

Larry Rolen

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- Education**
- **Emory University**, Ph.D. Mathematics (2013).
Dissertation in number theory on “Maass Forms and Quantum Modular Forms”
Advisor: Ken Ono
 - **University of Wisconsin–Madison**, B.A. Mathematics with Honors (2011).
- Research Interests**
- Number theory, combinatorics, modular forms, arithmetic geometry, harmonic Maass forms.
- Employment**
- **Vanderbilt University**, Assistant Professor, 2018-present.
 - **Georgia Institute of Technology**, Visiting Assistant Professor, 2017-2018.
 - **Trinity College Dublin**, Assistant Professor, 2016-2018.
 - **The Pennsylvania State University**, Research Associate, 2015-2016.
 - **University of Cologne**, Postdoc, 2013-2015.
- Fellowships & Awards**
- Dean’s Research Studio, Vanderbilt University, 2023.
 - 2 Month stay at the Max Planck Institute for Mathematics in Bonn, Germany, as part of the Guest Program, 2022.
 - Dean’s Faculty Fellow, Vanderbilt University, 2021-2023.
 - AIM SQuaRE Workshop on Indefinite Theta Functions and moonshine, co-applied for and received funding for 3 annual workshops, 2018-2020.
 - Prose Award (Best Scholarly Book in Math), Association of American Publishers, 2018.
 - “Thank Your Lecturer!,” Trinity College Dublin, 2016.
 - NSF Graduate Fellowship, Fall 2012 and Spring 2013.
 - Woodruff Fellowship, Emory University, Fall 2011 and Spring 2012.
 - NSF REU in Number Theory, Emory University.
 - MAA Undergraduate Poster Session (Joint Math Meetings) Prize Winner, 2011.
 - Young Mathematicians Conference Outstanding Presentation, second place, 2010.
 - NSF REU in Combinatorics and Number Theory, Clemson University.
 - Frank D. Cady Scholarship, UW-Madison Mathematics Department, 2010.
 - Lawrence Young Memorial Scholarship, UW–Madison Mathematics Department, 2009.
 - VIGRE, NSF Undergraduate Research Grant, 2009.
- Grants**
- NSF conference grant, with Andreas Mono and Jesse Thorner, \$25,000, 2024.
 - Simons Foundation: Collaboration Grants for Mathematicians, \$42,000, 2021-2026.
 - NSA Math Sciences Program conference grant, with Ian Wagner, \$10,500 (2020, extended due to COVID-19).
 - NSF conference grant, with Ian Wagner, \$7,500 (2020, extended due to COVID-19).
 - SFI Conference & Workshop Programme Grant, with Jan Manschot, (€6,000), 2017.
 - University of Cologne Postdoc Grant (€60,000) duration 2 years, 2014.

Books

1. K. Bringmann, A. Folsom, K. Ono, and L. Rolen, *Harmonic Maass forms and mock modular forms: theory and applications*, AMS Colloquium Series, 2017 (391 pages).

Publications

1. T. Anderson, L. Rolen, and R. Stoehr, *Benford's Law for Coefficients of Modular Forms and Partition Functions*, Proc. Amer. Math. Soc., **139** (2011), 1533–1541.
2. N. Amersi, J. Beyerl, J. Brown, A. Proffer, and L. Rolen, *Pullbacks of Siegel Eisenstein Series and Weighted Averages of Critical L-Values*, Ramanujan J., **27**, No. 2 (2012) 151–162.
3. L. Rolen, *A Generalization of the Congruent Number Problem*, Int. J. Number Theory, **7**, No. 8 (2011), 2237–2249.
4. E. Larson and L. Rolen, *Progress Towards Counting D_5 Quintic Fields*, Involve, **5**, No. 1 (2012), 91–97.
5. E. Larson and L. Rolen, *Upper Bounds for the Number of Number Fields with Alternating Galois Group*, Proc. Amer. Math. Soc., **141** (2013), 499–503.
6. E. Larson and L. Rolen, *Integrality Properties of the CM-values of Certain Weak Maass Forms*, Forum Math., **27**, No. 2 (2015), 961–972.
7. M. Griffin and L. Rolen, *On Matrices Arising in the Finite Field Analogue of Euler's Integral Transform*, Mathematics, **1**, No. 1 (2013), 3–8.
8. M. Griffin and L. Rolen, *Integrality Properties of Class Polynomials for Non-Holomorphic Modular Functions*, J. Ramanujan Math. Soc., **30**, No. 1 (2015), 83–99.
9. L. Rolen and R. Schneider, *A "Strange" Vector Valued Quantum Modular Form*, Arch. Math., **101** (2013), 43–52.
10. M. Griffin, K. Ono, and L. Rolen, *Ramanujan's Mock Theta Functions*, Proc. Natl. Acad. Sci. U.S.A., **110**, no. 15 (2013), 5765–5768.
11. V. Dose, N. Green, M. Griffin, T. Mao, L. Rolen, and J. Willis, *Singular Moduli for a Distinguished Non-Holomorphic Modular Function*, Proc. Amer. Math. Soc., **143**, No. 3 (2015), 965–972.
12. K. Bringmann, T. Creutzig, and L. Rolen, *Negative Index Jacobi Forms and Quantum Modular Forms*, Res. Math. Sci., **1** (2014), 1:11 (32 pages).
13. C. Alfes, M. Griffin, K. Ono, and L. Rolen, *Weierstrass Mock Modular Forms and Elliptic Curves*, Res. Number Theory, (2015) 1:24 (31 pages).
14. P. Guerzhoy, Z. Kent, and L. Rolen, *Congruences for Taylor Expansions of Quantum Modular Forms*, Res. Math. Sci., **1** (2014), 1:17 (17 pages).
15. K. Ono, L. Rolen, and S. Trebat-Leder, *Classical and Umbral Moonshine: Connections and p -adic Properties*, J. Ramanujan Math. Soc. **30**, No.2 (2015), 135–159.
16. K. Bringmann and L. Rolen, *Half-Integral Weight Eichler Integrals and Quantum Modular Forms*, J. Number Theory, special issue in honor of Winnie Li, **161** (2016), 240–254.
17. M. Mertens and L. Rolen, *On class invariants for non-holomorphic modular functions and a question of Bruinier and Ono*, Res. Number Theory, (2015) 1:4 (13 pages).
18. M. Mertens and L. Rolen, *Lacunary Recurrences for Eisenstein Series*, Res. Number Theory, (2015) 1:9 (5 pages).
19. L. Rolen, *A New Construction of Eisenstein's Completion of the Weierstrass Zeta Function*, Proc. Amer. Math. Soc., **144** (2016) 1453–1456.

