

JULIANNE (MCKAY) BARNHART

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PhD Candidate in Mathematical Sciences, Clemson University

EDUCATION

-
- PhD in Mathematical Sciences, in progress**, Clemson University, Clemson, SC August 2022 – Present
School of Mathematical and Statistical Sciences
Advisor: Dr. Michael Burr
Department of Engineering and Science Education
Certificate in Engineering and Science Education
Anticipated Degree Date: May 2026
- M.S. in Mathematical Sciences**, Clemson University, Clemson, SC August 2020 – August 2022
School of Mathematical and Statistical Sciences
Thesis: "Identifying Trace Affine Linear Sets using Homotopy Continuation"
Advisor: Dr. Michael Burr
Completed August 2022
- B.A. in Mathematics and History**, Gordon College, Wenham, MA August 2015 – May 2019
Department of Mathematics
Departmental Honors
Thesis: "Broadening the Field: the Life and Work of Charlotte Angas Scott"
Department of History
Concentration in Early Christianity
Honors: Summa Cum Laude, Presidential Honors
Completed May 2019

PROFESSIONAL HISTORY

-
- Graduate Teacher of Record** August 2021 – Present
Clemson University, Clemson, SC
- Graduate Teaching Assistant** August 2020 – August 2021
Clemson University, Clemson, SC

AWARDS AND HONORS

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- SMSS Outstanding Graduate in Teaching**
School of Mathematical and Statistical Sciences, Clemson University, 2024

PUBLICATIONS

-
- J. Barnhart**, T. Brysiewicz, M.A. Burr, T. Yahl, "Restricted Monodromy and the Sparse Trace Test", work in progress.

PRESENTATIONS

-
- [upcoming] "Restricted Monodromy Groups," invited presentation, Central AMS Sectional, Saint Louis University, October 18, 2025.

"Trace Tests and Monodromy Groups," invited presentation, SIAM Conference on Applied Algebraic Geometry, University of Wisconsin-Madison, July 7, 2025.

"Restricted Monodromy Groups and Trace Tests," invited seminar talk, Geometry and Combinatorics Seminar, University of Western Ontario, June 2, 2025.

"Trace Tests and Monodromy Groups," invited presentation, SIAM Southeastern Atlantic Section, University of Tennessee Knoxville, March 22, 2025.

"Trace Tests and Monodromy Groups," invited presentation, Southeastern AMS Sectional, Clemson University, March 8, 2025.

"Identifying Trace Affine Linear Sets using Homotopy Continuation," Poster Session at SIAM Conference on Applied Algebraic Geometry, Eindhoven University of Technology, Eindhoven, Netherlands, July 10, 2023.

"Identifying Trace Affine Linear Sets using Homotopy Continuation," Poster Session at the Meeting on Applied Algebraic Geometry, Georgia Tech, April 15, 2023.

"Broadening the Field: the Life and Work of Charlotte Angas Scott," North Shore Undergraduate Math Conference, Gordon College, April 6, 2019.

"Charlotte Angas Scott: Her Work and Women's Mathematical Education," Fall Meeting of the Northeastern Section of the MAA, Southern New Hampshire University, November 16, 2018.

"Compel Them to Consider Truth: Augustine on Anger and Righteous Persecution," Biennial Meeting of the Conference on Faith and History, Undergraduate Conference, Calvin College, October 3, 2018.

"The Story of Infinitesimals: Origins, Reactions, and Solutions," North Shore Undergraduate Math Conference, Merrimack College, April 7, 2018.

"Diophantus of Alexandria and the Introduction of Symbolic Mathematics," North Shore Undergraduate Math Conference, Southern New Hampshire University, April 8, 2017.

ORGANIZING

[upcoming] "Numerical Algebraic Geometry and its Applications", AMS Special Session at the Joint Mathematics Meetings, Washington, DC, January 4-7, 2026.

