

Nathan Burns

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🌐 LinkedIn
🌐 Website

🎓 Education

University of Tennessee

Ph.D in Mathematics

▶ Thesis: *The Free Boundary Curve Shortening Flow and Its Ancient Solutions*

M.S in Mathematics

▶ Concurrent Masters Degree: Awarded on the Way to Completing Ph.D

2021 - 2026

KNOXVILLE, TN

University of Edinburgh

M.Math in Mathematics

▶ First Class with Honours

2016 - 2020

EDINBURGH, UK

📖 Research

Publications

▶ T. Bourni, N. Burns and S. Catron, "Classification of convex ancient solutions to free boundary curve shortening flow in convex domains",
The Journal of Geometric Analysis, Vol. 35, No. 7. 2025

In Preparation

▶ T. Bourni, N. Burns, and M. Langford, "Classification of Convex Ancient Free Boundary Curve Shortening Flows in Convex Noncompact Domains", In preparation.
▶ T. Bourni, N. Burns, and M. Langford, "Stability of the Shrinking Semi-Circle Under the Free Boundary Curve Shortening flow", In Preparation.

Miscellaneous Research

▶ A. Ho, S. Bagley, C. Beckford, N. Burns, E. Campbell, J. Kingsley and Mary E. Pilgrim, "In Between High School and College: A Qualitative Study on Educators' Self-Reported Teaching Practices",
Journal of Education, DOI:10.1177/00220574261416889 2026
- THIS RESEARCH WAS DONE AS PART OF A RESEARCH ASSISTANTSHIP DURING THE FIRST YEAR OF GRADUATE STUDY.

🛠️ Service

Co-Organizer for the Geometric Analysis Seminar

2025/2026 ACADEMIC YEAR

▶ University of Tennessee

🔗 Academic Activity

Academic Visitor

MARCH 2. - MARCH 8. 2025

▶ Australian National University

Program Associate

OCT. 21. - NOV. 22. 2024

▶ SLMATH (Formerly the MSRI)

▶ New Frontiers in Curvature: Flows, General Relativity, Minimal Submanifolds and Symmetry.

🎤 Talks

▶ Johns Hopkins University - Geometric Analysis Seminar APRIL 2026
▶ NORTH CAROLINA STATE UNIVERSITY - GEOMETRY AND TOPOLOGY SEMINAR APRIL 2026
▶ AMS SPRING SOUTHEASTERN MEETING: GEOMETRIC AND NON-SMOOTH ANALYSIS MARCH 2026
▶ AMS FALL CENTRAL MEETING: RIEMANNIAN GEOMETRY AND SYMMETRY II OCT. 2025
▶ RUTGERS GAUGE THEORY, LOW-DIMENSIONAL TOPOLOGY, AND GEOMETRIC ANALYSIS MAY 2025
▶ AUSTRALIAN NATIONAL UNIVERSITY - GEOMETRIC ANALYSIS SEMINAR MARCH 2025

▶ MATRIX-MFO TANDEM WORKSHOP: NONLINEAR GEOMETRIC DIFFUSION EQUATIONS	FEB. 2025
▶ SLMATH (FORMERLY THE MSRI) - GRADUATE STUDENT SEMINAR	NOV. 2024
▶ PUNTA DEL ESTE (URUGUAY) - GEOMETRIC FLOWS AND RELATIVITY WORKSHOP	MARCH 2024

Conference Attendance

▶ Courant-Rutgers Geometric Analysis Workshop 2026 - Rutgers University	JAN. 2026
▶ TEXAS GEOMETETRY AND TOPOLOGY CONFERENCE - UT DALLAS	NOV. 2025
▶ AMS FALL CENTRAL MEETING: AMS SPECIAL SESSION ON RIEMANNIAN GEOMETRY AND SYMMETRY II	OCT. 2025
▶ TOPICS IN DIFFERENTIAL GEOMETRY - BROWN UNIVERSITY	JUNE 2025
▶ RUTGERS GAUGE THEORY, LOW-DIMENSIONAL TOPOLOGY, AND GEOMETRIC ANALYSIS	MAY 2025
▶ MATRIX-MFO TANDEM WORKSHOP: NONLINEAR GEOMETRIC DIFFUSION EQUATIONS	FEB. 2025
▶ THE 30TH SOUTHERN CALIFORNIA GEOMETRIC ANALYSIS SEMINAR - UC IRVINE	FEB. 2025
▶ GEOMETRY AND ANALYSIS OF SPECIAL STRUCTURES ON MANIFOLDS - SLMATH	NOV. 2024
▶ RECENT PROGRESS ON GEOMETRIC ANALYSIS AND RIEMANNIAN GEOMETRY - SLMATH	OCT. 2024
▶ BRIDGING PDE AND GEOMETRIC FLOWS - CARDIFF UNIVERSITY	JULY 2024
▶ KANSAS GEOMETRIC ANALYSIS CONFERENCE - WICHITA STATE UNIVERSITY	APRIL 2024
▶ GEOMETRIC FLOWS AND RELATIVITY WORKSHOP - PUNTA DEL ESTE (URUGUAY)	MARCH 2024
▶ GEOMETRIC FLOWS AND RELATIVITY SUMMER SCHOOL - UNIVERSIDAD DE LA REPÚBLICA	MARCH 2024

Teaching

All teaching as a graduate student at the University of Tennessee.

▶ Instructor of Record

- ▶ Math 152 - Calculus for the Life Sciences (2 Sections)
- ▶ Math 123 - Finite Mathematics (2 Sections)
- ▶ Math 113 - Mathematical Reasoning (3 Sections)

▶ Teaching Assistant

- ▶ Math 241 - Calculus III (1 Section)
- ▶ Math 231 - Differential Equations I (1 Section)
- ▶ Math 125 - Basic Calculus (1 Section)
- ▶ Math 119 - College Algebra (1 Section)
- ▶ Math 113 - Mathematical Reasoning (2 Sections)

Fellowships/Awards

All Awards Received as a Graduate Student at the University of Tennessee

▶ Summer Departmental Research Fellowship	SUMMER 2025
▶ SPIKE TICKLE STEM ENDOWED FELLOWSHIP	SPRING 2025
▶ GRADUATE STUDENT FELLOWSHIP: PASSING UTK ORAL EXAM EARLY	SPRING 2024
▶ GRADUATE STUDENT ACADEMIC ACHIEVEMENT AWARD	SPRING 2024
▶ GRADUATE STUDENT FELLOWSHIP: PASSING PRELIMINARY EXAMS EARLY	SPRING 2023
▶ F.M DRYZER MEMORIAL FELLOWSHIP	FALL 2021
▶ GRADUATE SCHOOL FELLOWSHIP: PREVIOUS OUTSTANDING RECORD	THROUGHOUT GRAD. SCHOOL