20. K. Bringmann, J. Duncan, and L. Rolén, *Maass-Jacobi Poincaré Series and Mathieu Moonshine*, Adv. Math., **281** (2015), 248–278.
21. K. Bringmann and L. Rolén, *Radial Limits of Mock Theta Functions*, Res. Math. Sci., **2** (2015), 2:17 (18 pages).
22. K. Bringmann, L. Rolén, and S. Zwegers, *On the modularity of certain functions from the Gromov-Witten theory of elliptic orbifolds*, Royal Soc. Open Sci **2**: 150310 (12 pages).
23. L. Rolén, *On t -core towers and t -defects of partitions*, Ann. Comb., **21**, No. 1 (2017), 119–130.
24. K. Bringmann, L. Rolén, and S. Zwegers, *On the Fourier coefficients of negative index meromorphic Jacobi forms*, Res. Math. Sci. (2016) **3**: 5 (9 pages).
25. M. Krauel, L. Rolén, and M. Woodbury, *On a relation between certain q -hypergeometric series and Maass waveforms*, Proc. Amer. Math. Soc., **145** (2017), 543–557.
26. K. Bringmann, J. Manschot, and L. Rolén, *Identities for generalized Appell functions and the blow-up function*, Lett. Math. Phys., **106**, no. 10 (2016), 1379–1395.
27. K. Ono, L. Rolén, and R. Schneider, *Explorations in the theory of partition zeta functions*, 223–264, Chapter 10 of the book *Exploring the Riemann Zeta Function: 190 years from Riemann’s Birth*, editors: H. Montgomery, A. Nikeghbali, and M. Rassias, Springer 2017.
28. K. Ono, L. Rolén, and F. Sprung, *Zeta-polynomials for modular form periods*, Adv. Math., **306** (2017), 328–343.
29. K. Bringmann, J. Lovejoy, and L. Rolén, *On some special families of q -hypergeometric Maass forms*, Int. Math. Res. Not., Vol. 2018, No. 18, 5537–5561.
30. N. Andersen, K. Bringmann, and L. Rolén, *Images of Maass-Poincaré series in the lower half-plane*, Contributions in Mathematical and Computational Science **10**, Springer 2017, proceedings of *L-functions and automorphic forms* (15 pages).
31. K. Bringmann, B. Kane, S. Löbrich, K. Ono, and L. Rolén, *Number-theoretic generalization of the Monster denominator formula*, Journal of Physics A: Mathematical and Theoretical **50** (2017) 473001, issue on “New Moonshines”, 14 pages.
32. K. Bringmann, J. Kaszian, and L. Rolén, *Indefinite theta functions arising in Gromov-Witten Theory of elliptic orbifolds*, Cambridge Journal of Mathematics, **6** no. 1 (2018), 25–57.
33. N. Diamantis and L. Rolén, *Period polynomials, derivatives of L -functions, and zeros of polynomials*, Res. Math. Sci., in the collection: Modular Forms are Everywhere: Celebration of Don Zagier’s 65th Birthday, **5** (9) (2018) (15 pages).
34. K. Bringmann, B. Kane, S. Löbrich, K. Ono, and L. Rolén. *On divisors of modular forms*, Adv. Math., **329** (2018), 541–554.
35. N. Benjamin, S. Kachru, K. Ono, and Larry Rolén, *Black holes and class groups*, Research in the Mathematical Sciences, **5** (2018), in the collection: Modular Forms are Everywhere: Celebration of Don Zagier’s 65th Birthday, A43, 22 pages.
36. M. Griffin, K. Ono, L. Rolén, and D. Zagier, *Jensen polynomials for the Riemann zeta function and other sequences*, Proceedings of the National Academy of Sciences, USA, **116**, no. 23 (2019), 11103–11110.
37. K. Ono and L. Rolén, *On Witten’s extremal partition functions*, Annals of Combinatorics, (special issue for George Andrews’ 80th birthday conference), **23** (2020), 953–961.
38. N. Gillman, X. Gonzalez, K. Ono, L. Rolén, and M. Schoenbauer, *From partitions to Hodge numbers of Hilbert Schemes of Surfaces*, Philosophical Transactions of the Royal Society, Series A, **378** (2020),

