Madeleine E. Goertz

Curriculum Vitae

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EDUCATION

California Polytechnic State University, San Luis Obispo, CA   Sept. 2021 – June 2025

Master of Science in Mathematics   *GPA: 4.0/4.0*

    Advised by Patrick Orson, writing Master's Thesis *On the Smale Conjecture*

Bachelor of Science in Mathematics   *GPA: 4.0/4.0*

    Advised by Eric Brussel, wrote Senior Project *On Moduli Spaces of Triangles*

Joint BS/MS Program. Member of University Honors Program, Association for Women in Mathematics

PREPRINTS & PUBLICATIONS

3. The Quaternary Gray Code and How It Can Be Used to Solve Ziggurat and Other Ziggu Puzzles. (with A. Williams). arXiv:2411.19291. (preprint).

2. The Moduli Stack of Triangles. (with E. Brussel, E. Guptill, & K. Lyle). arXiv:2408.07792. (preprint).

1. The Torus of Triangles. (with E. Brussel). arXiv:2303.11446. (submitted).

AWARDS & SCHOLARSHIPS

Charles J. Hanks Excellence in Mathematics Scholarship . . . . May 2024
    Awarded to the top student in the Cal Poly math department.

Frost Research Scholarship . . . . Sept. 2022 – June 2025
    College of Science and Math Award to support research, $10,000 per year for 3 years. Part of inaugural cohort of scholars.

First place, Physical & Mathematical Sciences, 37th Annual CSU Student Research Competition . . . . Apr. 2023
    California State University system-wide competition for 10-minute research talk to a general audience.

Frost Summer Undergraduate Research Scholarship . . . . June 2022 & June 2023
    Stipend to support summer research. $4,500 per summer for two summers.

Michael Hushour Scholarship . . . . May 2024

Bryant Russel Memorial Award . . . . May 2024

First place, Cal Poly Three Minute Thesis Competition . . . . Feb. 2024

Cal Poly Bailey College of Science and Mathematics Standout Student . . . . Nov. 2023

Women in STEM Scholarship . . . . May 2023

Advancement of Science & Technology Scholarship . . . . May 2023

Edward Van Duyne Memorial Scholarship . . . . May 2022

Math and Science Teacher Initiative Initial Scholarship . . . . Sept. 2022

RESEARCH PROGRAM PARTICIPATION

NSF SMALL REU, *Williams College* . . . . Summer 2024
    Advised by Aaron Williams, on *Combinatorial Algorithms & Hamilton Paths*

Frost Summer Undergraduate Research Program, *Cal Poly* . . . . Summer 2023
    Advised by Eric Brussel, on *Moduli Space of Triangles*

Frost Summer Undergraduate Research Program, *Cal Poly* . . . . Summer 2022
    Advised by Eric Brussel, on *Poncelet's Theorem*

RESEARCH COMMUNICATION

Talks for Mathematical Audiences

3. "Moduli Space of Triangles & Euclid's Similarity Theorems." (with E. Brussel, E. Guptill, & K. Lyle). AMS Contributed Paper Session on Geometry, *Joint Mathematics Meetings*, San Francisco, CA. Jan. 2024.

2. "Geometry of the moduli spaces of similarity classes of triangles defined by three classical theorems." (with E. Brussel, E. Guptill, & K. Lyle). *2nd CSU Mathematical Sciences Conference*, Bakersfield, CA. Nov. 2023.

1. "Poncelet Families & The Torus of Triangles." (with E. Brussel). *1st CSU Mathematical Sciences Conference*, Northridge, CA. Nov. 2022.

Talks for General Audiences

6. "A Moduli Space of Triangles." (with E. Brussel). *4th Annual CSU Grad Slam*, Virtual Meeting. May 2024.

5. "A Moduli Space of Triangles." (with E. Brussel). *Western Association of Graduate Schools 8th Annual Regional Three Minute Thesis Competition*, Virtual Meeting. Mar. 2024.

4. "A Moduli Space of Triangles." (with E. Brussel). *Cal Poly Three Minute Thesis Competition*, San Luis Obispo, CA. Feb. 2024.

3. "The Torus of Triangles." (with E. Brussel). *Cal Poly College of Science and Mathematics Research Conference*, San Luis Obispo, CA. May 2023.

2. "The Torus of Triangles." (with E. Brussel). *37th Annual CSU Student Research Competition*, San Diego, CA. Apr. 2023.

1. "The Torus of Triangles." (with E. Brussel). *Cal Poly CSU Student Research Competition*, San Luis Obispo, CA. Feb. 2023.

Poster Presentations

4. "Three Moduli Spaces of Triangles." (with E. Brussel, E. Guptill, & K. Lyle). *Bailey College of Science and Mathematics 2024 Student Research Conference*, San Luis Obispo, CA. May 2024.

3. "Three Moduli Spaces of Triangles." (with E. Brussel, E. Guptill, & K. Lyle). *Cal Poly Summer Undergraduate Research Symposium*, San Luis Obispo, CA. Oct. 2023.

2. "Three Moduli Spaces of Triangles." (with E. Brussel, E. Guptill, & K. Lyle). *Mathematics Department Summer Research Poster Symposium*, San Luis Obispo, CA. Oct. 2023.

1. "Poncelet Families & The Torus of Triangles." (with E. Brussel). *Mathematics Department Summer Research Poster Symposium*, San Luis Obispo, CA. Oct. 2022.

TEACHING EXPERIENCE

Teaching experience as a graduate teaching associate and instructor of record.

Math 118: Precalculus, *Cal Poly* .... Fall Quarter 2024

OTHER WORK EXPERIENCE

Mathematics Tutor, *Cal Poly Learning Support Center* .... Oct. 2023 – June 2024
Grader, *Cal Poly Department of Mathematics* .... Jan. 2023 – June 2023
Learning Assistant, *Cal Poly Department of Physics* .... Apr. 2022 – June 2022
Coding Camp Instructor, *Coding with Kids LLC* .... June 2019 – Sept. 2021

CONFERENCE & COMPETITION ATTENDANCE

Bailey College of Science and Mathematics Student Research Conference, *San Luis Obispo, CA* .... May 2024
4th Annual CSU Grad Slam Competition, *Virtual* .... May 2024
8th Annual Western Association of Graduate Schools Regional 3-Minute Thesis Competition, *Virtual* .... Mar. 2024
2024 Joint Mathematics Meetings, *San Francisco, CA* .... Jan. 2024
2nd CSU Mathematical Sciences Conference, *Bakersfield, CA* .... Nov. 2023
Cal Poly College of Science and Mathematics Research Conference, *San Luis Obispo, CA* .... May 2023
37th Annual CSU Student Research Competition, *San Diego, CA* .... Apr. 2023
2023 Joint Mathematics Meetings, *Boston, MA* .... Jan. 2023
1st CSU Mathematical Sciences Conference, *Northridge, CA* .... Nov. 2022

LEADERSHIP & INVOLVEMENT

Member, *Cal Poly Math Club* .... Sept. 2021 – Present
Member, *Cal Poly Association for Women in Mathematics Chapter* .... Sept. 2021 – Present
Ambassador, *Cal Poly University Honors Program* .... Feb. 2023 – June 2024

SKILLS

Technical: Mathematica, Java, Python, R, Git.
Nontechnical: English, German, Mathematics Communication.