

# Benjamin York

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## Education

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<b>University of Connecticut</b>	2019 – Present
<i>Ph.D. in Mathematics, Advisor: Álvaro Lozano-Robledo</i>	<i>Storrs, CT</i>
<b>Bowdoin College</b>	2015 – 2019
<i>B.A. in Mathematics</i>	<i>Brunswick, ME</i>

## Research Interests

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Number theory and arithmetic geometry. Elliptic curves and Galois representations.

## Research Papers

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<b>Models of CM elliptic curves with a prescribed <math>\ell</math>-adic Galois image</b>	Aug. 2024
<i>González-Jiménez, E., Lozano-Robledo, Á., York, B., arXiv:2408.04159, submitted</i>	
<b>The image of the adelic Galois representation of an elliptic curve with CM</b>	
<i>Lozano-Robledo, Á., York, B., in preparation</i>	
<b>Irreducibility of the non-ordinary locus for hyperelliptic curves over finite fields</b>	
<i>Bouchet, T., Davis, E., Groen, S., Porat, Z., York, B., in preparation</i>	

## Conferences Invited To

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<b>AMS Eastern Sectional Meeting</b>	Oct. 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>Albany, NY</i>
<b>Joint Mathematics Meetings, San Francisco</b>	Jan. 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>San Francisco, CA</i>
<b>Joint Mathematics Meetings, Boston</b>	Jan. 2023
<i>On the adelic image of Galois representations attached to elliptic curves with CM</i>	<i>Boston, MA</i>
• Joint with Álvaro Lozano-Robledo	
<b>AMS Eastern Sectional Meeting</b>	Oct. 2022
<i>On the adelic image of Galois representations attached to elliptic curves with CM</i>	<i>Amherst, MA</i>
• Joint with Álvaro Lozano-Robledo	

## Conferences Attended

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<b>Maine-Quebec Number Theory Conference</b>	Oct. 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>Québec City, Canada</i>
<b>Sixteenth Algorithmic Number Theory Symposium (ANTS XVI)</b>	July 2024
	<i>Cambridge, MA</i>
<b>The Mordell conjecture 100 years later</b>	July 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>Cambridge, MA</i>
<b>CTNT Number Theory Conference</b>	June 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>Storrs, CT</i>

<b>AMS Graduate Student Conference</b>	April 2024
<i>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</i>	<i>Providence, RI</i>
<b>LMFDB, Computation, and Number Theory Conference</b>	July 2023
	<i>Providence, RI</i>
<b>Maine-Quebec Number Theory Conference</b>	Oct. 2023
<i>On the adelic image of Galois representations attached to elliptic curves with CM</i>	<i>Orono, ME</i>
<b>Modular Curves and Galois Representations Conference</b>	Sept. 2023
<i>Cancelled - On the adelic image of Galois reps. attached to elliptic curves with CM</i>	<i>Zagreb, Croatia</i>
<b>Upstate New York Number Theory Conference</b>	April 2023
<i>On the adelic image of Galois representations attached to elliptic curves with CM</i>	<i>Rochester, NY</i>
<b>CTNT Number Theory Conference</b>	June 2022
	<i>Storrs, CT</i>
<b>Maine-Quebec Number Theory Conference</b>	Oct. 2022
	<i>Québec City, Canada</i>
<b>Upstate New York Number Theory Conference</b>	Oct. 2021
	<i>Schenectady, NY</i>
<b>Maine-Quebec Number Theory Conference</b>	Oct. 2021
	<i>Virtual</i>
<b>CTNT Number Theory Conference</b>	June 2020
	<i>Virtual</i>

#### *Seminar Talks*

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<b>Models of CM Elliptic Curves with Prescribed <math>\ell</math>-adic Galois Image</b>	Oct. 2024
<i>OSU University Number Theory Seminar - Invited Talk</i>	<i>Columbus, OH</i>
<b>The Adele and Idele Class Groups of <math>\mathbb{Q}</math></b>	Oct. 2024
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>A Family of Elliptic Curves with Rank One</b>	March 2024
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>Construction of Elliptic Curves with Large Rank</b>	Feb. 2024
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
• Joint with Asimina Hamakiotes	
<b>A Gentle Introduction to the <math>p</math>-adic Numbers</b>	Nov. 2023
<i>UConn SIGMA Seminar</i>	<i>Storrs, CT</i>
<b>Elliptic Curves with a View Towards Computation</b>	Oct. 2023
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>An Introduction to Elliptic Curves</b>	March 2023
<i>UConn Math Club</i>	<i>Storrs, CT</i>
<b>Dimension Formulas for Modular Curves</b>	March 2023
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>Galois Representations Attached to Elliptic Curves with CM</b>	Feb. 2023
<i>Wesleyan Graduate Student Seminar - Invited Talk</i>	<i>Middletown, CT</i>
<b>An Introduction to the Theory of Elliptic Curves</b>	Feb. 2023
<i>UConn SIGMA Seminar</i>	<i>Storrs, CT</i>
<b>Complex Tori and Modular Curves - A Four Part Lecture</b>	Oct. 2022
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>