- 2163, special issue: “Srinivasa Ramanujan: in celebration of the centenary of his election as FRS”, (13 pages).
39. L. Rolén and K. Taylor, *Richaud-Degert Real Quadratic Fields and Maass Waveforms*, Annals of Combinatorics (special issue for George Andrews’ 80th birthday), Annals of Combinatorics, **23** (2019), 1009–1026.
 40. K. Bringmann, B. Kane, S. Löfflich, K. Ono, and L. Rolén, *Corrigendum for “On Divisors of modular forms”*, Advances in Mathematics (2020) **374**: Art. 106751.
 41. S. Ehlen, P. Guerzhoy, B. Kane, and L. Rolén, *Central L-values of elliptic curves and local polynomials*, Proc. London Math. Soc. **120** (2020), 742–769.
 42. N. Diamantis and L. Rolén, *Eichler cohomology and zeros of polynomials associated to derivatives of L-functions*, Journal für die reine und angewandte Mathematik (Crelle’s Journal), **770** (2021), 1–25.
 43. P. Guerzhoy, M. Mertens, and L. Rolén, *Periodicities for Taylor coefficients of half-integral weight modular forms*, Pacific Journal of Math., **307** no. 1 (2020), 131–157.
 44. L. Rolén, *Mordell Integrals*, entry in “Srinivasa Ramanujan - His Life, Legacy, and Mathematical Influence,” editors: Krishnaswami Alladi, George E. Andrews, Bruce C. Berndt and Ken Ono, to appear, 3 pages.
 45. L. Rolén and I. Wagner, *A note on Schwartz functions and modular forms*, Archiv der Mathematik, **115** (2020), 35–51.
 46. A. Babei, L. Rolén, and I. Wagner, *The Riemann Hypothesis for Period Polynomials of Hilbert modular forms*, Journal of Number Theory, **218** (2021), 44–61.
 47. M. Mertens, K. Ono, and L. Rolén, *Mock modular Eisenstein series with Nebentypus*, Int. J. Number Theory (special issue for Bruce Berndt’s 80th birthday conference), **17** no. 3 (2021), 683–697.
 48. K. Bringmann, B. Kane, L. Rolén, and Z. Tripp, *Fractional partitions and conjectures of Chern-Fu-Tang and Heim-Neuhauser*, Trans. Amer. Math. Soc. Ser. B **8** (2021), 615–634.
 49. J. Males, A. Mono, and L. Rolén, *Higher depth mock theta functions and q-hypergeometric series*, Forum Mathematicum, vol. **33**, no. 4, 2021, 857–866.
 50. M. Griffin, K. Ono, L. Rolén, J. Thorner, Z. Tripp, and I. Wagner, *Jensen polynomials for the Riemann Xi function*. Advances in Mathematics Volume 397, **5** March 2022, 108186 (17 pages).
 51. J. Males, A. Mono, and L. Rolén, *Polar harmonic Maaßforms and holomorphic projection*, International Journal of Number Theory, vol. 18, (2022) no. 09, pp. 1975 –2004.
 52. M. Griffin, K. Ono, L. Rolén, and W.-L. Tsai, *Limiting Betti distributions of Hilbert schemes on n points*, Canadian Mathematical Bulletin, Canadian Mathematical Bulletin, (2022), 1–16.
 53. K. Bringmann, K. Gomez, L. Rolén, and Z. Tripp, *Infinite families of crank functions, Stanton-type conjectures, and unimodality*, Research in the Mathematical Sciences volume 9, Article number: 37 (2022) (arxiv version 20 pages).
 54. Y. Jiang, L. Rolén, and M. Woodbury, *Generalized Frobenius partitions, Motzkin paths, and Jacobi forms*, Journal of Combinatorial Theory Series A, Volume 190, Issue C, Aug 2022 (28 pages).
 55. K. Ono, S. Pujahari, and L. Rolén, *Turán Inequalities for the plane partition function*, Advances in Mathematics, Volume 409, Part B, 19 November 2022, 108692 (31 pages).
 56. K. Gomez, J. Males, and L. Rolén, *The second shifted difference of partitions and applications*, Bulletin of the Australian Mathematical Society **107** no. 1 (2023), 66–78.
 57. N. Diamantis, M. Lee, W. Raji, and L. Rolén, *L-series of harmonic Maass forms and a summation formula for harmonic lifts*, Int. Math. Res. Not., Volume 2023, Issue 18, Pages 15729–15765.

