Birch Forest Bryant

Curriculum Vitae

University of North Alabama
Dept. of Mathematics
UNA Box 5051
Florence, AL 35630
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Education

2017–2023 **Ph.D. Mathematics**, Oklahoma State University

Dissertation: *Fibers as Normal and Spun-normal Surfaces in Link Manifolds*

Advisors: Neil Hoffman and William Jaco

2012–2016 **B.S. Mathematics**, *Magna cum laude*, Southeastern Oklahoma State University

Advisor: Charles Matthews

Professional Experience

2024–*Pres.* **Assistant Professor**, *University of North Alabama*

Courses: Finite Mathematics, College Algebra, Trigonometry, Calculus I - III, Elementary Statistics, Applied Statistics, Linear Algebra with Proofs, Foundations of Mathematics, Knot Theory, Math UDR, Physics UDR

Graduate: General Topology

2023–2024 **Visiting Assistant Professor**, *Sam Houston State University*

Instructor of Record: College Algebra, Math for Mngl. Decision Making

2019 & 2021 **Graduate Research Assistant**, *Oklahoma State University*

Working under William Jaco and Henry Segerman resp.

2017–2023 **Graduate Teaching Associate**, *Oklahoma State University*

Instructor of Record: Preparation for Calculus, Calculus I

Teaching Assistant: Business Calculus, Math Functions and Uses

Grants

2026 University of North Alabama CASE Research and Development Award $1,786

2025-2026 Elizabeth Gaines Mann Research Professorship in Mathematics $5,000

2025 University of North Alabama Arts & Sciences Research Grant $1,283

Research and Publications

2021 B. Bryant, W. Jaco, and H. Rubinstein, "Efficient triangulations and boundary slopes," *Topology and its Applications* vol 297. `https://arxiv.org/abs/2006.14701`

2025 B. Bryant, "Ideal triangulations and once-punctured surface bundles." *Alg. & Geom. Top.* (under revision) `https://arxiv.org/abs/2505.21798v1`

2026 B.Bryant, "Multivariable Alexander polynomials of twisted torus links via Dehn surgery." (*preprint*) `https://arxiv.org/pdf/2611.03265`

B. Bryant "Efficient triangulated Dehn fillings and obstructions." (in preparation)

B. Bryant, M. Zhang, "Limits of Mahler measures of Alexander polynomials." (in preparation)

B. Bryant, C. Lee, "Normal surfaces realizing the Jones slopes." (in preparation)

B. Bryant, J. Pope, "PL-Links in $\mathbb{T}^3$: building surgery diagrams." (in preparation)

B. Bryant, L. Lahey, "Enumerating closed surfaces in Montesinos knot complements," (in preparation)

Lectures/Invited Talks

Nov. 2025 Texas State University Topology Seminar. Title: *Obstructions to Efficient Dehn Fillings*

Aug. 2025 39th Summer Topology and Its Applications Conference. Title: *Ideal Triangulations and Once-Punctured Surface Bundles. (fully funded)*

May 2025 AMS Western Sectional Special Session on Topological and Geometric Structures of 3-Manifolds. Title: *Ideal Triangulations and Once-Punctured Surface Bundles.*

Apr. 2025 Southern Regional Algebra Conference. Title: *Partial monoid of surfaces embedded in 3-manifolds. (fully funded)*

Apr. 2024 UNA Colloquium. Title: *Exploring 3-dimensional geometries with decompositions.*

Sept. 2023 SHSU Colloquium. Title: *Algorithms in 3-manifold theory using normal surfaces.*

May 2023 PhD Dissertation Defense. Title: *Fibers as Normal and Spun-normal Surfaces in Link Manifolds.*

Nov. 2022 Redbud Topology Conference. Title: *Inflating along spun-normal surfaces. (fully funded)*

Mar. 2021 Redbud Topology Conference. Title: *Normal Surfaces as Obstructions to Angle Structures.*

Fall 2020 PhD Candidacy Exam. Title: *1-efficient Dehn Fillings.*

Fall 2019 Okstate Topology Seminar. Title: *Crushing normal arcs (an analogy to crushing normal surfaces).*

Fall 2016 Undergraduate Thesis Presentation

July 2016 Math Seminar. Title: *Billiards on Topological Surfaces.*

Professional Development/Workshops

July 2026 Advances in Quantum and Geometric Topology

Spring 2026 SIGMAA IBL Virtual Workshop Series

Oct. 2025 Computational Problems in Topology IV

May 2025 64th Georgia International Topology Conference

Spring 2025 SIGMAA Inquiry-Based Learning Workshop Series

- Incorporating Puzzles and Games into the Mathematics Classroom *Feb. 25*
- Turning Proofs into Objects of Inquiry *Mar. 27*