WORKSHOPS

Participant, Macaulay2 Workshop, University of Wisconsin-Madison, June 30 - July 4, 2025.

Participant, AMS Mathematical Research Community on Real and Numerical Algebraic Geometry, Providence, RI, June 22 - 28, 2025.

Participant, Workshop on the Applications of Commutative Algebra, Fields Institute, Toronto, ON, May 26 - 30, 2025.

RESEARCH INTERESTS

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- Applied algebraic geometry, computational algebraic geometry
 - Geometry, topology, algebraic topology
 - History of mathematics, mathematical innovations across civilizations and by underrepresented groups

UNIVERSITY TEACHING EXPERIENCE

Graduate Teacher of Record, Clemson University

- MATH 1080, Calculus of One Variable II: Fall 2025
- MATH 1070, Differential and Integral Calculus: Spring 2025
- MATH 1060, Calculus of One Variable I: Fall 2023
- MATH 1040, Precalculus and Introductory Calculus: Fall 2024, Spring 2023, Fall 2022, Spring 2021, Fall 2021

Graduate Teaching Assistant, Clemson University

- MATH 1030, Elementary Functions: Summer 2024, Summer 2021
- MATH 9000, Introduction to Teaching College Mathematics: Spring 2024
- MATH 1080, Calculus of One Variable II: Spring 2024
- MATH 1980, College Algebra: Summer 2022
- MATH 1060, Calculus of One Variable I: Summer 2021
- MATH 3110, Linear Algebra: Spring 2021
- MATH 2060, Calculus of Several Variables: Fall 2020

Teaching Assistant, Gordon College

- MAT 231, Transitions to Higher Mathematics: Fall 2017

OTHER TEACHING EXPERIENCE

Math Teacher

August 2021 – May 2023

Clemson, SC

- Acted as the primary math instructor for a group of homeschooled sixth graders
- Reworked a year-long curriculum to fit into two lessons a week while maintaining standards for topics covered
- Designed supplementary tests, assignments, and interactive activities for the students

Math Instructor

March 2020 – August 2020

Mathnasium, Newton, MA

- Remotely taught K-12 math to children in one-on-one sessions
- Worked with a team of instructors to create learning plans for individual students
- Informed parents of students' progress

Substitute Teacher

September 2019 – March 2020

Lynden School District, Lynden, WA

- Managed classroom and followed a teacher's lesson plan on short notice
- Taught students grades K-12 in a variety of subjects and classroom settings

ACADEMIC SERVICE AND LEADERSHIP

SIAM Student Chapter, Clemson University

- President May 2024 – present
- Treasurer, May 2023 – May 2024

Calculus Challenge, Clemson University

- Problem runner, April 2023, April 2024, April 2025

Mathematics Club, Gordon College

- Member, January 2017 – May 2019

GRANTS AND FUNDING

SIAM Travel Award, awarded May 2025

- \$650 awarded by the Society for Industrial and Applied Mathematics
- In support of travel to SIAM Conference on Algebraic Geometry in Madison, Wisconsin, July 2025

Graduate Travel Grant, awarded April 2025

- \$750 awarded by Graduate Student Government, Clemson University
- In support of travel to SIAM Conference on Algebraic Geometry in Madison, Wisconsin, July 2025

SIAM AG 23 Travel Award, awarded June 2023

- 500 euros awarded by Eindhoven University of Technology
- In support of travel to SIAM Conference on Algebraic Geometry in Eindhoven, Netherlands, July 2023

Graduate Travel Grant, awarded April 2023

- \$1000 awarded by Graduate Student Government, Clemson University
- In support of travel to SIAM Conference on Algebraic Geometry in Eindhoven, Netherlands, July 2023

PROFESSIONAL MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)

TECHNICAL SKILLS

- Proficient: Macauley2, LaTeX
- Working knowledge: Python, MATLAB

REFERENCES

- References available upon request

Updated: 9/22/25