

ELISA BELLAH

CONTACT INFORMATION

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EMPLOYMENT

2024 - **University of Toronto**, Toronto, ON
Assistant Professor, Teaching Stream

2022 - 2024 **Carnegie Mellon University**, Pittsburgh, PA
Postdoctoral Teaching Fellow

EDUCATION

2015 - 2022 **University of Oregon**, Eugene, OR
Ph.D. in Mathematics, June 2022
Thesis: *Linear Recurrence Sequences in Diophantine Analysis*
Thesis Advisor: Dr. Shabnam Akhtari

2011 - 2015 **Portland State University**, Portland, OR
B.S. in Mathematics, June 2015

RESEARCH INTERESTS

Number theory, including Diophantine analysis, recurrence sequences, and explicit algebraic number theory.

PAPERS AND PREPRINTS

Research (* indicates undergraduate coauthor):

- 5.* Bounding Lifts of Markoff Triples mod p , with Elena Fuchs, Siran Chen, and Lynnelle Ye. Submitted. Preprint available at [arXiv:2311.11468](https://arxiv.org/abs/2311.11468).
- 4.* Arbitrary Finite Intersections of Doubling Measures and Applications, with Theresa C. Anderson, Zoe Markman, Teresa Pollard, and Josh Zeitlin. Journal of Functional Analysis. Vol. 287 (2024), No. 09, 110573. Preprint available at [arXiv:2310.17615](https://arxiv.org/abs/2310.17615).

3. [Norm Form Equations and Linear Divisibility Sequences](#). **International Journal of Number Theory**. Vol. 18 (2021), No. 6. Preprint available at [arXiv:2007.07392](#).
2. [A Probabilistic Heuristic for Counting Components of Functional Graphs of Polynomials over Finite Fields](#), with Derek Garton, Erin Tannenbaum, and Noah Walton. **Involve**. Vol. 11 (2018), No. 1, 169-179. Preprint available at [arXiv:1609.07667](#)

Other Writing:

1. [University of Oregon AWM Chapter: Its Creation and Evolution](#). With [Sarah Frei](#), [Leanne Merrill](#), and [Kelly Pohland](#). Book chapter in: Beery, J.L., Greenwald, S.J., Kessel, C. (eds) *Fifty Years of Women in Mathematics*. Association for Women in Mathematics Series, vol 28. Springer, Cham.

AWARDS, FELLOWSHIPS, AND RESEARCH VISITS

2025	MAA AWM Section Lecturer
2023	Provost's Inclusive Teaching Fellowship
2020	Anderson Distinguished Graduate Teaching Award
2019	Guest Researcher at the Max Planck Institute for Mathematics , Bonn, Germany

TEACHING EXPERIENCE

Instructor of record for the following courses at the University of Toronto:

MAT223: Linear Algebra I	Fall 2024, Winter 2025
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Instructor of record for the following courses at Carnegie Mellon University:

Matrices and Linear Transformations	Spring 2023, Spring 2024
Number Theory	Fall 2022, Fall 2023
Differential and Integral Calculus	Fall 2022

Instructor of record for the following courses at the University of Oregon:

Introduction to Proof	Summer 2019, Summer 2021
Calculus III	Fall 2019, Winter 2020
Calculus I	Winter 2018, Spring 2018
Elementary Functions	Winter 2017, Fall 2017, Summer 2018, Fall 2018
College Algebra	Fall 2015, Winter 2016, Spring 2016, Summer 2016, Fall 2016, Summer 2017

Teaching assistant for the following courses at the University of Oregon:

Fundamentals of Number Theory II	Spring 2021
Introduction to Abstract Algebra I - III	Fall 2020 - Spring 2021
Fundamentals of Abstract Algebra I - II	Fall 2020 - Winter 2021
Calculus for Business II	Spring 2017

Additional Positions at Carnegie Mellon University:

SAMS MATH INSTRUCTOR: NUMBER THEORY AND CRYPTOGRAPHY. Residential merit-based precollege program for high school students from underrepresented communities interested in STEM. Sole instructor in Summer 2023. Co-taught with [Dr. Anisah Nu'Man](#) in Summer 2022.

