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| CONTACT INFORMATION | <p>rvp@mit.edu Department of Mathematics Massachusetts Institute of Technology 77 Mass Ave, Cambridge, MA 02139</p> |
| CITIZENSHIP | USA |
| EDUCATION | <p>Massachusetts Institute of Technology</p> <p>Ph.D. in Mathematics, advised by Alexei Borodin 2018-2023</p> <p>Princeton University</p> <p>A.B. in Mathematics, <i>summa cum laude</i> with highest honors in mathematics 2014-2018</p> <ul style="list-style-type: none"> • Certificate (minor) in Applied and Computational Mathematics • GPA: 4.0 (departmental), 3.90 (overall) |
| PAPERS AND PREPRINTS (REVERSE CHRONOLOGICAL) | <ol style="list-style-type: none"> 1. <i>Universal local limits in p-adic random matrix theory</i>. In preparation. 2. (with H. Nguyen) <i>Universality for cokernels of random matrix products</i>. https://arxiv.org/abs/2209.14957 3. (with P. Cohen, J. Dell, O. E. González, G. Iyer, S. Khunger, C. H. Kwan, S. J. Miller, A. Shashkov, A. Smith Reina, C. Sprunger, N. Triantafyllou, N. Truong, S. Willis, and Y. Yang) <i>Extending support for the centered moments of the low lying zeroes of cuspidal newforms</i>. https://arxiv.org/abs/2208.02625 4. <i>q-TASEP with position-dependent slowing</i>. To appear in Electronic Journal of Probability. https://arxiv.org/abs/2112.03725 5. <i>Hall-Littlewood polynomials, boundaries, and p-adic random matrices</i>. International Mathematics Research Notices. https://arxiv.org/abs/2112.02147 6. (with A. Ahn) <i>Lyapunov exponents for truncated unitary and Ginibre matrices</i>. To appear in Annales de l'Institut Henri Poincaré. https://arxiv.org/abs/2109.07375 7. (with A. Ahn and M. Russkikh) <i>Lozenge tilings and the Gaussian free field on a cylinder</i>. Lozenge tilings and the Gaussian free field on a cylinder. Communications in Mathematical Physics, 1–55, 2022. https://arxiv.org/abs/2105.00551 8. <i>Limits and fluctuations of p-adic random matrix products</i>. Selecta Mathematica, 27 (05):1–71 (2021). https://arxiv.org/abs/2011.09356 9. <i>Spectral distributions of periodic random matrix ensembles</i>. Random Matrices: Theory and Applications, 10(01) 2021. https://arxiv.org/abs/1710.00240 10. (with S. DeHority, X. Gonzalez, and N. Vafa) <i>Moonshine for all finite groups</i>. Res. Math. Sci. 5 (2018), 14. https://arxiv.org/abs/1707.05249 11. (with O. E. González, C. H. Kwan, S. J. Miller, and T. A. Wong), <i>On smoothing singularities of elliptic orbital integrals on $GL(n)$ and Beyond Endoscopy</i>, Journal of Number Theory 183 (Supplement C) (2018) 407-437. https://arxiv.org/abs/1707.05249 |

12. (with P. Burkhardt, P. Cohen, J. Dewitt, M. Hlavacek, S.J. Miller, C. Sprunger, Y.N. Truong Vu, and K. Yang) *Random matrix ensembles with split limiting behavior*. Random Matrices: Theory and Applications **5** (2018) no. 3, 1850006. <https://arxiv.org/abs/1609.03120>
13. (with S. J. Miller, C. Peterson, and C. Sprunger) *The bidirectional ballot polytope*. Integers: The Electronic Journal of Combinatorial Number Theory **18** (2018). <https://arxiv.org/abs/1708.02399>.
14. (with V. Gupta and U. Roy) *A generalization of Tokuyama's formula to the Hall-Littlewood polynomials*, Electronic J. Combin. **22** (2015), no. 2, #P2.11. <https://arxiv.org/abs/1403.8139>

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| SELECTED FELLOWSHIPS AND AWARDS | NSF Graduate Research Fellowship | 2018-2023 |
| | MIT Presidential Fellowship An Institute-wide merit award | 2018-2019 |
| | Phi Beta Kappa | May 2018 |
| | Andrew H. Brown Prize for Outstanding Juniors in Mathematics Awarded by the Princeton mathematics department to three juniors (out of a class of 34) | May 2017 |
| | Top 200, William Lowell Putnam Mathematical Competition | December 2015 |
| | 1st Place in Algebra category, JMM Undergraduate Poster Session | January 2015 |
| | Intel International Science and Engineering Fair 4th in Category Award | May 2014 |
| | Outstanding Presentation Award, JMM Undergraduate Poster Session | January 2014 |
| | Siemens Competition Semifinalist in Mathematics Category | November 2013 |

