Anurag Sahay

Curriculum Vitae (last update: 2025-05-05)

MATH 402, Purdue University
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Employment

Aug '23– **Golomb Visiting Assistant Professor**, Purdue University.
Mentor: Prof. Trevor D. Wooley.

Education

2018–2023 **Doctor of Philosophy**, *Mathematics*, University of Rochester (UoR).
Doctoral Adviser: Prof. Steven M. Gonek.

2018–2020 **Master of Arts**, *Mathematics*, University of Rochester.

2011–2016 **B.S.–M.S. (Dual Degree)**, *Mathematics and Scientific Computing*,
Indian Institute of Technology, Kanpur (IITK).
Graduated with Distinction; Minors in: (1) Theory of Computing, and (2) Literature.

Publications

6. Winston Heap and Anurag Sahay, *The fourth moment of the Hurwitz zeta function*, **J. Reine Angew. Math.**, no. 818: 291–319, 2025., doi:10.1515/crelle-2024-0086, arxiv:2405.10888.

5. Brian McDonald, Anurag Sahay, and Emmett L. Wyman, *The VC dimension of quadratic residues in finite fields*, **Discrete Math.**, 348(1): Paper No. 114192, 13 pp., 2025., doi:10.1016/j.disc.2024.114192, arxiv:2210.03789.

4. Joshua Cooper, Dheer Noal Desai, and Anurag Sahay, *Principal eigenvectors in hypergraph Turán problems*, **Electron. J. Linear Algebra**, 40: 697–713, 2024., doi:10.13001/ela.2024.8497, arxiv:2401.10344.

3. Anurag Sahay, *Moments of the Hurwitz zeta function on the critical line*, **Math. Proc. Cambridge Philos. Soc.**, 174(3): 631–661, 2023., doi:10.1017/S0305004122000457, arxiv:2103.13542.

2. Winston Heap, Anurag Sahay, and Trevor D. Wooley, *A paucity problem associated with a shifted integer analogue of the divisor function*, **J. Number Theory**, 242:660–668, 2023., doi:10.1016/j.jnt.2022.05.006, arXiv:2108.00287.

1. Alex McDonald, Brian McDonald, Jonathan Passant, and Anurag Sahay, *Distinct distances from points on a circle to a generic set*, **Integers**, 21:Paper No. A55, 2021., arXiv:2005.02951.

Preprints

- Steven M. Gonek and Anurag Sahay, *Consecutive moderate gaps between zeros of the Riemann zeta function*, 2024., arxiv:2412.15481.
- Alexandra Florea, Matilde Lalín, Amita Malik, and Anurag Sahay, *The shifted convolution problem in function fields*, 2025., arxiv:2502.16067.

Teaching

(at Purdue).

Fall '25 *(upcoming)*	MA 30300: Differential Equations and Partial Differential Equations for Engineering and the Sciences.
Spring '25	MA 35100: Elementary Linear Algebra, *(×2 sections)*.
Spring '24	MA 35100: Elementary Linear Algebra.
Fall '23	MA 26500: Linear Algebra.

(as Instructor-of-Record at UofR).

Summer '23	Math 201: Introduction to Probability.
Spring '23	Math 165: Linear Algebra w/ Differential Equations.
Summer '22	Math 165: Linear Algebra w/ Differential Equations.
Spring '22	Math 143: Calculus III.
Summer '21	Math 142: Calculus II.

Talks

16 Apr 2025	Number Theory Seminar, Kennesaw State University
06 Apr 2025	Special Session on Recent Trends on Graphs and Hypergraphs, AMS Spring Eastern Sectional, Hartford
05 Apr 2025	Special Session on Counting and Asymptotics in Number Theory, AMS Spring Eastern Sectional, Hartford
28 Jan 2025	Number Theory Seminar, Rutgers University
04 Dec 2024	Number Theory Seminar, Kansas State University
04 Dec 2024	Graduate Number Theory Seminar, Kansas State University
28 Nov 2024	Number Theory Seminar, Queen's University, Kingston
21 Nov 2024	Number Theory Seminar, IIT Bombay
19 Nov 2024	Mathematics Colloquium, IMSc Chennai
14 Nov 2024	Number Theory Seminar, ISI Kolkata
07 Nov 2024	Circle Methods and Related Topics, ICTS Bengaluru
18 Sep 2024	Purdue Analytic Number Theory and Harmonic Analysis (PANTHA) Seminar
09 May 2024	Quebec-Vermont Number Theory Seminar (QVNTS)
03 May 2024	Algebra/Number Theory Seminar, University of Rochester
21 Feb 2024	Joint Analytic Number Theory Seminar, Stanford University
12 Feb 2024	Combinatorics and Discrete Probability Seminar, University of Illinois at Chicago
09 Feb 2024	Combinatorics/Graph Theory Seminar, Purdue University

