


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*

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. (to appear in *Involve*).

SELECTED AWARDS & SCHOLARSHIPS

Charles J. Hanks Excellence in Mathematics Scholarship May 2024
Frost Research Scholarship Sept. 2022 – June 2025
First place, Physical & Mathematical Sciences, 37th Annual CSU Student Research Competition Apr. 2023
Frost Summer Undergraduate Research Scholarship June 2022 & June 2023

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*

SELECTED 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

2. "A Moduli Space of Triangles." (with E. Brussel). *4th Annual CSU Grad Slam*, Virtual Meeting. May 2024.
1. "The Torus of Triangles." (with E. Brussel). *37th Annual CSU Student Research Competition*, San Diego, CA. Apr. 2023.

Poster Presentations

2. "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.
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 221: Calculus for Business and Economics, *Cal Poly*. Spring Quarter 2025

Math 118: Precalculus Algebra, *Cal Poly* Fall Quarter 2024, Winter Quarter 2025

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

LEADERSHIP & INVOLVEMENT

Member, *Cal Poly National and International Fellowships & Scholarships Advisory Board* Feb. 2025 – June 2025

Member, *Cal Poly Association for Women in Mathematics Chapter* Sept. 2021 – June 2025

Member, *Cal Poly Math Club* Sept. 2021 – June 2025

Ambassador, *Cal Poly University Honors Program* Feb. 2023 – June 2024

SKILLS

Technical: Mathematica, Java, Python, R, Git.

Nontechnical: English, German, Mathematics Communication.