

# Asif Zaman

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## APPOINTMENTS

- 2019–     University of Toronto  
          Assistant Professor, Teaching Stream
- 2017–19   Stanford University  
          NSERC Postdoctoral Scholar

## EDUCATION

- Ph.D.     Mathematics, University of Toronto, 2017  
          supervised by [John Friedlander](#)
- M.Sc.     Mathematics, University of British Columbia, 2012
- B.Sc.     Mathematics, Simon Fraser University, 2010

## RESEARCH AREAS

Number theory: analytic, probabilistic, and algebraic.

## GRANTS AND FELLOWSHIPS

- 2022–27   NSERC Discovery Grant – Early Career Researcher (\$115,000)
- 2022       NSERC Discovery Launch Supplement (\$12,500)
- 2022       Pedagogical Innovation and Experimentation Fund, Faculty of Arts & Science (\$4,000)
- 2019       Teaching Stream Pedagogical Grant, Faculty of Arts & Science (\$2,000)
- 2017–19   NSERC Postdoctoral Fellowship (\$90,000)
- 2016       Queen Elizabeth II Graduate Scholarship (\$15,000)
- 2015       Ontario Graduate Scholarship (\$15,000)
- 2012–15   NSERC Postgraduate Scholarship D (\$63,000)
- 2010       NSERC Canada Graduate Scholarship M (\$17,500)

## PUBLICATIONS

### Published or Accepted

15.       D. Aggarwal, U. Subedi, W. Verreault, A. Zaman, and C. Zheng. “A conjectural asymptotic formula for multiplicative chaos in number theory.” *Res. Number Theory*. 8 (2022), no. 35. [doi:10.1007/s40993-022-00332-x](https://doi.org/10.1007/s40993-022-00332-x)

14. D. Aggarwal, U. Subedi, W. Verreault, A. Zaman, and C. Zheng. “Sums of random multiplicative functions over function fields with few irreducible factors.” *Math. Proc. Camb. Phil. Soc.*, (2022) published online. [doi:10.1017/S030500412200010X](https://doi.org/10.1017/S030500412200010X)
13. K. Soundararajan and A. Zaman. “A model problem for multiplicative chaos in number theory.” *Enseign. Math.*, 68 (2022), no. 3, 307–340. [doi:10.4171/lem/1031](https://doi.org/10.4171/lem/1031)
12. J. Thorner and A. Zaman. “A zero density estimate for Dedekind zeta functions.” *Int. Math. Res. Not.*, (2022) published online. [doi:10.1093/imrn/rnaco15](https://doi.org/10.1093/imrn/rnaco15)
11. F. Brumley, J. Thorner, and A. Zaman. With an appendix by C. J. Bushnell and G. Henniart. “Zeros of Rankin-Selberg  $L$ -functions at the edge of the critical strip.” *J. Eur. Math. Soc.*, 24 (2022), no. 5, 1471–1541. [doi:10.4171/jems/1134](https://doi.org/10.4171/jems/1134).
10. J. Thorner and A. Zaman. “An unconditional  $GL(n)$  large sieve.” *Adv. Math.* 378 (2021), paper no. 107529, 24 pp. [doi:10.1016/j.aim.2020.107529](https://doi.org/10.1016/j.aim.2020.107529)
9. J. Thorner and A. Zaman. “A unified and improved Chebotarev density theorem.” *Alg. Num. Theory*. 13 (2019), no. 5, 1039–1068. [doi:10.2140/ant.2019.13.1039](https://doi.org/10.2140/ant.2019.13.1039)
8. A. Zaman. “Primes represented by positive definite binary quadratic forms.” *Q.J. Math.* 56 (2018), no. 4, 1353–1386. [doi:10.1093/qmath/hay028](https://doi.org/10.1093/qmath/hay028)
7. B. Hanson and A. Zaman. “The density of numbers represented by diagonal forms of large degree.” *Mathematika*. 64 (2018), no. 2, 542–550. [doi:10.1112/S0025579318000190](https://doi.org/10.1112/S0025579318000190)
6. J. Thorner and A. Zaman. “A Chebotarev variant of the Brun–Titchmarsh theorem and bounds for the Lang–Trotter conjectures.” *Int. Math. Res. Not.* 2018 (2018), no. 16, 4991–5027. [doi:10.1093/imrn/rnx031](https://doi.org/10.1093/imrn/rnx031)
5. A. Zaman. “The least unramified prime which does not split completely.” *Forum. Math.* 30 (2017), no. 3, 651–661. [doi:10.1515/forum-2017-0081](https://doi.org/10.1515/forum-2017-0081)
4. J. Thorner and A. Zaman. “An explicit bound for the least prime ideal in the Chebotarev density theorem.” *Alg. Num. Theory* 11 (2017), no. 5, 1135–1197. [doi:10.2140/ant.2017.11.1135](https://doi.org/10.2140/ant.2017.11.1135)
3. A. Zaman. “Bounding the least prime ideal in the Chebotarev Density Theorem.” *Funct. Approx. Comment. Math.* 57 (2017), no. 1, 115–142. [doi:10.7169/facm/1651](https://doi.org/10.7169/facm/1651)
2. A. Zaman. “On the least prime ideal and Siegel zeros.” *Int. J. Number Theory*. 12 (2017), no. 8, 2201–2229. [doi:10.1142/S1793042116501335](https://doi.org/10.1142/S1793042116501335)
1. A. Zaman. “Explicit estimates for the zeros of Hecke  $L$ -functions.” *J. Number Theory*. 162 (2016), 312–375. [doi:10.1016/j.jnt.2015.10.003](https://doi.org/10.1016/j.jnt.2015.10.003)

