Benjamin York

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Education

University of Connecticut 2019 – Present
Ph.D. in Mathematics, Advisor: Álvaro Lozano-Robledo *Storrs, CT*

Bowdoin College 2015 – 2019
B.A. in Mathematics *Brunswick, ME*

Research Interests

My current research interests include Galois representations attached to elliptic curves, and algebraic properties of orthogonal polynomials. More broadly, I am interested in Diophantine equations and arithmetic geometry.

Invited Talks

Maine-Quebec Number Theory Conference Oct. 1st, 2023
On the adelic image of Galois representations attached to elliptic curves with CM *Orono, ME*

Modular Curves and Galois Representations Conference Sept. 21st 2023
On the adelic image of Galois representations attached to elliptic curves with CM *Zagreb, Croatia*

Upstate New York Number Theory Conference April 1st, 2023
On the adelic image of Galois representations attached to elliptic curves with CM *Rochester, NY*

Wesleyan Graduate Student Seminar Feb. 23rd 2023
Galois Representations Attached to Elliptic Curves with Complex Multiplication *Middletown, CT*

Joint Mathematics Meetings, Boston Jan. 5th 2023
On the adelic image of Galois representations attached to elliptic curves with CM *Boston, MA*
- Joint with Álvaro Lozano-Robledo

Mathematics Continued Conference Oct. 22nd 2022
An Exploration of Size and Distance *Storrs, CT*

AMS Eastern Sectional Meeting Oct. 1st 2022
On the adelic image of Galois representations attached to elliptic curves with CM *Amherst, MA*
- Joint with Álvaro Lozano-Robledo

Seminar Talks

Elliptic Curves with a view towards Computation Oct. 23rd & 30th 2023
UConn Number Theory Seminar *Storrs, CT*

The Haar Measure on the Adele Group over $\mathbb{Q}$ May 2nd, 2023
Course on Abstract Harmonic Analysis *Storrs, CT*

Dimension Formulas for Modular Curves March 24th & 31st 2023
UConn Number Theory Seminar *Storrs, CT*

An Introduction to the Theory of Elliptic Curves Feb. 3rd 2023
UConn SIGMA Seminar *Storrs, CT*

Complex Tori and Modular Curves - A Four Part Lecture Oct. 2022
UConn Number Theory Seminar *Storrs, CT*

Infinite Galois Theory March 26th 2021
UConn Number Theory Seminar *Storrs, CT*

Finite Extensions of $\mathbb{Q}_p$ Oct. 9th 2020
UConn Number Theory Seminar *Storrs, CT*

Hensel's Lemma & Automorphisms of $\mathbb{Q}_p$ July 30th 2020
UConn Number Theory Seminar *Storrs, CT*

Orders of Imaginary Quadratic Number Fields Oct. 18th 2019
UConn Number Theory Seminar *Storrs, CT*

Instructional Schools/Workshops

UConn Number Theory Seminar Sept. 2019 - Present
UConn
- Weekly seminar covering a selected topics in number theory. Focuses on student presentation of material.
- Past Topics: complex multiplication on elliptic curves, p-adic numbers and p-adic analysis, local class field theory, units of cyclic cubic number fields, modular forms and modular curves.

Preliminary Arizona Winter School (PAWS) Oct. 3rd - Nov. 11th 2022
Virtual
- Virtual program on topics related to the upcoming AWS.
- Topic: Heights in Diophantine geometry.

Connecticut Summer School in Number Theory (CTNT) June 6th - 11th 2022
UConn
- Summer school promoting number theory to advanced undergraduates and early career graduate students.
- Topics: Algebraic number theory, local fields, the Chebotarev density theorem, introduction to Galois representations.

Connecticut Summer School in Number Theory (CTNT) June 8th - 12th 2020
UConn
- Summer school promoting number theory to advanced undergraduates and early career graduate students.
- Topics: sieves, infinite Galois theory, computations in number theory research, curves over finite fields, and p-adic functions on $\mathbb{Z}_p$.

REU in Fractal Analysis May 26th - Aug. 4th 2018
UConn, Advisor: Luke Rogers *Storrs, CT*
- Investigated the question "Are eigenfunctions of the Laplacian on the harmonic Sierpinski gasket Lipschitz continuous?"
- Studied known results on Laplacians of post-critically finite (PCF) self-similar sets.
- Produced results in the affirmative on a class of PCF self-similar sets, including the unit interval and Sierpinski gasket.

Independent Research in Number Theory June 26th - Aug. 4th 2017
Bowdoin College, Advisor: Michael King *Brunswick, ME*
- Project aimed to contribute to understanding of Hermite's problem on representing cubic irrationals as repeating expansions.
- Defined new class of continued fraction-like representations, generalizing usual continued fraction expansion.

Awards & Honors

Smyth Mathematics Prize 2019
Bowdoin College

$100\pi - \epsilon$ **prize** 2016
Bowdoin College

Teaching Experience

MATH 2110Q Multivariable Calculus Fall 2023
Teaching Assistant *UConn*

MATH 1132Q Calculus II Summer 2023
Teaching Assistant *UConn*

MATH 2210Q Applied Linear Algebra Summer 2023
Teaching Assistant *UConn*

MATH 2110Q Multivariable Calculus Spring 2023
Teaching Assistant *UConn*

MATH 1071Q Calculus for Business and Economics Fall 2022
Instructor *UConn*

MATH 2110Q Multivariable Calculus Summer 2022
Teaching Assistant *UConn*

MATH 2110Q Multivariable Calculus Spring 2022
Teaching Assistant *UConn*

MATH 1020Q Problem Solving Fall 2021
Instructor *UConn*

MATH 1132Q Calculus II Summer 2021
Teaching Assistant *UConn*

MATH 1020Q Problem Solving Spring 2021
Instructor *UConn*

MATH 1020Q Problem Solving Fall 2020
Instructor *UConn*

MATH 1132Q Calculus II Spring 2020
Teaching Assistant *UConn*

MATH 1131Q Calculus I Fall 2019
Teaching Assistant *UConn*

MATH 2603 Introduction to Analysis Fall 2018
Teaching Assistant *Bowdoin College*

Specialized Skills

Programming Languages: Magma (advanced); SAGE, Python (intermediate); PARI/GP, Java (novice)
Software: LaTeX, Microsoft Excel
Other: Library based research