58. N. Diamantis, M. Lee, and L. Rolen, *Analogues of the Bol Operator for half-integral weight weakly holomorphic modular forms*, Proc. Amer. Math. Soc., **152**, no. 1 (2024), Pages 37–51.
59. N. Diamantis and L. Rolen, *L-values of harmonic Maass forms*, Trans. Amer. Math. Soc., **377** no. 06 (2024), 3905–3926.
60. A. Folsom, J. Males, and L. Rolen, *Equidistribution and partition polynomials*, Ramanujan Journal, Volume 65, pages 1827–1848, (2024), part of the collection: “100 years of Mock Theta Functions: A celebration of Ramanujan’s influence from his last letter until today.”
61. J. Branch, N. Diamantis, W. Raji, and L. Rolen, *Period-like polynomials for L-series associated with half-integral weight cusp forms*, Res. Math. Sci., volume 11, article 44 (2024), (14 pages).
62. K. Bringmann, S.H. Man, L. Rolen, and M. Storzer, *Asymptotics of Parity Biases for Partitions into Distinct Parts via Nahm Sums*, Proc. London Math Soc. **129** no. 6 (2024), (40 pages).
63. W. Bridges, W. Craig, A. Folsom, and L. Rolen *Zeros of Hook Polynomials and Related Questions*, SIGMA **21** (2025), 026, 14 pages.
64. K. Bringmann, A. Mono, and L. Rolen *Flipping operators and harmonic Maass forms*, Ramanujan J. **68**, 40 (2025) (13pages).
65. K. Banerjee, K. Bringmann, and L. Rolen, *Recent developments in the Jensen-Pólya Program*, Journal of Open Mathematical Problems, accepted for publication (18 pages).
66. A. Folsom, J. Males, L. Rolen, and M. Storzer, *Oscillating asymptotics and conjectures of Andrews*, Mathematische Annalen, accepted for publication, arXiv:2305.16654 (36 pages).

Preprints

67. K. Ono, M. Locus Dawsey, A. Wilson, S. Mesihovic, F. Muir, S. Ono, J. Howell, L. Rolen, *A case study of elite breaststrokers using inertial measurement units*, submitted (18 pages).
68. M. Alsharif, M. Gibson, D. de Laat, M. Milinovich, Z. Tripp, L. Rolen, and I. Wagner, *Pair correlation for Dedekind zeta functions*, in preparation.
69. J. Duncan, M. Griffin, M. Mertens, and L. Rolen, *Elliptic curve arithmetic and Janko’s first group*, in preparation.
70. L. Rolen, Z. Tripp, and I. Wagner, *Cranks for Ramanujan-type congruences of k-colored partitions*, submitted, arxiv: 2006.16195 (22 pages).
71. K. Bringmann, S.H. Man, and L. Rolen, *Unimodality of ranks and a proof of Stanton’s conjecture*, arxiv: 2209.12239 (23 pages)
72. T. Huber, J. McLaughlin, L. Rolen, and D. Ye, *Some Remarks on the Coefficients of Hecke Eigenforms and Chebyshev Polynomials of the Second Kind*, submitted (10 pages).
73. A. Mono, J. Males, L. Rolen, and I. Wagner, *Central L-values of newforms and local polynomials*, submitted, arxiv: 2306.15519 (47 pages).
74. E. McSpirit and L. Rolen *Quantum Modular Forms and Resurgence*, submitted (33 pages).
75. O. Beckwith, N. Diamantis, R. Gupta, K. Thalagoda, and L. Rolen, *Summation formulas for Hurwitz class numbers and other mock modular coefficients*, submitted (33 pages).
76. A. Mono, L. Rolen, and J. Stumpfenhusen, *On a divisor modular form and a theta lift*, submitted (14 pages).
77. K. Bringmann, B. Kane, A. Pahari, and L. Rolen, *Strict log-concavity of k-coloured partitions*, submitted (13 pages).

78. K. Banerjee, K. Bringmann, and L. Rolén, *The Jensen-Pólya Program and Inequalities for Arithmetic Sequences*, submitted (26 pages).
79. K. Bringmann, P. Guerzhoy, M. Mertens, and L. Rolén *On U_p -congruences for Meromorphic Modular Forms vis Supersingularity*,, submitted, 15 pages.

Advising

Postdocs

- Eleanor McSpirit (Fall 2024- Spring 2026). Winner of Vanderbilt 2025 Chair's Teaching Award. First position after Vanderbilt: Assistant Professor at California Polytechnic State University, San Luis Obispo.
- Andreas Mono (Fall 2023- Spring 2026).
- Ian Wagner (2019-2021). First position after Vanderbilt: Postdoc at the University of Cologne.
- Angelica Babei (2019-2020). Positions first year after Vanderbilt: Postdoctoral Fellow at the CRM thematic semester "Cohomology in Arithmetic" (Fall), Postdoctoral researcher at Dartmouth College, as part of the Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation (Spring).

Graduate Students

- Jayashree Kalita (2024-present)
- Zachary Tripp (2018-2021), winner of 2022 Bjarni Jónsson graduate student research prize from the Vanderbilt Mathematics department. First position after Vanderbilt: Software Engineer at Digital Insight Games.