### Submitted and In Preparation

18. A. Zaman. “Partial sums of general random multiplicative functions.” (2022), in preparation.
17. J. Thorner and A. Zaman. “Refinements to the prime number theorem for arithmetic progressions.” (2021), submitted. [arxiv:2108.10878](https://arxiv.org/abs/2108.10878)
16. R.J. Lemke Oliver, J. Thorner, and A. Zaman. “An approximate form of Artin’s holomorphy conjecture and non-vanishing of Artin  $L$ -functions.” (2021), submitted. [arxiv:2012.14422](https://arxiv.org/abs/2012.14422)

## INVITED TALKS

### Conferences

- 2022 Ulsan National Institute of Science and Technology. Ulsan, Korea.  
First International Workshop in Analytic Number Theory
- 2020 Canadian Mathematical Society Winter Meeting. Montréal, QC.  
Arithmetic Statistics session
- 2020 Canadian Mathematical Society Winter Meeting. Montréal, QC.  
Probability in Number Theory session
- 2019 Joint Math Meetings. Baltimore, MD.  
AMS Special Session. Analytic Number Theory
- 2019 Joint Math Meetings. Baltimore, MD.  
AMS Invited Paper Session. Counting Methods in Number Theory
- 2018 Canadian Mathematical Society Winter Meeting. Vancouver, BC.  
Analytic Number Theory session
- 2018 Oregon Number Theory Days. Corvallis, OR.  
Hosted by Portland State University, University of Oregon, and Oregon State University
- 2017 Joint Math Meetings. Atlanta, GA.  
AMS Special Sessions. Analytic Number Theory and Arithmetic
- 2016 Canadian Mathematical Society Winter Meeting. Niagara Falls, ON.  
Analytic Number Theory session
- 2016 Canadian Number Theory Association 14th Meeting. University of Calgary. Calgary, AB.
- 2015 Canadian Mathematical Society Winter Meeting. Montréal, QC.  
Analytic Number Theory session
- 2014 Teaching Assistants' Day. University of Toronto. Toronto, ON.

