

# ANDREW AHN

ajahn.math@gmail.com

## EMPLOYMENT

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**Cornell University**

NSF Postdoctoral Associate (Visiting Assistant Professor)

*July 2021 - present*

**Columbia University**

Joseph F. Ritt Assistant Professor

*July 2020 - June 2021*

## EDUCATION

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**Massachusetts Institute of Technology**

Ph.D. in Pure Mathematics. Advisor: Prof. Vadim Gorin

*September 2015 - May 2020*

**Northwestern University**

*Summa cum laude* B.A. in Mathematics; Mathematical Methods in the Social Sciences.

*September 2011 - June 2015*

## PUBLICATIONS AND PREPRINTS

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- *Extremal Singular Values of Random Matrix Products and Brownian Motion on  $GL(N, \mathbb{C})$* , preprint, arXiv:2201.11809.
- *Lyapunov Exponents for Truncated Unitary and Ginibre Matrices* (joint with R. Van Peski), preprint, arXiv:2109.07375.
- *Lozenge Tilings and the Gaussian Free Field on a Cylinder* (joint with M. Russkikh and R. Van Peski), preprint, arXiv:2105.00551.
- *Airy Point Process via Supersymmetric Lifts*, preprint, arXiv:2009.06839.
- *Fluctuations of  $\beta$ -Jacobi Product Processes*, to appear in *Probab. Theory and Related Fields*, arXiv:1910.00743.
- *Product Matrix Processes with Symplectic and Orthogonal Invariance via Symmetric Functions* (joint with E. Strahov), *Int. Math. Res. Not. IMRN*, Apr. 2021, rnab045.
- *Global Universality of Macdonald Plane Partitions* *Ann. Inst. H. Poincaré Probab. Stat.*, vol. 56, no. 3, Aug. 2020, pp. 1641-1705.
- *Discrete Derivative Asymptotics of the  $\beta$ -Hermite Eigenvalues* (Joint with G. Goel), *Combinatorics, Probability and Computing*, vol. 25, no. 5, Sept. 2019, pp. 657-674.
- *Density of Gabor Systems via the Short Time Fourier Transform* (joint with W. Clark, S. Nitzan, J. Sullivan), *Journal of Fourier Analysis and Applications*, vol. 24, no. 3, June 2018, pp. 699-718.

## RESEARCH TALKS

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*Random Matrix Sums and Supersymmetric Lifts*, Random Matrix Theory Seminar, University of Melbourne, Nov. 2020.

*Airy Edge Fluctuations in Random Matrix Sums*, Probability and the City Seminar, Columbia University/NYU, Oct. 2020,

*Addition of Random Matrices and Quantized Analogues*, Junior Integrable Probability Seminar, Columbia University, Sept. 2020.

*GFF in  $q^{\text{vol}}$  plane partitions*, Seminar from a Safe Distance, MIT, May 2020.

*Largest Singular Values of Products of  $\beta$ -Ensembles*, Special Jerusalem Analysis Seminar, Hebrew University of Jerusalem, Jan. 2020.

Virginia Integrable Probability Summer School, University of Virginia, June 2019.

Combinatorics Seminar, UCSD, Jan. 2019.

Integrable Probability Seminar, Columbia University, Oct. 2018.

Probability Seminar, Brown University, Apr. 2018.

Integrable Probability Seminar, MIT Nov. 2017.

## EXPOSITORY TALKS

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*Universality of the Gaussian Free Field*, Simple Person's Applied Math Seminar, MIT, May 2017.

*Reconstruction of Signals*, Mathematics Club Seminar, Northwestern University, May 2015.

## TEACHING AND MENTORING

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### Cornell University

- Introduction to Probability Theory: Math 4170 Spring 2022
- Statistical Theory and Application in the Real World: Math 1710 Fall 2021

### Columbia University

- Calculus III: Math UN1201 Spring 2021, Summer 2021
- Linear Algebra: Math UN2010 Spring 2021

### Cornell Probability Summer School

Summer 2019

- Prepared and gave supplemental lectures for a course "Lectures on Random Tilings" given by Vadim Gorin.

### MIT PRIMES Program

January 2017 - December 2018

- Mentored Gopal Goel (a high school student at the time) on a project in random matrix theory.
  - Published a joint paper.
  - Gopal made the Intel ISEF finals in 2018 (4th place in the Math category) and placed 4th in the 2021 Regeneron Science Talent Search Competition with submissions based on this project.
- Jointly mentored Gopal Goel and Andrew Yao (as high school students) on a project in asymptotic representation theory.
  - The project report is available online:  
<https://math.mit.edu/research/highschool/primes/materials/2018/Ahn-Goel-Yao.pdf>.
  - This project led to their paper (<https://arxiv.org/abs/2011.10724>) which is submitted.

### MIT Undergraduate Research Opportunities Program

June 2016 - August 2016

- Mentored an undergraduate (Mark Sellke) on Gaussian free fields and imaginary geometry, culminating in an expository article:  
<https://math.mit.edu/research/undergraduate/urop-plus/documents/2016/Sellke.pdf>

### Teaching Assistant

- 18.06 Linear Algebra, 6.9/7.0 Student Evaluation Overall Rating Spring 2019

- 18.01A/18.02A Accelerated Calculus, 6.9/7.0 Student Evaluation Overall Rating Fall 2018
- 18.03 Differential Equations, 6.8/7.0 Student Evaluation Overall Rating Spring 2018

### **SELECTED AWARDS**

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- Johnson Prize for best published paper written by MIT math grad student 2020
- Member of Phi Beta Kappa Society 2015
- Oliver Marcy Scholar Award for top three Northwestern students in the natural sciences 2014
- 3X Outstanding Achievement in Mathematics 2013-2015