Theory student seminar**, *Primes with restricted digits*
- 2020 **Stanford Analytic Number Theory student seminar**, *Reduced residues and primes in short intervals*
- 2020 **Stanford Analytic Number Theory student seminar**, *Roth's Theorem via almost-periodicity*
- 2020 **Stanford Area Exam**, *The distribution of prime numbers and sums of singular series*
- 2020 **Stanford Kiddie Colloquium**, *Dirichlet's Class Number Formula, Dirichlet Style*

- 2019 **Stanford Student L-functions Reading Seminar**, *Maass Waveforms*
- 2019 **Stanford Student Elliptic Curves Seminar**, *Siegel's Theorem*
- 2019 **Stanford Student Arizona Winter School Preparatory Seminar**, *Hochschild Homology*
- 2018 **Stanford Kiddie Colloquium**, *How To Juggle*
- 2017 **Cornell Topology and Geometric Group Theory Seminar**, *Soficity and variations on Higman's group*
- 2015, 2016 **Splash! at Cornell**, *n-dimensional doodles (2015), Soda cans, donuts, hanging pictures, and the fundamental group (2016)*
- 2016 **AMS Sectional Meeting**, *Packings of equal disks in a square torus*
With R. Connelly, M. Funkhouser, E. Solomonides.
- 2016 **Cornell Undergraduate Math Club**, *On defeating hydras*
- 2015 **Cornell Undergraduate Math Club**, *Fun facts about free groups*
- 2015 **Joint Math Meetings**, *Hadamard matrices modulo p and small modular Hadamard matrices*

Personal

Citizenship United States

Other Skills Java · Python · Sage · \LaTeX · \TiKZ · French (proficient) · Hebrew (proficient) · German (elementary)