

Jonathan Zung

24 Dickinson St, Apt 25

Princeton, NJ 08540

☎ 609-375-7445

✉ jzung@math.princeton.edu

🏠 web.math.princeton.edu/~jzung/

Education

- 2017- **PhD candidate**, *Princeton University*.
expected graduation June 2022
- 2014-2016 **MSc., Computer Science**, *Princeton University*.
- 2013-2014 **MSc., Mathematics**, *University of Toronto*.
- 2010-2013 **Honours BSc., Mathematics Specialist and Computer Science Major**, *University of Toronto*.

Teaching Experience

- 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

- 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.math.princeton.edu/~jzung/murals.
- Summer 2021 **Ghana Math Olympiad Program**.
Trained members of Ghana's IMO team as well as teaching junior students
- Fall 2020 **Undergraduate directed reading program**.
Graduate mentor

Research

Topology

- [8] **Reeb flows transverse to foliations**, *arXiv:2103.01325 [math.GT]*, 2021.
submitted
- [7] **Taut foliations, left orders, and pseudo-Anosov mapping tori**, *arXiv:2006.07706 [math.GT]*, 2020.
submitted

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

- 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.