Alexander Tepper

University of Georgia
Mathematics
Athens, GA 30602

alexander.tepper@uga.edu
www.alexander-tepper.com
www.linkedin.com/in/alexander-tepper
+1 (561) 262-3899

Academic Degrees

PhD, Mathematics
University of Georgia. Advisor: David Gay 2026

MS, Mathematics
Summa Cum Laude Florida International University. Advisor: Laura De Carli 2018

BS, Mathematics
Florida International University 2015

Academic Interests

- Differential topology and smooth singularity theory, especially in generalizations of Morse theory, h–principles, and applications of these to low-dimensional topology.
- Mathematics outreach, specifically through mathematical visualization, scientific communication, and interdisciplinary projects for undergraduate and graduate students from diverse disciplines.

Professional Positions Held

Chateaubriand Research Fellowship 2025
Centre International De Rencontres Mathematiques
Institut De Mathematique De Marseille

RTG Research Fellowship 2025-2026
Geometry and Topology RTG, University of Georgia

Graduate Student Instructor 2018–2025
University of Georgia
- Instructor or record for 12 courses (precalculus and calculus)

Graduate Research Assistant 2023
University of Georgia
- Project lead on "Spacing Out: Art and Topology Pop-up Museum," a three semester interdisciplinary project in which undergraduates from math and the arts designed, developed, and installed a month-long exhibition in the Shirley McBay Science Library featuring objects from topology rendered in a variety of media.
- Organized two weekend-long workshops in computer graphics for scientific visualization.

Procedural Technical Artist in Computer Graphics and Machine Learning 2022
Microsoft
- Developed parametric 3D models for generating large synthetic image datasets, for use in machine learning training.

- Led development of pipeline between partner Microsoft graphics and AI research teams (Cambridge, UK, and Seattle, WA). Contributed to parametric human model development, and ported functionality to the graphics software Houdini.
- Developed tools for team of 3D artists in Houdini and Blender for various modeling, geometry processing, and animation tasks.
- Worked with clients to regularly deliver trained models and large synthetic datasets, report performance metrics, and update tools.

Graduate Teaching Assistant 2016–2018
Florida International University
- TA for Abstract Algebra, Differential Geometry, Multivariable Calculus, Functional Analysis

Highschool Mathematics Teacher 2015–2016
Palm Beach School District, FL
- Algebra II Honors, Geometry Honors, AP Statistics
- Received maximal evaluation of "Highly Effective"

Mathematics Tutor 2014
Wise Choice Tutoring, Miami, FL

Mathematics Tutor 2012–2013
Center for Teaching and Learning, Florida International University

Honors and Awards

Chateaubriand Research Fellowship 2025
Centre International De Rencontres Mathematiques
Institut De Mathematique De Marseille
RTG Research Fellowship 2025–2026
Geometry and Topology RTG, University of Georgia
Excellence in Teaching Award 2025
University of Georgia
Awarded yearly to 5 graduate students from across the UGA graduate student body.
Outstanding Teaching Assistant 2021
University of Georgia
Highly Effective Instruction 2016
Palm Beach County School District

Publications

- "Constructing Immersions with Given Self–Intersection," arXiv: to appear December 2025
- "Trisection Diagrams for Lefschetz Pencils," arXiv: to appear December 2025
- "Failure Rate Identification of a Reparable System Governed by Coupled ODE-PDEs and Deep Learning Based Implementation," with W. Hu, B. Xie, and Q. Zhang, IEEE Control Systems Society American Control Conference (2023)
- "Three Problems on Exponential Bases," with L. De Carli and A. Mizrahi, Canadian Mathematical Bulletin (2019)

Other Products

- "Spacing Out: Art and Topology Pop-Up Museum," see https://art.uga.edu/2024/12/05/feeling-grovi-research-at-the-intersection-of-design-art-and-mathematics/
- Mathematical Visualizations and Other Computer Graphics Projects, see https://alexander-tepper.com/portfolio/

