# CURRICULUM VITAE

ELEANOR MCSPIRIT

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## Education

University of Virginia ∘ 2020 – Spring 2024 Expected
Ph.D. in Mathematics
Advisor: Ken Ono
Thesis: *Insights From Number Theory: From Arithmetic Geometry to Quantum Topology*
Dean's Doctoral Fellow

University of California, Berkeley ∘ 2016 – 2020
B.S. in Mathematics
Minor in Gender & Women's Studies
Graduated Summa Cum Laude

## Research Publications

1. L. Liles and E. McSpirit, *Infinite Families of Quantum Modular* 3*-Manifold Invariants.* Accepted for publication in Communications in Number Theory and Physics.
2. E. McSpirit and K. Ono, *Hypergeometry and the AGM over Finite Fields.* To appear in Contemporary Mathematics, American Mathematical Society.
3. E. McSpirit and K. Ono, *Zeros in the character tables of symmetric groups with an $\ell$-core index.* Canadian Mathematical Bulletin **66** (2023), no. 2, 467-476.
4. E. McSpirit and K. Scheckelhoff, *On the number of* 2*-hooks and* 3*-hooks of integer partitions.* Bulletin of the Australian Mathematical Society **107** (2023) no. 3, 432-439.
5. A. Lin, E. McSpirit, and A. Vishnu, *Algebraic relations between partition functions and the $j$-function.* Research in Number Theory **6** (2020) no. 2.

## Expository Publications

1. E. McSpirit, *Swinnerton-Dyer and the Ramanujan Congruences for $\tau(n)$.* To appear in Ramanujan Handbook by Springer.
2. E. McSpirit, *K*3 *Surfaces and Ramanujan's Sum of Two Cubes.* To appear in Ramanujan Handbook by Springer.

## Conference and Seminar Talks

2024 Apr AMS Special Session on Elementary Number Theory and Elliptic Curves, Howard U.
*Jellyfish, the Arithmetic-Geometric Mean, and Elliptic Curves*

Mar Meeting on Plumbings and Spectra, Caltech
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

Algebra, Geometry, and Number Theory Seminar, University of South Carolina
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

Feb Algebra and Number Theory Seminar, Louisiana State University
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

The Web of Modularity, Tulane University
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

Algebra Seminar, Virginia Tech
*Jellyfish, the Arithmetic-Geometric Mean, and Elliptic Curves*

Jan Graduate Student Seminar, University of Virginia
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

Joint Mathematics Meetings, San Francisco

AMS Special Session on Mock modular forms, physics, and applications
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

AMS Special Session on Partition Theory and $q$-Series
*Zeros in the Character Tables of Symmetric Groups*

2023 Oct Vanderbilt University Number Theory Seminar
*Jellyfish, the Arithmetic-Geometric Mean, and Elliptic Curves*

AMS Special Session on Number Theory and Friends, University of South Alabama
*Jellyfish, the Arithmetic-Geometric Mean, and Elliptic Curves*

Sept Ramanujan–Serre Seminar, University of Virginia
*Infinite Families of Quantum Modular* 3*-Manifold Invariants*

May 35th Automorphic Forms Workshop, Louisiana State University
*Lattice Cohomology and Quantum Modular Forms*

Apr AMS Special Session on Hypergeometric Functions, $q$-series and Generalizations III
*Jellyfish, Hypergeometric Functions, and the AGM*

Jan Texas Number Theory and Combinatorics Seminar
*Zeros in the Character Tables of Symmetric Groups*

2022 Mar Graduate Student Seminar, University of Virginia
*Representation Theory of the Symmetric Group*

Jan Joint Mathematics Meetings, Virtual

AMS Special Session on Modular Forms and Combinatorics
*On the Number of* 2*-Hooks and* 3*-Hooks of Integer Partitions*

## Additional Conference and Workshop Participation

- September 2023: Merging Categorification, Gauge Theory, & Physics, Simons Collab.
- February 2023: Learning Workshop on BPS States and 3-Manifolds, ICTP
- Summer 2022: PCMI on Number Theory Informed by Computation
- May 2022: 100 Years of Mock Theta Functions, Vanderbilt University
- January 2020: Joint Mathematics Meetings, Denver

## Leadership and Mentorship

- Fall 2023: Mentor for Graduate Teaching Assistants.
  Observed and advised five first-time graduate instructors throughout the semester.
- Fall 2023: Mentor for the Directed Reading Program at the University of Virginia.
- Spring 2023–Present: Founding President of the University of Virginia AMS Graduate Student Chapter. Leader of the executive committee and organizing chapter events.
- Summer 2023: Mentor for the University of Virginia REU in Number Theory.
  Advised two projects on Shintani zeta functions and class number formulas.
- Fall 2022: Mentor for the Directed Reading Program at the University of Virginia.
  Advised a project on partitions and the representation theory of the symmetric group.
- Summer 2022: Mentor for the University of Virginia REU in Number Theory.
  Advised a project on the arithmetic of McKay numbers.

## Teaching

University of Virginia

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| 2024 | Spring | Instructor of record for MATH 1320 (Calculus II) |
| 2023 | Spring | Instructor of record for MATH 1320 (Calculus II) |
| 2022 | Spring | Instructor of record for MATH 1220 (A Survey of Calculus II) |
| 2021 | Fall | Instructor of record for MATH 1210 (A Survey of Calculus I) |
| | Spring | Teaching Assistant for MATH 3315 (Advanced Calculus and Linear Algebra) |
| 2020 | Fall | Teaching Assistant for MATH 1190 (A Survey of Calculus I with Algebra) |

University of California, Berkeley

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| 2018 | Fall | Teaching Assistant for MATH 1B (Calculus II) |
| | Spring | Teaching Assistant for MATH 53 (Multivariable Calculus) |

## Referee Service

- Annals of Combinatorics
- International Journal of Number Theory
- Israel Journal of Mathematics
- Journal of Number Theory
- Journal of Combinatorial Theory, Series A
- Research in the Mathematical Sciences

## REU Participation

- Emory University, Summer 2019
- University of Chicago, Summer 2019
- University of Chicago, Summer 2018