

Byron Heersink

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EDUCATION

University of Illinois at Urbana-Champaign

Ph.D., Mathematics

M.S., Mathematics

Urbana, IL
Expected May 2017
May 2013

Adams State University

B.A., Mathematics

Minor in Physics, Summa Cum Laude

Alamosa, CO
May 2011

RESEARCH INTERESTS

Ergodic theory and number theory

LIST OF PUBLICATIONS

Continued fraction normality is not preserved along arithmetic progressions, with J. Vandehey, Archiv der Mathematik 106(4) (2016), 363–370

An effective estimate for the Lebesgue measure of preimages of iterates of the Farey map, Advances in Mathematics 291 (2016), 621–634

Poincaré sections for the horocycle flow in covers of $SL(2, \mathbb{R})/SL(2, \mathbb{Z})$ and applications to Farey fraction statistics, Monatshefte für Mathematik 179(3) (2016), 389–420

Gap distribution of Farey fractions under some divisibility constraints, with F. P. Boca and P. Spiegelhalter, Integers 13 (2013), A#44

CONFERENCE PRESENTATIONS

“An effective estimate for the Lebesgue measure of preimages of iterates of the Farey map”

- Illinois Number Theory Conference
University of Illinois at Urbana-Champaign
- Aug. 2015

“The spacing statistics of Farey fractions and the horocycle flow in $SL(2, \mathbb{R})$ ”

- AMS Fall Southeastern Sectional Meeting
University of North Carolina at Greensboro
- Nov. 2014

SEMINAR PRESENTATIONS

“An effective asymptotic result for the Lebesgue measure of the sum-level sets for continued fractions”

- Geometry, Groups and Dynamics/GEAR Seminar (UIUC) Apr. 2015
- Number Theory Seminar (UIUC) Apr. 2015

“Tauberian Theory”

- Graduate Student Analysis Seminar (UIUC) Mar. 2015

“The central limit theorem for dynamical systems”

- Graduate Student Analysis Seminar (UIUC) Nov. 2014

“Ergodic theory and the distribution of the Farey and Stern-Brocot sequences”

- Graduate Student Analysis Seminar (UIUC) Oct. 2014

“Gap distribution of Farey fractions determined by subgroups of $SL(2, \mathbb{Z})$ ”

- Graduate Student Number Theory Seminar (UIUC) Mar. 2014

TEACHING EXPERIENCE

- Teaching Assistant 2013 - 2015
Courses: Calculus I Fall 2013, Fall 2014, Fall 2015
 Calculus II Spring 2014, Spring 2015
- Taught mathematical concepts to students by engaging them in group work through active learning discussion sections.
 - Graded quizzes and exams, and provided tutoring to individual students.
 - Served as head teaching assistant in Sprint 2015
 - Co-led meetings with other teaching assistants and undergraduate classroom assistants to prepare for each week's classes
 - Contributed to the creation of quizzes, exams, and other materials for the 200-student lecture

SERVICE ACTIVITIES

- Graduate student mentor in the Illinois Geometry Lab Fall 2013 - Spring 2014
- Provided mathematical and computing guidance to three undergraduate students in the project *Angular distribution of lattice points*.

OTHER RESEARCH EXPERIENCE

- Program for Interdisciplinary and Industrial Internships at UIUC
- Entomology Internship Summer 2015
- Wrote an ant colony model for the UIUC Entomology department implementing a stimulus-threshold response model to control task behavior for each ant.
- Mathematical Biology Research Group Summer 2014
- Worked with other graduate students in developing and programming population models using branching processes.
- Undergraduate Research Summer 2010 - Spring 2011
- Conducted a research project involving discrete geometry and coding theory leading to my undergraduate thesis, *New lower bounds for kissing numbers using codes*.
 - Presented a poster at the AMS/MAA Joint Mathematics Meetings in New Orleans, LA Jan. 2011

AWARDS

- GAANN Fellowship Fall 2011 - Spring 2013
Scharck Fellowship Spring 2016