Professional Service

UGA and ICMAT h–principles And Wrinkling Seminar Organizer 2024
UGA and ICMAT Wrinkling and Igusa Functions Seminar Organizer 2025

Talks

"Putting Symplectic Surfaces in $\mathbb{C}P^2$ into Bridge Position," Centre International De Rencontres Mathematiques, November 2025
"Constructing Immersions with Given Self-Intersection," Lightning Talk, Georgia Tech Topology Conference, December 2024
"Framed Igusa Functions," Wrinkling and Igusa Functions Seminar, August 2024
"Wrinkled Submersions," h–principles and Wrinkling Seminar, January 2024
"Introduction to Smooth Singularity Theory," "h–principles and Wrinkling Seminar", August 2023
"An Introducion to Percolation Theory", University of Georgia Mock AMS, May 2021
"An Introduction to Brownian Motion," University of Georgia Mock AMS, May 2020
"Symplectic Geometry and Gromov's Non-Squeezing Theorem," University of Georgia Graduate Student Topology Seminar, February 2019
"Branched Coverings," University of Georgia Graduate Student Topology Seminar, October 2018

Courses Taught

As Instructor of Record at University of Georgia:
Calculus, Spring 2025
Precalculus (2 sections), Fall 2024
Calculus, Spring 2024
Precalculus, (2 sections) Fall 2023
Calculus, (online asynchronous) Summer 2023
Calculus, Spring 2021
Calculus (online asynchronous), Fall 2020
Precalculus (2 sections), Spring 2020
Precalculus, Fall 2019
"Spacing Out: Art and Topology Pop-Up Museum", 2023–2024
Computer Graphics Workshops (2), 2023–2024

As Graduate Teaching Assistant at University of Georgia
Mathematics of Options Pricing, Spring 2025
Foundations of Geometry I, Spring 2024
Numerical Analysis I, Spring 2021
Topics in Math (variational calculus), Fall 2020
Arithmetic for Middle Grade Teachers, Spring 2019

As Mathematics Teacher in Palm Beach County School District
Algebra II Honors, 2015–2016
Geometry Honos, 2015–2016
AP Statistics, 2015–2016

Guest Lecturer at Florida International University Honor's College
Introduction to Turing Machines (3 lectures), 2013
Gödel's Incompleteness Theorems and Proof (3 lectures), 2013

Educational Outreach and Interdisciplinary Activities

Spacing Out: Art and Topology Pop-Up Museum 2023–2024
As project lead for 3 semesters, oversaw recruitment, design, development, and installation of a month-long exhibition in the UGA Shirley McBay Science Library, showcasing objects from low-dimensional topology rendered in various media (ceramic, laser–cut wood, fabric arts, computer graphics, zine, etc.) by UGA undergraduate students from diverse majors. See https://art.uga.edu/2024/12/05/feeling-grovi-research-at-the-intersection-of-design-art-and-mathematics/.

Computer Graphics Workshops 2023–2024
Led two weekend-long workshops on various computer graphics platforms/software, with a focus on scientific illustration and communication.

Guest Lecture Series 2024
"Complex Numbers and Geometry": Foundations of Geometry I, University of Georgia

Seifert Surface Workshop 2024
Led programming on a general audience workshop in which students learn about knot theory and Seifert surfaces, and learn methods for creating these surfaces out of paper.

Consult for UGA Math Education Doctoral Research 2023
Description: Assisted in the experimental design stage of a doctoral research project in the Math Education Department which investigated the impact of graduate student instruction on outcomes in Precalculus classes.

Guest Lecture Series 2019
Arithmetic for Middle School Teachers

Guest Lecture Series 2013
"An Introduction to Turing Machines", Florida International University Honors College

Guest Lecture Series 2013
"Gödel's Incompleteness Theorems and Proof", Florida International University Honors College