

William Mahaney

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Education

- (Expected) May 2027  **PhD in Mathematics**
Virginia Polytechnic Institute and State University, Blacksburg, VA.
- May 2023  **Masters of Science in Mathematics**
Virginia Polytechnic Institute and State University, Blacksburg, VA.
- May 2020  **Bachelors of Science in Mathematics**
Virginia Polytechnic Institute and State University, Blacksburg, VA.

Publications

Preprints

- 2024  **Computing Isogenies at Singular Points of the Modular Polynomial** with Travis Morrison
available at <https://arxiv.org/abs/2402.02038>

Work Experience

- Fall 2024  **Student Internship with RTX** Worked with a student and RTX mentor to benchmark performance of implementations of the three NIST standardized cryptographic algorithms FIPS 203, 204, and 205. Gathered implementation requirements and commercial acquisition data for FIPS 140-3 and CNSA 2.0 compliant cryptographic modules. Wrote a report comparing and contrasting various libraries' performance and outlining FIPS 140-3 and CNSA 2.0 requirements for cryptographic modules.
- 2017-2020  **Private Mathematics Tutoring** Tutored college undergraduates in Calculus 1,2,3 and Linear Algebra.

Skills

- Coding/Computer  **Working** – Python 3, Sagemath, LaTeX/Beamer, Microsoft Excel, Linux, Git
-  **Basic** – C, C++, Java, Magma

Awards

Awards and Achievements

- 2022–2027  Julian Chin PhD Fellowship in Cybersecurity

Workshop/School Attendance

- August 2025  **BIRS Isogeny Graphs in Cryptography Research Workshop** Week long research workshop in Banff, Canada. Participants split into groups and worked on research topics related to supersingular isogeny cryptography
- July 2025  **LuCaNT Research Workshop on LMFDB, Computation, and Number Theory** Week long research workshop focused on Computational Number Theory and using databases.

Workshop/School Attendance (continued)

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| June 2025 | ■ | SLMath Summer School on Local Limits of Random Graphs 2 week summer school focused on Benjamin-Schramm limits (local limits) of deterministic and random graphs as well as other modern topics in Random Graph theory using the techniques introduced by researchers after the advent of the Benjamin-Schramm framework. |
| March 2024 | ■ | Arizona Winter School on Abelian Varieties One week lecture series focused on Abelian varieties over finite fields along with problem sessions at night. |
| August 2023 | ■ | BIRS Isogeny Workshop 2023 Week long research workshop in Bristol, UK. Participants split into groups and worked on research topics related to supersingular isogeny cryptography. |
| July 2022 | ■ | Park City Mathematics Institute Summer School 3 Week summer school on Computational Number Theory sponsored by the IAS. |

Talks

- “Computing Isogenies at Singular Points of the Modular Polynomial”
- (2025) MASON VII (Mid-Atlantic Seminar on Numbers) at University of Maryland.
 - (2025) AMS Southeast Fall Sectional at Tulane University.
 - (2025) AMS Eastern Spring Sectional Meeting at Howard University.
 - (2024) AMS Central Spring Sectional Meeting at University of Wisconsin-Milwaukee.
 - (2024) PANTS XXXVII (Palmetto Algebraic Number Theory Seminar) at Wake Forest University.

Volunteer/Organizational Work

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| 2025 | ■ | Volunteer at <i>Virginia Tech Mathematics Opportunities in Research and Education</i> - Helped run breakout sessions and acted as a graduate student representative for Q&A events. |
| | ■ | Volunteer science fair judge for Roanoke Valley Governor’s School Regional Science Fair. |
| 2024-Present | ■ | Organization committee member of Mathematics Directed Reading Program at Virginia Tech. |