

# AIDAN LORENZ

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## TECHNICAL SKILLS

**Languages:** Python, R, SQL, Java • **Additional Software:** Anaconda, Git, RStudio, Matlab, Latex, Mathematica

## EDUCATION

**(Expected) PhD in Mathematics**, *Vanderbilt University*, GPA: 3.93 2019 – May 2024

Dissertation topics: Geometric group theory, low dimensional topology.

Selected courses: Mathematical Data Science • Data Structures • Database Management Systems • College Teaching

Bootcamp mini-courses: Machine Learning • Applied Statistics and Data Science • Python • R • Stochastic Modeling • Optimization

**Master's in Mathematics**, *Vanderbilt University* 2019 – 2022

**Honors Bachelor of Science**, Mathematics & Physics, Certificate in Programming, *Temple University* 2015 – 2019

## SELECTED EXPERIENCE

**Doctoral Mathematics Researcher** 2019 – Present

*Vanderbilt University, Department of Mathematics*

- Built package to work with small dilatation pseudo-Anosov homeomorphisms using Veering triangulations integrating Python, Sage, Regina, and Mathematica.
- Instructor of Record for 3 courses including Statistics Lab in R, TA for additional 5 courses, completed optional teaching certification.

**Participant, Math to Industry Bootcamp** June – July 2023

*University of Minnesota, Institute for Mathematics and its Applications*

- Worked with a group at Pacific Northwest National Laboratory on assessing robustness of deep learning models (Meta's Segment Anything Model, GPT-2, Bloom, Pythia, and other large language models).
- Utilized embedding algorithms via Huggingface and standard computer vision metrics in our assessment.

**Participant, Data Science Bootcamp** September – December 2023

*Erdős Institute*

- Took comprehensive semester-long course on Machine Learning techniques.
- Built a collaborative filtering beer recommendation system with a group using matrix factorization and Pytorch.

**Research Assistant, Mathematics** 2017 – 2019

*Temple University, Department of Mathematics*

- Studied "shadows" (approximations of elements) of the Grothendieck-Teichmüller group.
- Paper accepted to Algebraic & Geometric Topology.

**Research Assistant, Mathematics** June – July 2018

*Cornell University, Department of Mathematics*

- Collaborated on a project about generating sets of finite groups with a group of fellow undergraduates from other universities.
- Wrote programs in GAP to carry out group-theoretic computations.
- Paper accepted to Communications in Algebra.

## PUBLICATIONS *\*Authors listed in alphabetical order*

- What are GT-shadows?, Vasily Dolgushev, Khanh Le, Aidan Lorenz, **Algebraic & Geometric Topology** (2023)
- On the replacement property for  $PSL(2, p)$ , David Cueto Noval, Aidan Lorenz, Baran Zadeoglu, **Communications in Algebra** (2021)

## SELECTED AWARDS

B.F. Bryant Prize for Excellence in Teaching • Sholomskas Award for Outstanding Students (Mathematics) • Phi Beta Kappa • Undergraduate Research Program Poster Session Honorable Mention • Robert A. Figlin Family Research Award • Most Promising Mathematics Major Award • Science Scholars Program • President's (full tuition merit) Scholarship • Dean's List • Graduated Magna Cum Laude