Samuel Robert Dodds
GRADUATE STUDENT

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RESEARCH INTERESTS

My principle research interests lie in the intersection of Ergodic Theory and Geometric Group Theory. In particular, the asymptotic and geometric properties of subgroups of Lie groups and random walks on subgroups of Lie groups. I have proven various results about the entropy of stationary dynamical systems, and the factorizability of such systems, which occur in the context of Gromov hyperbolic groups.

PAPERS

- *On the Lattice of Boundaries and the Spectrum of Entropies of Hyperbolic Groups*
  https://doi.org/10.48550/arXiv.2211.04554
- (*with Alex Furman) Quotients of Poisson Boundaries, Entropy, and Spectral Gap*
  (in preparation)

TEACHING EXPERIENCE

Graduate Teaching Assistant August 2016 - Present
University of Illinois - Chicago

- *Precalculus*
- *Business Calculus*
- *Calculus I*
- *Calculus II*
- *Calculus III*

Graduate Teaching Assistant August 2016 - Present
University of Illinois - Chicago

I lead active learning discussion sections, focused on group work and collective problem solving. I also grade for undergraduate and graduate courses. Courses taught include, but are not limited to:

- *Precalculus*
- *Business Calculus*
- *Calculus I*
- *Calculus II*
- *Calculus III*

Courses graded:

- *Linear Algebra*
- *Graduate Real Analysis*

Emerging Scholar Program Instructor August 2019 - Present
University of Illinois - Chicago

Here I lead a workshop to compliment and supplement the standard STEM math sequence. Additionally I design all the course curricula and materials. ESP is intended both to address possible mathematical gaps as well as to position students to think more deeply about ideas brought up in the course. Workshops taught:

- *Calculus I*
- *Calculus II*

MCC Instructor September 2017 - February 2020, September 2022-Present
Math Circles of Chicago

Guiding lessons for small groups of students. Math Circles of Chicago is an extracurricular math program focusing giving young students (6th - 12th grade) opportunities to explore exotic mathematical topics.

QED Judge 2017, 2018, 2019
Math Circles of Chicago

QED is a annual math fair in the Chicago area affiliated with the Chicago math circles. Middle and high school students submit projects and receive awards based on their quality.

UICMOP Assistant 2017-2020 *University of Illinois - Chicago*

UIC Math Olympiad Program is an after-school program for 7th-12th grade students focusing on problem solving and contest math. I help guide problem solving sessions and provide mathematical assistance where required.

UIC YSP Graduate Teaching Assistant 2017-2020 *University of Illinois - Chicago*

UIC Young Scholars Program is a free admission summer program for 7th-12th grade students which consists of all day lessons and exercise sessions in non-standard topics in pure and applied mathematics. My role was prepare and give lectures on speciality mathematical topics and to care for the students as they worked on exercises and participated in activities for 4 weeks.

ORGANIZING

2018 Graduate Student Geometry and Topology Conference : An annual conference for graduate students in topology and geometry to present their work to their peers. Co-organized with Janis Lazovskis, Nathan Lopez, Christopher Perez, and Keaton Quinn, with oversight from David Dumas

Graduate Geometry, Topology, and Dynamics Seminar at UIC : I was the principle organizer of the only long term graduate seminar in geometry, topology and dynamics at UIC since Fall 2019 to Spring 2022. The purpose of the seminar was twofold: to give graduate students practice in giving talks, and to conduct readings of classic theorems in the fields of geometry, topology, and dynamics.