CS SCHOLARS: IMPLEMENTATION OF CLASSICAL CRYPTOSYSTEMS. Residential merit-based pre-college program for high school students interested in computer science. Co-advised project with [Dr. Anisah Nu'Man](#) in Summer 2022.

Additional Positions at the University of Oregon:

INVITED COURSE ASSISTANT: [ARIZONA WINTER SEMESTER 2021](#). Lecture series for undergraduate and beginning graduate students on quadratic forms and the local global-principal led by [Dr. Charlotte Chan](#). Assisted 2021.

PROGRAM DEVELOPMENT: UNDERGRADUATE MATH TUTOR AND GRADER TRAINING. Developed and implemented training program for undergraduate math tutors. Consulted with department about best practices for undergraduate graders. Position held Winter 2019.

UNDERGRADUATE MENTORING EXPERIENCE

Research projects advised through [SUAMI](#) at Carnegie Mellon University:

- 2024 **Markoff Triples and Periods of Linear Recurrence Sequences.** Project to be advised in Summer 2024.
- 2023 **Doubling Measures Along Sets of Natural Numbers** (3 students). Co-advised with [Dr. Theresa C. Anderson](#). Project culminated in research paper. Students accepted to present at [YMC](#) and JMM in 2024.

Research projects advised through [SURF](#) at Carnegie Mellon University:

- 2023 **Bounding Lifts of Markoff Triples** (1 student). Project culminated in research paper. Student invited to give [special session](#) talk at JMM in 2024.

Reading projects mentored through the [Directed Reading Program](#) at the University of Oregon:

- 2021 **Geometry of Numbers and Applications** (2 students). Read chapters of J.W.S. Cassels *An Introduction to the Geometry of Numbers*. Students will each give 20 minute expository talks.
- 2020 **An Introduction to Algebraic Number Theory** (2 students). Read chapters of Paul Pollack's *A Conversational Introduction to Algebraic Number Theory: Arithmetic Beyond \mathbb{Z}* . Students each gave 20 minute expository talks.
- 2019 **Pell's Equation** (2 students). Read chapters of Edward J. Barbeau's *Pell's Equation (Problem Books in Mathematics)*. Students each gave 20 minute expository talks.
- 2018 **p -adic Numbers** (1 student). Read chapters of Fernando Gouvea's *p -adic Numbers: An Introduction*. Student gave 20 minute expository talk.
- 2017 **Constructible Numbers** (1 student). Read chapters of Ian Stewart's *Galois Theory*. Student [presented a poster](#).

INVITED TALKS

- 2025 [Perspectives on Markov Numbers](#), Banff International Research Station
- 2022 [AWM Research Symposium](#), University of Minnesota
- 2022 [Pitt AWM Student Seminar Series](#), University of Pittsburgh
- 2020 [Algebraic Geometry and Number Theory Seminar](#), Rice University
- 2019 [Number Theory Seminar](#), Oregon State University
- 2019 [Combinatorics and Number Theory Seminar](#), Portland State University
- 2019 [PLeaSANT Seminar](#), Max Planck Institute for Mathematics

SERVICE AND MEMBERSHIPS

- 2023-2024 Co-director of [SUAMI](#) at CMU
- 2023-2024 Search committee member for CMU postdoctoral teaching fellow
- 2023 External reviewer for [Archiv der Mathematik](#)
- 2022-2023 Co-founder and organizer for the CMU Teaching in Practice Seminar
- 2020 - 2022 Co-founder and organizer for the [Junior Mathematician Research Archive](#)
- 2020 - 2022 Co-founder and organizer for the UO [Committee for Learning about Antiracism in STEM](#)
- 2019 - 2021 Organizer for the UO Student Number Theory Seminar
- 2018 - 2022 Co-founder and organizer for the [UO Directed Reading Program](#)
- 2019 External Reviewer for [Finite Fields and their Applications](#)
- 2019 - 2020 Mentor to first year graduate student
- 2019 - 2020 Co-organizer for the UO Number Theory Seminar

2018 - 2019 Graduate student representative for the UO Math Diversity and Equity Committee
2017 - 2018 President of the [UO Chapter of the Association for Women in Mathematics](#)