

Jonathan Zung

686 Cherry St NW
Atlanta, GA 30332
✉ jzung3@gatech.edu

Education and Employment

- June 2026 - **Assistant Professor**, *Georgia Institute of Technology*
Jan 2026 - **Postdoctoral Fellow**, *Simons–Laufer Mathematical Sciences Institute*
May 2026
July 2025 - **Postdoctoral Associate**, *Massachusetts Institute of Technology*
Dec 2025
Sept 2022 - **C.L.E. Moore Instructor**, *Massachusetts Institute of Technology*
May 2025
Sept 2017 - **PhD, Mathematics**, *Princeton University*
May 2022
2014 - 2016 **MSc, Computer Science**, *Princeton University*
2010-2014 **Honours BSc, Mathematics Specialist and Computer Science Major; MSc, Mathematics**, *University of Toronto*

Teaching

- 2023-2024 **Charles and Holly Housman Award for Excellence in Teaching**, *MIT*
Fall 2024 **Instructor 18.022 (Multivariable calculus)**, *MIT*
Spring 2024 **Instructor 18.900 (Geometry and topology in the plane)**, *MIT*
Fall 2023 **Instructor 18.904 (Undergraduate seminar in topology)**, *MIT*
Spring 2023 **Instructor 18.01 (Calculus)**, *MIT*
Fall 2022 **Recitation leader 18.03 (Differential equations)**, *MIT*
Spring 2021 **Instructor MAT202 (Linear algebra with applications)**, *Princeton*
Fall 2020 **Instructor MAT201 (Multivariable calculus)**, *Princeton*
Spring 2020 **Instructor MAT201 (Multivariable calculus)**, *Princeton*
Fall 2019 **TA MAT377 (Combinatorics)**, *Princeton*
Spring 2019 **TA MAT218 (Honors analysis II)**, *Princeton*
Fall 2018 **TA MAT201 (Multivariable calculus)**, *Princeton*
Spring 2016 **TA COS340 (Reasoning about computation)**, *Princeton*
Fall 2015 **TA COS450 (Computational geometry)**, *Princeton*
2013-2014 **TA MAT237 (Multivariable calculus)**, *Toronto*
2012-2013 **TA MAT135/136 Calculus I**, *Toronto*

Outreach/Advising

- 2022-2024 **Undergraduate advising**
I have advised seven students for reading courses/research projects in geometry and topology during my time at MIT.
2019-2021 **Fine hall mathematical murals initiative**
I initiated a project to paint mathematically inspired murals in the stairwells of the math department. You can see some of the results at web.mit.edu/jzung/www/murals.html.
Summer 2021 **Ghana Math Olympiad Program**
Trained members of Ghana's IMO team as well as teaching junior students

Research

Topology

- [14] (with John Baldwin and Steven Sivek) **Pseudo-Anosov flows on hyperbolic L-spaces**, *arxiv:2505.21113 [math.GT]*, 2025
- [13] **Veering triangulations and transverse foliations**, *arXiv:2411.00227 [math.GT]*, 2024
- [12] **Pseudo-Anosov representatives of stable Hamiltonian structures**, *arXiv:2410.02186 [math.GT]*, 2024
- [11] (with Malo Jézéquel) **Fried conjecture for pseudo-Anosov flows**, *arXiv:2409.17014 [math.DS]*, 2024
submitted
- [10] **Expansion and torsion homology of 3-manifolds**, *arXiv:2405.04846, [math.GT]*, 2024
submitted
- [9] (with A. Abdurrahman, A. Adve, B. Lowe, and V. Giri) **Hyperbolic 3-manifolds with uniform spectral gap for coclosed 1-forms**, *arXiv:2404.19039 [math.GT]*, 2024
submitted
- [8] **Reeb flows transverse to foliations**, *arXiv:2103.01325 [math.GT]*, 2021
to appear, *Geometry and Topology*
- [7] **Taut foliations, left orders, and pseudo-Anosov mapping tori**, *arXiv:2006.07706 [math.GT]*, 2020
to appear, *Geometry and Topology*

Computer vision and connectomics

- [6] (with N. Turner et al.) **Multiscale and multimodal reconstruction of cortical structure and function**, *bioRxiv:10.1101/2020.10.14.338681*, 2020
- [5] (with K. Lee, I. Tartavull, and S. Seung) **An Error Detection and Correction Framework for Connectomics**, *Advances in Neural Information Processing Systems* 30, 2017
- [4] (with K. Lee, P. Li, V. Jain, and S. Seung) **Superhuman Accuracy on the SNEMI3D Connectomics Challenge**, *arXiv:1706.00120 [cs.CV]*, 2017
- [3] (with D. Buniatyan, S. Popyvych, D. Ih, T. Macrina, and S. Seung) **Weakly Supervised Deep Metric Learning for Template Matching**, *Advances in Intelligent Systems and Computing*, 943:39-58, 2020
- [2] (with S. Seung) **A correlation game for unsupervised learning yields computational interpretations of Hebbian excitation, anti-Hebbian inhibition, and synapse elimination**, *arXiv:1704.00646 [cs.NE]*, 2017

Combinatorics

- [1] (with E. Ebrahimzadeh, L. Farczadi, P. Gao, A. Mehrabian, C. Sato, and N. Wormald) **On longest paths and diameter in random Apollonian networks**, *Random Structures and Algorithms* 45(4):703-725, 2014

Invited Talks

Philadelphia area topology (contact/hyperbolic) seminar

Summer 2025 Workshop/summer school in low dimensional topology and Floer theory (Montreal)

Spring 2025 Dynamics and Floer theory (Princeton)

WashU St. Louis geometry and topology seminar

Ohio State University geometry and topology seminar

Boston College topology seminar

MIT symplectic seminar

Brandeis Topology seminar

Columbia geometric topology seminar

Fall 2024 CIRM “Foliations and Diffeomorphism Groups”

Rutgers geometry and topology seminar

Informal seminar in dynamics, geometry, and moduli spaces (Harvard)

Spring 2024 Berkeley topology seminar

Fall 2023 Boston College topology seminar

AMS sectional meeting on flows and foliations

Summer 2023 CIRM “From smooth to C^0 symplectic geometry”

Spring 2023 Chicago geometry seminar

Princeton geometry festival

Spring 2022 Queen’s dynamics, geometry, and groups seminar

Temple geometry and topology seminar

Stony Brook geometry and topology seminar

Caltech geometry and topology seminar

Fall 2021 MIT geometry and topology seminar

Princeton topology seminar

Columbia geometric topology seminar

WashU St. Louis geometry and topology seminar

Summer 2021 Regensburg low dimensional geometry and topology seminar

Symplectic zoominar (CRM-Montreal, Princeton/IAS, Tel Aviv, and Paris)

Nearly carbon neutral geometry and topology conference, session on foliations and flows

Spring 2021 Symplectix seminar (Nantes-Orsay)

UT Austin topology seminar

AIM workshop on conformal symplectic structures, contact topology, and foliations