### Seminars

- 2022 Rutgers University. Newark, NJ.  
Number Theory seminar
- 2021 Kansas State University. Manhattan, KS.  
Number Theory seminar
- 2021 University of Mississippi. Oxford, MS.  
Number Theory seminar
- 2021 Heilbronn Institute. Bristol, UK.  
Number Theory seminar
- 2021 Montreal number theory group. Montréal, QC.  
MOBIUS ANT mini-course
- 2021 Institut Elie Cartan de Lorraine. France.  
Nancy Metz Number Theory seminar
- 2021 Boise State University. Boise, ID.  
Department colloquium

- 2021 Fields Institute. Toronto, ON.  
Number Theory seminar
- 2020 University of Lethbridge. Lethbridge, AB.  
Number Theory and Combinatorics seminar
- 2019 University of Wisconsin-Madison. Madison, WI.  
Number Theory seminar
- 2019 University of New South Wales Canberra. Canberra, Australia.  
Number Theory seminar
- 2019 University of New South Wales Sydney. Sydney, Australia.  
Number Theory seminar
- 2019 Duke University. Durham, NC.  
Number Theory seminar
- 2018 Tufts University. Medford, MA.  
Algebra and Number Theory seminar
- 2018 Stanford University. Stanford, CA.  
Number Theory seminar
- 2018 University of Oregon. Eugene, OR.  
Number Theory seminar
- 2018 University of Wisconsin-Madison. Madison, WI.  
Number Theory seminar
- 2018 Boise State University. Boise, ID.  
Complexity Across Disciplines REU seminar
- 2017 University of Waterloo. Waterloo, ON.  
Number Theory seminar
- 2016 Stanford University. Stanford, CA.  
Number Theory seminar
- 2016 University of Lethbridge. Lethbridge, AB.  
Number Theory and Combinatorics seminar
- 2016 York University. Toronto, ON.  
Number Theory seminar

## **AWARDS**

- 2017 Ida Bulat Teaching Award  
department award for teaching excellence as a graduate student course instructor
- 2016 Daniel B. Delury Teaching Award  
department award for teaching excellence as a TA
- 2014 TATP TA Teaching Excellence Award  
university award for teaching excellence as a TA
- 2010 Governor General's Silver Medal, Simon Fraser University.

## TEACHING DEVELOPMENT AND LEADERSHIP

- 2019–21 Director of Math Learning Centre, University of Toronto  
designed and implemented new drop-in TA resource for large first year courses both in-person and online; relocated to better space in collaboration with FAS
- 2019–20 MAA Project NExT Silver Dot  
participated at invited MAA program for teaching development of junior faculty members workshops at MathFest 2019, JMM 2020, and MathFest 2020
- 2019 First-time TA training, Mathematics Department, University of Toronto  
led interactive session on grading, feedback, and consistency for 90 TAs
- 2018 Postdoc instructor training, Mathematics Department, Stanford University  
led two sessions on experiences with active learning at this 3-day workshop
- 2017 Graduate student instructor training, Mathematics Department, University of Toronto  
provided feedback to graduate students in microteaching session
- 2017 Mentors in Teaching Program, Stanford University  
participated in 3 workshops and gave feedback to TAs in the Math Department
- 2013–14 Advanced University Teaching Preparation Certificate, University of Toronto  
offered by Teaching Assistants' Training Program for completing 10 workshops, in-class observation, microteaching, and teaching dossier
- 2014 Teaching Large Classes, Mathematics Department, University of Toronto  
Course offered by Prof. Joe Repka with practice preparing course materials and teaching a class
- 2013–14 Teaching Assistants' Training Program workshops, University of Toronto  
offered by Centre for Teaching Support & Innovation including: Active Learning Methods in Science and Engineering; Pedagogy 101; Accessibility and AODA in the University Environment; Fostering Academic Integrity; Dealing with Students in Difficulty

## TEACHING EXPERIENCE

### University of Toronto

- 2021–22 MAT237 Multivariable Calculus with Proofs (coordinator)
- 2021 Fall MAT198 Cryptology
- 2020–21 MAT237 Multivariable Calculus with Proofs (coordinator)
- 2020 Fall MAT198 Cryptology
- 2020 Winter MAT198 Cryptology
- 2019–20 MAT137 Calculus with Proofs (coordinator)

### Stanford University

- 2019 Spring MATH 122 Modules and Group Representations
- 2019 Spring MATH 106 Functions of a Complex Variable
- 2018 Spring MATH 52 Integral Calculus of Several Variables
- 2018 Winter MATH 106 Functions of a Complex Variable