07 Oct 2023	Special Session on Analytic Number Theory and related fields, AMS Fall Central Sectional, Omaha
04 Oct 2023	Purdue Analytic Number Theory and Harmonic Analysis (PANTHA) Seminar
23 May 2023	CANT 2023 (Combinatorial and Additive Number Theory)
18 Mar 2023	Special Session on Discrete Analysis, AMS Spring Southeastern Sectional, Atlanta
01 Apr 2023	11th Annual Upstate New York Number Theory Conference
14 Feb 2023	Number Theory Seminar, University of Mississippi
02 Feb 2023	Number Theory Seminar, UC Irvine
04 Jan 2023	AMS Contributed Paper Session, Joint Mathematical Meetings, Boston
01 Dec 2022	Weekly Seminar, PIMS CRG on L-functions in Analytic Number Theory
18 Nov 2022	Discrete Math and Combinatorics Seminar, University of South Carolina
11 Nov 2022	Program on Number Theory and Physics, Simons Center for Geometry and Physics
02 Nov 2022	Algebra/Number Theory Seminar, University of Rochester
29 July 2022	PIMS CRG Workshop on Moments of L-functions, University of Northern British Columbia
27 May 2022	CANT 2022 (Combinatorial and Additive Number Theory)
02 Apr 2022	47th Annual New York State Regional Graduate Mathematics Conference, Syracuse
28 Mar 2022	Graduate Number Theory Seminar, Rutgers University
23 Mar 2022	Number Theory Seminar, Duke University
18 Mar 2022	Graduate Students' Seminar, University of Rochester
21 Apr 2021	London Analytic Number Theory Study Group
27 Feb 2020	Combinatorics Seminar, University of Rochester
25 Feb 2020	Combinatorics Seminar, University of Rochester

High School and Undergraduate Mentoring

Mentor Network, *Association for Women in Mathematics*.

Sep'23–	Carol Wu. (She wrote arxiv:2403.19696 in the course of our discussions.)

Directed Reading Program at Purdue.

Jan'24–Apr'24	Junhyeok Kil, *Introduction to spectral graph theory*.

Guided Reading Program, *AMS Grad Student Chapter, UofR*.

Sep'22–Jul'23	Alhussein Khalil, *Roth's theorem on arithmetic progressions*.
Feb'22–Aug'22	Tran Duy Anh Le, *Introduction to analytic number theory*.
Oct'20–May'21	Zhengkai Li, *Introduction to analytic number theory*.

Joint Mentorship Program, *AMS Grad Student Chapter & SUMS, UofR*.

Oct'19–Jan'20	Peter Dragos.

Other Teaching Experience

Teaching Assistant – Recitations & Workshops, *(at UofR)*.

Spring '21	Math 165: Linear Algebra with Differential Equations.

Fall '20	Math 141: Calculus I.
Spring '19	Math 162: Calculus IIA.
	Teaching Assistant – Grading, *(at UofR)*.
Fall '22	Math 200: Transition to Advanced Mathematics.
Fall '21	Math 280: Introduction to Numerical Analysis.
Spring '21	Math 233: Introduction to Cryptography.
Spring '20	Math 437: Graduate Algebra II.
Fall '19	Math 436: Graduate Algebra I.
Fall '18	Math 201: Introduction to Probability.
2012-2014	**(Senior) Academic Mentor**, *(at Counselling Service, IITK)*.
	Taught remedial classes for institute-core mathematics courses, and mentored some students one-on-one

Journal Refereeing

- Discrete Math.
- J. Number Theory
- Ramanujan J.
- Math. Ann.
- Math. Proc. Cambridge Philos. Soc.
- Int. J. Number Theory

Conferences, Workshops, Research Schools, etc

23-27 Jun '25 *(upcoming)*	Diophantine Equations, Combinatorics, Analysis in Number Theory, ICMS Edinburgh
05-06 Apr '25	‡AMS Spring Eastern Sectional Meeting, Hartford
29-30 Mar '25	MAGNTS 2025, The Ohio State University
05-08 Nov '24	‡Circle Method and Related Topics, ICTS Bengaluru
26-30 Aug '24	Analytic Number Theory and Arithmetic Statistics, CRM, Montréal
28-30 May '24	†SCHOLAR II, The Fields Institute, Toronto
13-16 May '24	Int'l Conference on L-functions and Automorphic Forms, Vanderbilt
16-20 Oct '23	AIM Workshop: Delta symbols and the subconvexity problem
07-08 Oct '23	‡AMS Fall Central Sectional Meeting, Creighton University, Omaha
23-26 May '23	†Combinatorial and Additive Number Theory, 2023*
01-02 Apr '23	†11th Annual Upstate New York Number Theory Conference, Rochester
18-19 Mar '23	†AMS Spring Southeastern Sectional Meeting, GeorgiaTech, Atlanta
04-07 Jan '23	†Joint Mathematical Meetings, Boston
18-20 Nov '22	BIRS Workshop: L-functions in Analytic Number Theory*
24-28 Oct '22	SCGP Workshop: Number Theory and Physics, Stony Brook
01-04 Aug '22	ANTeater '22, UC Irvine

