

# Jacob Mayle

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## Research Interests

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Number theory and arithmetic geometry. Algebraic curves and their Jacobians. Galois representations.

## Education

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- 2018 – **Ph.D. in Mathematics (in progress)**  
University of Illinois at Chicago  
*Advisor: Nathan Jones*
- 2016 – 2018 **M.S. in Mathematics**  
University of Illinois at Chicago
- 2012 – 2016 **A.B. in Mathematics**  
Colgate University  
*Magna cum laude with Honors in Mathematics*

## Additional Education

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- 2018 – 2019 **Certificate in the Foundations of College Instruction**  
University of Illinois at Chicago
- 2016 **Math in Moscow**
- 2015 **Budapest Semesters in Mathematics**

## Publications and Preprints

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- 2020 **Curious Squares**  
Joint with Neelima Borade.  
*Submitted. Preprint, arXiv:2006.08083.*
- 2020 **Rigidity in Elliptic Curve Local-Global Principles**  
*Preprint, arXiv:2005.05881.*
- 2020 **A Bound for the Image Conductor of a Principally Polarized Abelian Variety with Open Galois Image**  
*Submitted. Preprint, arXiv:2001.07229.*
- 2015 **The Asymptotic Distribution of a Hybrid Arithmetic Function**  
Joint with Sarah Manski and Nate Zbacnick.  
*INTEGERS, Vol. 15: A28.*

## Awards

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- 2019 **MSCS Graduate Student Teaching Award**, University of Illinois at Chicago
- 2016 **MSCS First Year Graduate Student Award**, University of Illinois at Chicago
- 2016 **Edwin J. Downey Award**, Colgate University  
*Awarded for outstanding contributions to the mathematics department*
- 2015 **Math in Moscow Scholarship**, American Mathematical Society

2013 **Sisson Mathematical Prize**, Colgate University  
*Awarded for excellence in number theory*

## Talks

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- 2018 – **Graduate Number Theory Seminar**, University of Illinois at Chicago  
*Sato-Tate Conjecture III; Modular Curves II; Primitive Root Conjecture and Cyclicity II; Arithmetic Statistics IV; Isogeny Volcanoes II; Average Rank of Elliptic Curves I; Chabauty’s Method IV; Modular Functions; Elliptic Functions: An Introduction; The Chebotarev Density Theorem; Orders in Imaginary Quadratic Fields: Relationship with Quadratic Forms; Introduction to Algebraic Number Fields; Primes of the Form  $x^2 + ny^2$ : Descent, Reciprocity, and Quadratic Forms*
- 2020 **Front Range Number Theory Day**, University of Colorado (Online)  
*Lightning Talk: Rigidity in Elliptic Curve Local-Global Principles*
- 2020 **Graduate Student Colloquium**, University of Illinois at Chicago  
*Elliptic Curves: A Hands on Introduction*
- 2019 **Math Club Lecture Series**, University of Illinois at Chicago  
*Primes of the Form  $x^2 + y^2$*
- 2019 **Graduate Algebraic Geometry Seminar**, University of Illinois at Chicago  
*Serre’s Open Image Theorem*
- 2018 **Number Theory Seminar**, University of Illinois at Chicago  
*The Davenport Constant of a Finite Abelian Group; Introduction to Function Field Arithmetic*
- 2014 – 2015 **Department Colloquium**, Colgate University  
*The Search for Partial Difference Sets; Summer Research on Arithmetic Functions*

## Conferences

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- 2020 **Front Range Number Theory Day**  
University of Colorado (Online)
- 2020 **Chicago Number Theory Day**  
University of Illinois at Chicago (Online)
- 2020 **Connecticut Summer School in Number Theory Research Conference**  
University of Connecticut (Online)
- 2020 **Workshop on Arithmetic Geometry, Number Theory, and Computation**  
Brown University, ICERM (Online)
- 2020 **Front Range Number Theory Day**  
University of Colorado (Online)
- 2020 **Arizona Winter School 2020: Nonabelian Chabauty**  
University of Arizona
- 2020 **Chicago Symposium Series: Excellence in Teaching Mathematics and Science**  
University of Illinois at Chicago
- 2019 **CMI-HIMR Summer School in Computational Number Theory**  
University of Bristol
- 2019 **Arithmetic of Low-Dimensional Abelian Varieties**  
Brown University, ICERM
- 2018 **Pop-up Conference in Number Theory**  
University of Illinois at Chicago

- 2018      **Arithmetic Geometry, Number Theory, and Computation**  
Massachusetts Institute of Technology
- 2018      **Summer Seminar on Primes of the Form  $x^2 + ny^2$**   
University of Illinois at Chicago
- 2015      **Summer REU on Representation Theory**  
Sam Houston State University
- 2014      **MAA Seaway Meeting**  
Buffalo State University
- 2014      **Summer REU on Analytic Number Theory**  
Kent State University

### Teaching

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- 2020      **Teaching Assistant Coordinator**, University of Illinois at Chicago
- 2020      **Coordinator**, UIC Summer Enrichment Mathematics Workshop
- 2016 – 2019      **Teaching Assistant**, University of Illinois at Chicago  
*Calculus I (14 sections); Calculus II (3 sections); Calculus III (6 sections); Precalculus (1 section);  
College Algebra (1 section)*
- 2019      **Instructor**, University of Illinois at Chicago  
*College Algebra (1 section)*
- 2013 – 2015      **Undergraduate Learning Assistant**, Colgate University  
*Number Theory & Mathematical Reasoning (2 sections); Linear Algebra (2 sections)*

### Service

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- 2020 –      **Organizer**, Graduate Number Theory Seminar
- 2020      **Co-Organizer**, Chicago Number Theory Day
- 2018      **Assistant**, Chicago Youth Math Studio
- 2013 – 2014      **Tutor**, Hamilton Central School