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| INVITED TALKS | <ul style="list-style-type: none"> • Cornell Probability Seminar • Probability and Mathematical Physics 2022 (Helsinki) • Probability and the City Seminar • UChicago Probability and Statistical Physics Seminar • St. Petersburg Youth Conference in Probability and Mathematical Physics • Northeast Probability Seminar • Junior Integrable Probability Seminar • UW-Madison Joint Probability and Number Theory Seminar • Columbia Integrable Probability Seminar • OSU Virtual Combinatorics & Probability seminar • UniMelb-Bielefeld RMT seminar • Joint Mathematics Meetings • International Conference of the Indian Mathematics Consortium in cooperation with the AMS • Quebec-Maine Number Theory Conference | <ul style="list-style-type: none"> November 2022 (poster) June 2022 April 2022 March 2022 December 2021 November 2021 March 2021 February 2021 February 2021 January 2021 November 2020 January 2018 December 2016 October 2016 |
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| TEACHING | Graduate teaching assistant - MIT <ul style="list-style-type: none"> • Spring 2021: 18.03 (Differential Equations) • Fall 2020: 18.600 (Probability Theory) Undergraduate course assistant - Princeton University <ul style="list-style-type: none"> • Fall 2015: MAT 216 (Accelerated Honors Analysis I) • Spring 2016: MAT 218 (Accelerated Honors Analysis II) • Fall 2016: MAT 340 (Applied Algebra I) • Spring 2017: MAT 355 (Introduction to Differential Geometry) • Fall 2017: MAT 320 (Introduction to Real Analysis) • Spring 2018: MAT 330 (Complex Analysis with Applications) |
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MENTORING

Mentor, MIT Grad-Undergrad Math Mentor Initiative (GUMMI) 2021-present
Mentor, MIT directed reading program (DRP)

Mentors for this program guide MIT undergraduates reading an advanced textbook during the month-long independent activities period (IAP) in January. I advised the following groups:

- Sean Li (Lie algebras), Joshua Kuffour and Katie Miner (statistical physics) January 2022
- Korina Digalaki and Dhruv Rohatgi (random matrices) January 2021
- Korina Digalaki (integrable probability) January 2020
- Joshua Amaniampong and Yogeshwar Velingker (Lie groups and quantum mechanics) January 2019

Mentor, MIT SPUR and UROP Summer 2020-Spring 2021

Supervised undergraduate Korina Digalaki in a research project on the 6-vertex model, meeting three times weekly during summer and weekly/biweekly during academic year.

Program in Mathematics for Young Scientists (PROMYS)

- **Counselor (July 2015 – August 2015)** Gave three high school students daily feedback on their work in the first-year number theory program, mentored a student research project in combinatorics, and graded for the class Complex Analysis in Number Theory.
- **Head counselor (July 2018 – August 2018)** Along with two other head counselors, oversaw a team 25 counselors in running most aspects of the ~70-student program (in addition to regular counselor duties as above). Mentored students Aman Aggarwal, Caroline Choi and Nathan Sun in a research project which became <https://arxiv.org/abs/1809.07398>.
- **Research lab coordinator (July 2019 – August 2019)** Helped organize and oversee independent research projects of ~20 returning students.

Princeton Splash 2014 – 2018

- Splash is an educational event in which roughly 300 high school students come to Princeton’s campus for a day to take short hour classes in a wide array of topics from Princeton students.
- **Teacher coordinator (2014-2015)** Helped recruit undergraduates to teach classes.
- **Co-director (2015-2016, 2016-2017)** Directed a team of about 10 Princeton undergraduates to organize all aspects of the event and coordinate with Princeton administration and national nonprofit Learning Unlimited.
- **Advisor (2017-2018)** Advised and assisted the new directors in running the event.

Princeton University Math Club

- **Advising co-chair (2017-2018)** Ran a ‘big-small’ program ‘Mentoring Möbius’, which brings together graduate students and undergraduates to talk about math in an informal setting.

SERVICE

Co-organizer, MIT Integrable Probability Working Group Fall 2021 – present

Co-organizer, MIT Seminar from a Safe Distance Spring 2020 – Fall 2021

Co-organizer, MIT pure math graduate student seminar (PuMaGraSS) 2019 – 2020

Referee activities include reports for Probability Theory and Related Fields, Advances in Mathematics.