Undergraduate Research

- Supervised undergraduate honors theses obtaining highest honors for Kevin Gomez and Madelynn Roche at Vanderbilt University (both finished in 2022) and Joshua Hunt (finished in 2023). Supervised honors theses for Binh Ho and Ethan Sherman (both finished in 2024).
- Organized and funded the Cologne Young Researchers in Number Theory Program 2015 and advised 9 international students for 6 weeks. This resulted in 3 publications, in the journals Proc. Amer. Math. Soc. and Res. Number Theory.

Theses

- Four Master's/Diploma theses and one Bachelor's thesis co-advised with Kathrin Bringmann at the University of Cologne.
- Served on undergraduate thesis committee for Qianhan Liu, Vanderbilt University, 2019, Jeffrey Cheng, Vanderbilt University, 2022, Will Fowlkes, Vanderbilt University, 2025, Jiaming Zhang, Vanderbilt University, 2025, Alberto Magaña, Vanderbilt University, 2025, Evelyn Zhang, 2025.
- University of Cologne PhD defense committees: René Olivetto (2014), Michael Mertens (2014).
- Vanderbilt Ph.D. defense committees: Ahram Feigenbaum (2019), Jun Yang (2021), Nathaniel Tenpas (2024).
- Other Ph.D. defense committees: Hamed Mousavi (2022), Georgia Tech.
- External reviewer for Joshua Drewitt, University of Nottingham, 2021.

Emory REU

- 2013, 2018, and 2019: Teaching and advising in the REU in Number Theory at Emory University organized by Ken Ono.

Other

- Guest on episode of podcast GRASP, host Michael Sandborn, 2023.
- Contributed to Quanta article: “Behold Modular Forms, the ‘Fifth Fundamental Operation’ of Math”
- Co-founder, with Mark Sapir, of the Nashville Math Club. This is a math circle for middle and high schoolers. I have co-run the operations of the club since 2019.
- Advised 3 students at the Hamilton Trust Summer Internship Programme 2017 at Trinity College Dublin, which I organized.
- Advised a visiting Ph.D. student at the Pennsylvania State University for one month.
- Libby Taylor (undergraduate at Georgia Tech)
- Joshua Males (Ph.D. student at the University of Cologne)
- Served as academic advisor for a number of undergraduate math majors at Vanderbilt.
- Contributor to Interactive Linear Algebra Textbook at Georgia Tech: <https://textbooks.math.gatech.edu/ila/>

Teaching

- **Coding Theory and Cryptography**, 2 sections (Spring 2026).
- **Being Human**, Vanderbilt University (Fall 2025)
- **Graduate Algebra II**, Vanderbilt University (Spring 2025).
- **Graduate topics course in modular forms**, Vanderbilt University (Spring 2025).
- **Graduate Algebra I**, Vanderbilt University (Fall 2024).
- Taught a 2 week course to high schoolers in Vanderbilt Summer Academy, through the Program for Talented Youth. Course title: “**Exploring Number Theory: Unveiling the Queen of Mathematics**’.”
- **Graduate Algebra II**, Vanderbilt University (Spring 2024).
- **Graduate Algebra I**, Vanderbilt University (Fall 2023).
- **Number Theory**, Vanderbilt University (Spring 2023).
- **Coding theory and Cryptography**, Vanderbilt University (Fall 2022).
- **Topics Course on Modular Forms**, Vanderbilt University (Fall 2020).
- **Graduate Algebra II**, Vanderbilt University (Spring 2020).
- **Number Theory**, Vanderbilt University (Spring 2020).
- **Graduate Algebra I**, Vanderbilt University (Fall 2019).
- **Number Theory**, Vanderbilt University (Spring 2019).
- **Linear Algebra**, Vanderbilt University (Spring 2019).
- **Linear Algebra**, Vanderbilt University (Fall 2018).
- **Topics Course in Modular Forms**, Georgia Tech (Spring 2018).
- **Intro to Number Theory**, Georgia Tech (Spring 2018).
- **Graduate Algebra I**, Georgia Tech (Fall 2017).
- **Foundations of Mathematical Proof**, Georgia Tech (Fall 2017).
- **Linear Algebra Textbook**, helped write interactive textbook, Georgia Tech (2017-2018).
- **Advanced Calculus** (equivalent to Calculus III), Trinity College Dublin (Spring 2017).
- **Linear Algebra I**, Trinity College Dublin (Fall 2016).
- **Discrete Mathematics** (Intro to proofs, number theory, and groups), Pennsylvania State University (Spring 2016).
- **Calculus 1**, Pennsylvania State University (Fall 2015) and Emory University (Spring 2013 and Fall 2012).
- **Elliptic Functions and Related Objects**, University of Cologne (Winter 2014).