<b>Infinite Galois Theory</b>	March 2021
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>Finite Extensions of <math>\mathbb{Q}_p</math></b>	Oct. 2020
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>Hensel's Lemma &amp; Automorphisms of <math>\mathbb{Q}_p</math></b>	July 2020
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>
<b>Orders of Imaginary Quadratic Number Fields</b>	Oct. 2019
<i>UConn Number Theory Reading Group</i>	<i>Storrs, CT</i>

#### *Instructional Schools/Workshops*

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<b>UConn Number Theory Reading Group</b>	Fall 2019 - Present
<i>University of Connecticut</i>	
<ul style="list-style-type: none"> <li>Weekly reading group covering select topics in number theory. Focuses on student presentation of material.</li> </ul>	
<b>Modular Curves Workshop</b>	March 2022, 2024
<i>MIT</i>	
<ul style="list-style-type: none"> <li>Week long workshop to improve and expand the L-functions and Modular Forms Database (LMFDB)</li> </ul>	
<b>Arizona Winter School (AWS)</b>	March 2023, 2024
<i>University of Arizona</i>	
<ul style="list-style-type: none"> <li>Five-day-long intensive winter school covering advanced graduate topics in number theory and arithmetic geometry.</li> </ul>	
<b>Connecticut Summer School in Number Theory (CTNT)</b>	June 2020, 2022
<i>University of Connecticut</i>	
<ul style="list-style-type: none"> <li>Summer school promoting number theory to advanced undergraduates and early graduate students.</li> </ul>	
<b>Preliminary Arizona Winter School (PAWS)</b>	Oct. - Nov. 2022
<i>Virtual</i>	
<ul style="list-style-type: none"> <li>Virtual program on topics related to the upcoming Arizona Winter School.</li> </ul>	

#### *Teaching Experience*

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##### *University of Connecticut*

<b>MATH 1020Q Problem Solving</b>	Instructor
<i>Fall 2020, Spring 2021, Fall 2021, Fall 2024</i>	
<b>MATH 2210Q Applied Linear Algebra</b>	Instructor
<i>Spring 2025</i>	
<b>MATH 1071Q Calculus for Business and Economics</b>	Instructor
<i>Fall 2022</i>	
<b>MATH 2210Q Applied Linear Algebra</b>	Teaching Assistant
<i>Summer 2023, Summer 2024</i>	
<b>MATH 2110Q Multivariable Calculus</b>	Teaching Assistant
<i>Spring 2022, Summer 2022, Spring 2023, Fall 2023, Spring 2024</i>	
<b>MATH 1132Q Calculus II</b>	Teaching Assistant
<i>Spring 2020, Summer 2021, Summer 2023</i>	
<b>MATH 1131Q Calculus I</b>	Teaching Assistant
<i>Fall 2019</i>	

##### *Bowdoin College*

<b>MATH 2603 Introduction to Analysis</b>	Teaching Assistant
<i>Fall 2018</i>	

## *Outreach*

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### **Directed Reading Program Mentor**

Spring 2024

*University of Connecticut*

- Mentor to student studying introductory abstract algebra, with a focus on algebraic number theory.

### **Graduate Mentorship Program**

Fall 2020 - Spring 2024

*University of Connecticut*

- Mentor to first year graduate students, helping to smooth the transition to graduate life.

### **Speaker at Mathematics Continued Conference**

Oct. 2022

*University of Connecticut*

- The Mathematics Continued Conference seeks to give undergraduate students interested in math an opportunity to learn about graduate school and current research done by graduate students and faculty.

## *Awards & Honors*

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### **Conference Travel Fellowship (\$750)**

Fall 2024

*Graduate School, UConn*

### **Summer Travel Fellowship (\$1,120)**

Summer 2024

*Department of Mathematics, UConn*

### **Predoctoral Fellowship (\$7,805)**

Spring 2024

*Graduate School, UConn*

### **Summer Fellowship (\$5,000)**

Summer 2020

*Department of Mathematics, UConn*

### **Smyth Mathematics Prize**

Spring 2019

*Bowdoin College*

### **$100\pi - \varepsilon$ prize**

Spring 2016

*Bowdoin College*

## *Specialized Skills*

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**Programming Languages:** Magma (advanced); SAGE, Python (intermediate); PARI/GP, Java (novice)

**Software:** LaTeX, Microsoft Excel