25-29 Jul '22	†PIMS CRG Workshop on Moments of L-functions⋆
21-24 Jun '22	50 Years of Number Theory and Random Matrix Theory, IAS, Princeton
24-27 May '22	†Combinatorial and Additive Number Theory, 2022⋆
02 Apr '22	†47th Annual NYS Regional Graduate Mathematics Conference, Syracuse
06-10 Dec '21	AIM Workshop: Spectral graph and hypergraph theory⋆
Apr '21-Jun '21	‡London Analytic Number Theory Study Group⋆
07-17 Jun '21	Summer School: Polynomial Methods, HIM, Bonn⋆
24-28 May '21	UNCG Summer School: Applications of Expander Graphs to Number Theory and Computer Science⋆
10-21 May '21	Hausdorff School: The Circle Method, HIM, Bonn⋆
17-18 Apr '21	AMS Spring Central Sectional Meeting⋆
03-04 Oct '20	AMS Fall Eastern Sectional Meeting⋆
09-23 Jul '14	École d'été: Théorie analytique des nombres, IHÉS, France
†	– contributed talk, ‡ – invited talk
⋆	– online

▬▬▬ Service

2025 (upcoming)	**Co-organizer, Special Session on Analytic Number Theory and Related Topics**, *American Mathematical Society*. Fall Western Sectional Meeting at University of Denver
2023–	**Reviewer for Math. Reviews**, *MathSciNet*. American Mathematical Society
2023–	**Co-organizer, PANTHA Seminar**, *Purdue University*. (Purdue Analytic Number Theory And Harmonic Analysis)
2021–2024	**Organizer, FRG Grad Seminar**, *American Institute of Mathematics*. NSF FRG on L-functions and Arithmetic Stratification (DMS-1854398)
2019–2022	**Grad Student Member, Board on Academic Honesty**. College of Arts, Sciences & Engineering; University of Rochester
2019–2020	**Organizer, Problem Solving Seminar**, *AMS Grad Student Chapter*. Department of Mathematics, University of Rochester
2019–2020	**Math Department Representative**, *Graduate Students' Association*. College of Arts, Sciences & Engineering; University of Rochester
2012–2015	**Students' Senate Nominee, Senate Undergraduate Committee**. Indian Institute of Technology, Kanpur
2014–2015	**Chairperson, Students' Senate**. Indian Institute of Technology, Kanpur

▬▬▬ Awards, Scholarships, Fellowships, and Grants

2024–2026	**AMS-Simons Travel Grant**.

2024–2026	**SQuaRE Grant**, *American Institute of Mathematics*.
	(joint with Alexandra Florea, Matilde Lalín, and Amita Malik)
2023	**JMM Graduate Student Travel Grant**, *American Mathematical Society*.
2023	**Graduate Student Travel Grant for Sectional Meetings**, *American Mathematical Society*.
2022 & 2023	**Dean's Teaching Fellowship**, *AS&E, UofR*.
	Fellowship for teaching a course as instructor-of-record during a regular semester; typically awarded to only 2-4 math grads in an academic year.
2016	**Ratan Swarup Memorial Prize**, *IITK*.
	Best all round undergraduate student graduating at the Convocation of IIT Kanpur
2016	**IIT Kanpur Excellence Award for Leadership in Students' Affairs**.
2014	**Prof. J.N. Kapur Prize**, *Department of Mathematics and Statistics, IITK*.
	Best student among 3rd year undergrads and 1st year Masters in the department
2014	**Academic Excellence Award**, *Senate Scholarships and Prizes Committee, IITK*.
2013	**Summer Research Fellowship**, *Indian Science Academies*.
	Awarded by IASc, Bangalore; INSA, Delhi; and NASI, Allahabad to do a project under the guidance of Prof. R. Balasubramanian and Prof. Sanoli Gun at the IMSc, Chennai
2011	**Kishore Vaigyanik Protsahan Yojana (KVPY) SX Fellowship**, *IISc Bangalore*.
	Awarded to 78 (out of about 100,000 applicants) undergraduate students excelling in the fields of science to encourage them to take up research careers as scientists.
2008	**NTSE Scholarship**, *National Council of Educational Research and Training*.
	Awarded to the top 1000 high school students in India on the basis of a National Talent Search Examination (NTSE).

▬▬▬ Non-academic Work Experience

Sep'16–Sep'17	**Boston Consulting Group**, *Gurgaon, Haryana, India*.
	Associate
May'15–Jul'15	**Deutsche Bank (DB Centre)**, *Mumbai, Maharashtra, India*.
	Summer Analyst