## University of Toronto

2017 Winter	MAT135 Calculus I(A) for Life Sciences (co-coordinator)
2016 Fall	MAT186 Calculus I for Engineers
2016 Summer	MAT136 Calculus I(B) for Life Sciences (co-coordinator)
2015 Fall	MAT186 Calculus I for Engineers
2014 Fall	MAT186 Calculus I for Engineers
2014 Summer	MAT136 Calculus I(B) for Life Sciences (co-coordinator)

## STUDENT SUPERVISION

### Undergraduate Research

2020	Daksh Aggarwal, Fields Undergraduate Research Summer Program
2020	Unique Subedi, Fields Undergraduate Research Summer Program
2020	William Verreault, Fields Undergraduate Research Summer Program
2020	Chenghui Zheng, Fields Undergraduate Research Summer Program

### Undergraduate Work-Study

2022	Sirui (Ariel) Chen, textbook design assistant
2022	Kevin Didi, textbook design assistant
2022	Sarah Verreault, textbook design assistant
2022	Amy Wang, textbook design assistant
2021	Sam De Abreu, textbook design assistant
2021	Raymond Liu, textbook design assistant
2021	Lucas Prates, textbook design assistant

## CONFERENCE ACTIVITY

### Sessions Organized

2019	Canadian Mathematical Society Winter Meeting Analytic Number Theory session. co-organized with Yu-Ru Liu and Stanley Xiao.
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### Conferences Attended

2020	Joint Math Meetings. Denver, CO. Project NExT program
2019	Canadian Mathematical Society Winter Meeting. Toronto, ON. Analytic Number Theory session
2019	MAA MathFest. Cincinnati, OH. Project NExT program

- 2018 Hausdorff Center for Mathematics. Bonn, Germany.  
Summer school on  $L$ -functions
- 2018 Centre de Recherches Mathématiques. Montréal, QC.  
Probability in number theory
- 2017 Mathematical Sciences Research Institute. Berkeley, CA.  
Recent developments in Analytic Number Theory
- 2017 Fields Institute. Toronto, ON.  
Efficient Congruencing and Translation-invariant Systems
- 2017 Fields Institute. Toronto, ON.  
Heights and Applications to Unlikely Intersections
- 2016 Fields Institute. Toronto, ON.  
Serre's Uniform Boundedness Conjecture
- 2014 Centre de Recherches Mathématiques. Montréal, QC.  
New approaches in probabilistic and multiplicative number theory
- 2014 Centre de Recherches Mathématiques. Montréal, QC.  
Statistics and number theory
- 2014 Canadian Number Theory Association 13th Meeting. Ottawa, ON.
- 2012 26th Automorphic Forms Workshop. Vancouver, BC.
- 2011 Pacific Northwest Number Theory Conference. Bellingham, WA.
- 2010 Canadian Mathematics Society Winter Meeting. Vancouver, BC.

### **Contributed Talks**

- 2018 Canadian Number Theory Association 15th Meeting. Québec City, QC.
- 2015 Elementary, analytic, and algorithmic number theory: in honor of Carl Pomerance's 70th.  
Athens, GA.
- 2012 Canadian Mathematical Society Winter Meeting. Montréal, QC.  
Analytic Number Theory satellite session

## **SERVICE**

### **Seminars Organized**

- 2017–19 Stanford Analytic Number Theory learning seminar

### **Academic Journal Peer Review**

*Algebra and Number Theory*

*Bulletin of the London Mathematical Society*

*Duke Mathematical Journal*

*Forum Mathematics, Pi*

*Journal of Mathematical Analysis and Applications*

*Journal of Number Theory*

*Mathematical Research Letters*

*Mathematics of Computation*

*Mathematika*

*Proceedings of the American Mathematical Society*

*Research in the Mathematical Sciences*

*Transactions of the American Mathematical Society*

**Service to Field**

Reviewer, MathSciNet, 2018–

**Service to Department**

Teaching Stream Appointments Committee, University of Toronto, 2021–22

Workload Committee, University of Toronto, 2020–2021

Undergraduate Committee, University of Toronto, 2019–2021

Appeals committee member, Mathematics Graduate Student Association, University of Toronto, 2015–17

Social committee member, Mathematics Graduate Student Association, University of Toronto, 2013–15

Updated July 2022