Fall 2024 SIGMAA Inquiry Based Learning Fall Speaker Series

- Building Thinking Classrooms *Aug. 29*
- An Inquiry on Inquiry: Questions for Formative Assessment *Sept. 26*
- Equity in Inquiry-Based Instructional Practices *Nov. 19*

Mar. 2024 Generative AI in Teaching and Learning

Apr. 2023 Data Carpentry: R

Mar. 2023 Data Carpentry: Unix & Python

Nov. 2019 Sage Days 104: Arithmetic Dynamics

Recognition/Awards

2026 Teaching Service Award from UNA Honors College
2025 Elizabeth Gaines Mann Research Professorship in Mathematics
2019 O.H. Hamilton Fellowship
2016 Graduated Magna Cum Laude from SE
2015 Alpha Xi Honors Society Member
2013-2016 SE Academic Excellence Scholarship
2012 Oklahoma Academic All-State

Service to Department, University, Community

Advising

2024-*Pres.* Undergraduate Advisor:
- Seth Kemble
- Harrison Conely
- Antoinette Wooten
- Marisol Sombra
- Jordi Gomez

2025-*Pres.* Mathematics Undergraduate Research Experience:
- Joseph Pope, Title: *Distances in the space of Alexander roots.* *Spring 2025*

2025-*Pres.* Physics Undergraduate Research Experience:
- Seth Kemble, Title: *Gordian unlinks and material constraints.* *Fall 2025*

2025-*Pres.* Honors Project Advisor:
- Ethan Elliott *Fall 2026*
- Darby Blanset *Spring 2026*
- Jake Boynar *Fall 2025*
- Ana Rosas-Sanchez *Spring 2025*

2025-*Pres.* Statistical Consulting:
- Jolene Fretwell (*Doctor of Nursing Practice Project*) *Spring 2025*

High School/Undergraduate STEM Outreach

Oct. 2026 SIMIODE Challenge Using Differential Equation Modeling; team coach
Mar. 2026 MAA Southeastern Section Poster Session Judge
2025 - *Pres.* Putnam Problem Seminar
Feb. 2025 Alabama Statewide High School Math Contest Proctor
2024 - *Pres.* Annual UNA STEM Poster Session Judge
Nov. 2024 SIMIODE Challenge Using Differential Equation Modeling; Judge
Sept. 2024 UNA Math Club Lecture, Title: *From The Basel Problem to The Riemann Hypothesis*
Fall 2024 Founded the Semesterly UNA Math Problem of the Week
Fall 2024 Problem Writer for the Alabama Statewide High School Math Contest

University/Department Committees

2026-*Pres.* CASE Awards Committee

Fall 2026 Faculty Hiring Committee

2025-*Pres.* General Education Curriculum Committee

July 2025 Staff Selection Committee

Professional Service

Oct. 2026 AMS Sectional Special Session Organizer: *Computational topology and decision problems.*

2025 - *Pres.* Referee: *Contemporary Mathematics*, *Pacific Journal of Mathematics*, *npj Artificial Intelligence* (Springer Nature's Partner Journal)

2023 - *Pres.* Review Writer for zbMATH (*formerly Zentralblatt MATH*)

Professional Memberships

2023–*Pres.* Association of Mathematical Research

2017–*Pres.* American Mathematical Society

2017–*Pres.* Mathematical Association of America

Technical skills

Experienced in the following programming languages:

C++, Python, Assembly, R

Applications utilized in research/teaching:

SageMath, Regina, Matlab, GAP, Desmos, GeoGebra, Blender

References

Dr. Neil Hoffman, Associate Professor
University of Minnesota Duluth
218-726-7238
neilhoff@d.umn.edu

Dr. Christine Lee, Assistant Professor
Texas State University
vne11@txstate.edu

Dr. Michael Tallman, Associate Professor
Teaching Reference
Oklahoma State University
405-744-5479
michael.tallman@math.okstate.edu

Dr. Saul Schleimer, Associate Professor
University of Warwick
s.schleimer@warwick.ac.uk

Dr. William Jaco, Grayce Kerr Emeritus Chair
Oklahoma State University
bus.jaco@gmail.com

Dr. Brandy Doleshal, Associate Professor
Sam Houston State University
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