- Co-Organizer for Student Seminars at the University of Cologne on the following topics:
 - **Modular Forms** (Spring 2015)
 - **Generating Functions** (Spring 2015)
 - **L -functions** (Spring 2014)
 - **Asymptotic Expansions of Modular Forms** (Summer 2014)
 - **Partitions** (Summer 2014)
 - **Elliptic Curves** (Winter 2013)

Professional Service

- Reviewed Habilitation of Johann Franke for the University of Cologne.
- Member of the graduate committee, Vanderbilt University, 2024-2026 (interim DGS in Spring 2025).
- Chair of algebra preliminary exam committee, Spring 2025, Fall 2025, Spring 2026.
- Member of the undergraduate committee, Vanderbilt University, 2024-2025.
- Guest co-editor of special collection “100 years of Mock Theta Functions: A celebration of Ramanujan’s influence from his last letter until today,” Ramanujan Journal.
- Co-organizer: International Conference on L -functions and Automorphic Forms, Vanderbilt University, 2024.
- Member of the math tenure-track hiring committee, Vanderbilt University, 2023-2024.
- Member of Scheduling Task Force, Vanderbilt University, 2023-2024.
- Member on Algebra preliminary exam committee, Vanderbilt University, Spring 2024.
- Member on Algebra preliminary exam committee, Vanderbilt University, Fall 2023.
- Co-organizer: AMS special session on “Mock Modular Forms, Physics, and Applications” at Joint Math Meetings 2024.
- Co-organizer: Automorphic Forms Workshop (2023)
- Chair of the Postdoc Search Committee, Vanderbilt University, 2022-2023.
- Member of the Vanderbilt Math Department’s Teaching Committee, 2022-2023.
- Member on Algebra preliminary exam committee, Vanderbilt University, Fall 2022.
- Co-organizer: Shanks workshop on “100 years of mock theta functions: New directions in partitions, modular forms, and mock modular forms”, 2022.
- Co-organizer: AMS special session on “Modular forms and combinatorics” at Joint Math Meetings 2022.
- Member of Postdoc Search Committee, Vanderbilt University, 2021-2022.
- Chair of Algebra prelim. exam committee, Vanderbilt University, Fall 2020, Spring 2021.
- MAA Student Poster Session judge at JMM 2021.
- Co-organizer: AMS special session on “Analytic Theory of Automorphic Forms and L -Functions” at Joint Math Meetings 2020.
- Co-organizer: Number Theory Seminar, Vanderbilt University, 2019-present.
- Member of the Undergraduate Committee, Vanderbilt University 2019-2020.
- Member of Postdoc Search Committee, Vanderbilt University, 2019-2020.
- Member on Algebra preliminary exam committee, Vanderbilt University, Fall 2019.
- Member of Postdoc Search Committee, Vanderbilt University, 2018-2019.
- Member on Graduate Committee, Vanderbilt University, 2018-2019.
- Co-organizer: Geometry Seminar, Vanderbilt University, 2018-2019.
- Co-wrote Algebra comprehensive exam, Georgia Tech, Spring 2018.
- Organizer: “Hamilton Trust Summer Internship Program 2017,” Trinity College Dublin.
- HMI Workshop “Indefinite theta functions and applications in physics and geometry,” Trinity College Dublin, Co-organizer, 2017.
- “Modular forms are everywhere,” School, Max Planck Institute for Mathematics in Bonn, Co-organizer, 2017.

- Modular forms seminar, Trinity College Dublin, Organizer, 2016.
- Cologne Young Researchers in Number Theory Program, Organizer, 2015.
- “Characters of Representations and Modular Forms,” Summer School, Max Planck Institute for Mathematics in Bonn, Co-Organizer, 2015.
- Algebra/Number Theory Seminar, University of Cologne, Co-organizer 2014-15.
- Grant proposal reviewing for several organizations, Mathscinet and Zentralblatt review writing, reviewing for Springer books and Cambridge University Press.
- Refereeing work: Acta Arith., Adv. Math., Algebra and Number Theory, Amer. Math. Monthly, Anal. Appl., Ann. Univ. Ferrara, Ann. Comb., Arch. Math., Asian J. Math., Bull. Lond. Math. Soc., Commun. Contemp. Math., Commun. Number Theory Phys., Compositio Math., Constr. Approx., Discrete Math., Expositiones Mathematicae, Forum Math., Forum. Math. Sigma, Fract. Calc. Appl. Anal., Hardy-Ramanujan J., Invent. Math., Int. J. Number Theory, Int. Math. Res. Not., Israeli J. Math., J. Analysis, J. Comb. Theory A, J. Korean Math. Soc., Journal de Théorie des Nombres de Bordeaux., J. Eur. Math. Soc., J. Math. Anal. Appl., J. Number Theory, J. Phys. A, Lett. Math. Phys, Mathematics, Math. Ann., Math Research Letters, Open Math., Proc. Amer. Math. Soc., Publ. Mat., Q. J. Math., Ramanujan J., Res. Math. Sci., Res. Number Theory, Rocky Mountain J. Math., Selecta Mathematica, SIDMA, SIGMA, Trans. Amer. Math. Soc., Women In Numbers Proceedings.

Selected

- Workshop on “Multiple Zeta Values and Modular Forms” Mathematisches Forschungsinstitut Oberwolfach, Germany, 2026.

Invited

- Main speaker at The 2026 Gainesville International Number Theory Conference (Alladi70) in honor of Krishna Alladi’s 70th birthday.

