

Kelly Isham

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EDUCATION

University of California, Irvine

Ph.D. in Mathematics

Advisor: Nathan Kaplan

Irvine, CA

September 2016 - June 2021

University of California, Irvine

Master of Science in Mathematics

Irvine, CA

September 2016 - December 2017

Skidmore College

Bachelor of Arts in Mathematics

Minor in Computer Science

Saratoga Springs, NY

September 2012 - May 2016

RESEARCH INTERESTS

Number theory, combinatorics, arithmetic algebraic geometry, arithmetic statistics

RESEARCH PAPERS

1. *Lower bounds for the number of subrings in \mathbb{Z}^n* , submitted, <https://arxiv.org/abs/2010.09123>.
2. (with L. Monroe) *Arithmetic of idempotents in $\mathbb{Z}/m\mathbb{Z}$* , submitted, <https://arxiv.org/abs/2005.05248>.
3. (with L. Monroe) *On the structure induced by the power sequences of $(\mathbb{Z}/m\mathbb{Z}, \cdot)$* , submitted, <https://arxiv.org/abs/2002.10980>.
4. *An algorithm for counting arcs in higher-dimensional projective space*, in preparation.
5. *The number of 10-arcs in a projective plane is nonquasipolynomial*, in preparation.

AWARDS AND SCHOLARSHIPS

Nominated for the Most Promising Future Faculty Award

February 2021

President's Dissertation Year Fellowship (\$27,800)

June 2020 - June 2021

Science in Action Award (\$500)

April 2020

NSF Mathematical Sciences Graduate Internship (\$12,000)

July 2019 - September 2019

Outstanding Mathematics Teaching Assistant Award

June 2018

Gladys Gillman Taylor '48 Prize in Mathematics

May 2016

Porter Presidential Scholarship in Science and Mathematics (\$60,000)

September 2012 - May 2016

TEACHING EXPERIENCE

Instructor

- Math 199 (Independent Reading on Graph Theory): *Spring 2019*

Special Session Leader

- Designed and taught review sessions for the Algebra Comprehensive Exam: *Spring 2020*

Directed Reading Program

- Created and led a reading course on Gröbner bases for two undergraduate students: *Fall 2020*
- Created and am leading a reading course on finite geometry for two undergraduate students: *Winter 2021*

Teaching Assistant

- Math 2B (Calculus II): *Fall 2016, Winter 2017, Spring 2017, Summer 2017*
- Math 2D (Calculus III): *Winter 2018*
- Math 3A (Linear Algebra): *Fall 2017, Spring 2018, Summer 2018, Spring 2019*
- Math 13 (Introduction to Abstract Math): *Fall 2018*
- Math 120B (Rings and Fields): *Winter 2019*
- Math 180A (Number Theory I): *Winter 2019*
- Math 206ABC (Introduction to Graduate Algebra): *Fall 2019, Winter 2020, Spring 2020*

INVITED TALKS

<i>Asymptotic growth of orders in a fixed number field via subrings in \mathbb{Z}^n</i> Number Theory Seminar, UC San Diego	June 2021
<i>Asymptotic growth of orders in a fixed number field via subrings in \mathbb{Z}^n</i> Number Theory Seminar, Charles University	May 2021
<i>On n-arcs in projective space</i> Combinatorics Seminar, UC Berkeley	April 2021
<i>Point-line-plane structures and n-arcs in $\mathbb{P}^3(\mathbb{F}_q)$</i> Special Session on Discrete Geometry and Finite Structures, AMS Western Sectional, CSU Fresno	Cancelled
<i>Counting n-arcs in projective planes</i> Special Session on Algorithms, Experimentation, and Applications in Number Theory, JMM	January 2020

OTHER TALKS

<i>Lower bounds for the number of subrings in \mathbb{Z}^n</i> PAJAMAS, virtual conference	September 2020
<i>A lower bound for the number of subrings in \mathbb{Z}^n</i> Chicago Number Theory Day, virtual conference (lightning talk)	June 2020
<i>On the number of subrings of prime power index</i> WiMSoCal, UCI	March 2020
<i>Counting n-arcs in projective planes</i> Special Session on Research in Mathematics by Early Career Graduate Students, AMS Western Sectional, UC Riverside	November 2019
<i>Counting n-arcs in projective planes</i> MAAIM Conference, Emory University	November 2019
<i>Power sequences in $(\mathbb{Z}/m\mathbb{Z}, \cdot)$</i> Number Theory Series in Los Angeles I, Occidental College	October 2019
<i>Counting n-Arcs in Projective Planes</i> Mathematics Graduate Student Colloquium, UCI	May 2019

MATH WORKSHOPS ATTENDED

MRC on Explicit Methods in Arithmetic Geometry in Characteristic p	June 2019
Connecticut Summer School in Number Theory, University of Connecticut	May 2018

CERTIFICATES

Inclusive Excellence Certificate Program	Winter 2021
Mentoring Excellence Program	Winter 2020

SERVICE

Reviewed 1 article for the American Mathematical Monthly

Community, Outreach, and Mentoring Program (COMP) Co-founder July 2020 - Present

- Founded an expansion of the Peer Mentor program in collaboration with the Inclusive Excellence Committee at UCI
- This program emphasizes supporting graduate students and increasing diversity in math
- Successfully advocated for a paid fellowship to be given to the leader of COMP

Directed Reading Program Founder and Co-leader February 2020 - Present

- Responsible for setting up the Directed Reading Program at UCI
- Provide the structure and support for graduate student mentors to lead reading groups with undergraduate mentees

Peer Mentor Program Co-leader July 2018 - Present

- Serve as a resource for first year graduate students
- Assign peer mentors to the first year graduate students to help them with the transition to graduate school

Math Circles October 2016 - Present

- Session Leader - create a lesson plan and teach middle school children topics in mathematics that they do not typically see in the classroom
- Session Assistant - assist the session leader and help the students with the math problems

OTHER EXPERIENCE

Student Researcher September 2019 - September 2020

Los Alamos National Laboratory, part-time remote work

NSF Mathematical Sciences Graduate Internship July 2019 - September 2019

Los Alamos National Laboratory *Los Alamos, NM*

Cryptanalysis & Exploitation Services Summer Program May 2016 - August 2016

Department of Defense *Fort Meade, MD*

Director's Summer Program May 2015 - August 2015

Department of Defense *Laurel, MD*

MEMBERSHIPS

- American Mathematical Society
- Association for Women in Mathematics
- Phi Beta Kappa

PROGRAMMING SKILLS

Languages: Sage, Magma, Mathematica, Python