Lectures

- AMS Fall Eastern Virtual Sectional Meeting, special session on Unveiling Connections: Number Theory Meets Algebraic Geometry, 2025.
- HKU Number Theory Days 2025, The University of Hong Kong.
- AMS Special Session on Current Directions on Modular Forms: in Twenty Minutes Snippets, JMM 2025, Seattle.
- University of Cologne Number Theory Seminar, 2024.
- University of North Texas Mathematics Colloquium, 2024.
- One of two longer talks in Special Session on Additive Number Theory and Modular Forms at AMS Fall Central Sectional Meeting, UT San Antonio, 2024.
- One of two invited speakers to The 6th Workshop on Number Theory and Algebra, Busan, Korea, 2024.
- International Conference on Modular Forms and q -Series, University of Cologne, 2024.
- Plenary speaker at conference “The Web of Modularity” (Annual Clifford Lectures), Tulane University, 2024.
- Mini colloquium talk at Vanderbilt University, 2023.
- Special Session on “Number theory and friends” at AMS Fall Southeastern Sectional meeting, 2023.
- Special Session on “Experimental Mathematics in Number Theory and Combinatorics” at AMS Fall Southeastern Sectional meeting, 2023.
- Review Lecture, Isaac Newton Programme “Black holes: bridges between number theory and holographic quantum information” (2023)
- Tulane University Algebra and Combinatorics Seminar, 2023.
- Texas A&M University Number Theory Seminar, 2023.
- MTSU/Vanderbilt Graph Theory and Combinatorics Seminar, 2022
- Partitions and q -Series Seminar, Michigan Tech (online), 2022.

- NSF/CBMS Research Conference Ramanujan's ranks, Mock Theta Functions, and Beyond, The University of Texas Rio Grande Valley, 2022.
- Joint Math Meetings, AMS Special Session on Partition Theory and Related Topics, (online) 2022.
- Number Theory Seminar, RWTH Aachen University, Germany, 2022.
- Southern Regional Number Theory Conference, Louisiana State University, Plenary speaker, 2022.
- Max Planck Number Theory Lunch Seminar, 2022.
- University of Virginia Number Theory Seminar, 2021.
- Coding Theory, Cryptography and Number Theory RTG Seminar, Clemson University, 2021.
- AMS Fall Southeastern Sectional Meeting, Special Session on Experimental Mathematics in Number Theory and Combinatorics (online), 2021.
- Oregon State University Number Theory Seminar, 2021.
- Oregon State University Colloquium, 2021.
- Northern Number Theory Seminar, Durham, United Kingdom, 2021.
- Philadelphia Area Number Theory Seminar, Bryn Mawr, 2021.
- Number Theory Seminar, University of Georgia (virtual), 2021.
- JMM Special Session on Quadratic Forms and Theta Functions, 2021
- AMS Special Session Meeting, (formerly at University of Tennessee at Chattanooga), 2020.
- AMS Special Session Meeting, (formerly at The Pennsylvania State University), 2020.
- Amherst REU invited lecture (virtual), 2020.
- International Seminar on Automorphic Forms, Zoom, 2020.
- Number Theory Seminar, University of Mississippi, 2020.
- International Conference on Number Theory, Sastra University, India, 2019.
- Two lectures in the number theory seminar at the Institute of Mathematical Sciences, Chennai, India, 2019.
- Number theory seminar, University of Tennessee, Knoxville, 2019.
- AMS special session on "Experimental Mathematics in Number Theory and Combinatorics", University of Florida, 2019.
- Seminar at the CUNY Graduate Center, 2019.
- Number theory seminar, UC Davis, 2019.
- Shanks Workshop on Computations and Linear Programming Bounds for Energy, Packing, Vanderbilt University, 2019.
- MAA Invited Paper Session, Joint Math Meetings in Baltimore, 2019.
- Subfactor Seminar, Vanderbilt University, 2018.
- Colloquium and Pure Math Seminar (two talks), University of South Alabama, 2018.
- Athens-Atlanta Number Theory Seminar, 1 of 2 invited speakers, Emory University, 2018.
- Number theory and geometry seminar, University of Nottingham, 2018.
- RTG-Coding theory, cryptography, and number theory seminar, Clemson University, 2018.
- Elementary and analytic number theory, Max Planck Institute for Mathematics, Bonn, Germany, 2018
- 2 talks at the Summer Research Institute on q -Series, Nankai University, China, 2018.
- Emory math circle week of mathematical exploration (expository talk for middle and high schoolers), Atlanta, GA, 2018.
- Conference on Modular Forms and Related Topics, AUB, Lebanon, 2018.
- Number Theory Seminar, Massachusetts Institute of Technology, 2018.

- Colloquium Talk, Louisiana State University, 2018.
- Colloquium Talk, Drexel University, 2018.
- Colloquium Talk, University of Florida, 2018.
- Colloquium Talk, University of Alberta, 2018.
- Colloquium Talk, Carnegie Mellon University, 2017.
- Colloquium Talk, Vanderbilt University, 2017.
- Geometric Methods in Representation Theory Seminar, UNC at Chapel Hill, 2017.
- Algebra and Number Theory Seminar, University of Arizona, 2017.
- Philadelphia Area Number Theory Seminar, Byrn Mawr College, 2017.
- Topology & Group Theory Seminar, Vanderbilt University, 2017.
- Number Theory Seminar, University of Florida, 2017.
- Number Theory Seminar, Emory University, 2017.
- Conference: Number Theory, Geometry, Moonshine & Strings, Simons Foundation, 2017.
- British Mathematics Colloquium, Durham, England, 2017.
- Mathematics Society, Trinity College Dublin, 2017.
- Number Theory Seminar, University College Dublin, 2016.
- Conference School on mock theta functions and related topics, series of 4 lectures, Fukuoka, Japan, 2016.
- Undergraduate math club lecture, The Pennsylvania State University, 2016.
- Number Theory Seminar (two talks, one for students), UIUC, 2015.
- Mass Colloquium Speaker (program for advanced undergraduates), The Pennsylvania State University, 2015.
- Number Theory Seminar, Brigham Young University, 2015.
- Undergraduate talk, Amherst College, 2015.
- Number Theory Seminar, Universität Heidelberg, 2015.
- 13th International Symposium on Orthogonal Polynomials, Special Functions, and Applications, National Institute of Standards and Technology, USA, 2015.
- Automorphic Forms: Advances and Applications, Luminy Institute of Mathematics, France, 2015.
- Geometric Methods in Representation Theory Seminar, UNC at Chapel Hill, 2015.
- UNC-Duke Number Theory Seminar, UNC at Chapel Hill, 2015.
- Algebra and Number Theory Seminar, Emory University, 2015.
- Colloquium, Center for Communications Research–Princeton, 2014.
- Max Planck Institute for Mathematics Number Theory Lunch Seminar, 2014.
- Number Theory Seminar, Technische Universität Darmstadt, 2014.
- Center for Advanced Mathematical Sciences Seminar, AUB, Lebanon, 2014.
- Seminar Aachen-Köln-Lille-Siegen on Automorphic Forms, 1 or 3 invited speakers, University of Cologne, 2014.
- International Conference on Number Theory and Galois Representations, Sastra University, India, 2013.
- Max Planck Institute for Mathematics Number Theory Seminar, 2013.

Selected

Contributed

Lectures

- Palmetto Number Theory Seminar XL, Clemson University, 2025.
- Palmetto Number Theory Seminar XXXVI, in memoriam of Kevin James, Clemson University, 2023.
- Palmetto Number Theory Seminar XXXII, University of North Carolina at Charlotte, 2019.
- Maths/physics journal club, Trinity College Dublin, 2016.
- Number Theory Seminar, The Pennsylvania State University, 2016.

- The 2016 Gainesville International Number Theory Conference, in honor of Krishna Al-ladi's 60th birthday, University of Florida.
- Combinatorics/Partitions Seminar, The Pennsylvania State University, 2015.
- Number Theory Seminar, The Pennsylvania State University, 2015.
- Exciting New Faces in Analytic Number Theory, Hausdorff Center for Mathematics, 2014.
- SouthEast Regional Meeting on Numbers, High Point University, 2013.
- Ramanujan 125, University of Florida, 2012.
- Fall Western Sectional Meeting of the AMS, University of Arizona, 2012.
- Palmetto Number Theory Seminar XVIII, Wake Forest University, 2012.
- Building Bridges: First EU-US Conference on Automorphic Forms and Related Topics, Aachen University, 2012.
- SouthEast Regional Meeting on Numbers, Western Carolina University, 2012.
- Symposium, Mock Modular Forms, Mock Theta Functions, and Applications, University of Cologne, 2012.
- Palmetto Number Theory Seminar XVII, Clemson University, 2011.
- Integers Conference, University of West Georgia, 2011.
- Palmetto Number Theory Seminar XVI, Emory University, 2011.
- Joint Mathematics Meeting Poster Session, New Orleans, 2011.
- Young Mathematicians Conference, Ohio State University, 2010.

**Selected
Professional
Activities**

- 35th Automorphic Forms Workshop, Louisiana State University, 2023.
- Joint Math Meetings, Boston, 2023.
- Workshop on “Modularity in Quantum Systems”, UC Santa Barbara, Kavli Institute for Theoretical Physics (moved online), October 26th-December 18th 2020.
- Palmetto Joint Arithmetic, Modularity, and Analysis Series (PAJAMAS), virtual conference, 2020.
- The First Journal of Number Theory Biennial Conference, Grand Hotel San Michele, Cetraro, Italy, 2019.
- ICERM workshop on Modularity and 3-manifolds, 2019.
- MPS Conference on Number Theory, Geometry, Moonshine and Strings III, Simons Foundation, 2019
- Srinivasa Ramanujan: centenary of his election as FRS, Royal Society, London, UK, 2018.
- PANTS XXVIII, University of Tennessee, Knoxville, 2017.
- Joint Math Meetings, Seattle, Washington, 2016.
- Oberwolfach Conference on Modular Forms (invited participant), 2014.
- Applications of Automorphic Forms in Number Theory and Combinatorics, Louisiana State University–Baton Rouge, 2014.
- Automorphic Forms and Arithmetic, Göttingen University, 2014.
- Mock Modular Forms, Moonshine, and String Theory, Stony Brook University, 2013.
- Arizona Winter School 2013: Modular Forms and Modular Curves, University of Arizona.