Alexis Newton

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	Emory University, Department of Mathematics,
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Research Interests

Number theory, arithmetic geometry, elliptic curves and abelian varieties, rational points on curves, modular curves, computational and algorithmic work.

Education

2020-2025   **Emory University**

Ph.D. in Mathematics
Advisor: David Zureick-Brown
Ph.D. Title: *"Quartic torsion and quartic points on some rank 0 modular curves"*

2018-2020   **Wake Forest University**

M.A. in Mathematics
Advisor: Jeremy Rouse

2014-2018   **High Point University**

B.A. in Mathematics and English Writing
Advisor: Jenny Fuselier

Publications and Preprints

Oct 2024   "Quartic torsion and quartic points on some rank 0 modular curves" with M. Cerchia (In preparation)

Mar 2022   "Integers that are sums of two rational sixth powers" with J. Rouse,
Published in *Canadian Mathematical Bulletin* 2023; 66(1):166-177.
doi:10.4153/S0008439522000157

Aug 2019   "Prime Graph Labelings of $C_n \star S_4$"
Published in *Innovation: Journal of Creative and Scholarly Work* vol. 7, 2019
(High Point University Undergraduate Journal)

Teaching

Instructor of Record (Emory University)

Fall 2024	Calculus II (MATH 112)
Spring 2024	Calculus II (MATH 112)

Fall 2023	Calculus I (MATH 111)
Fall 2022	Calculus I (MATH 111)

Graduate Teaching Assistant (Emory University)

Fall 2021	Adv. Calc for Data Sciences (MATH 210)
Spring 2022	Adv. Calc for Data Sciences (MATH 210)

Grader (Emory University)

Fall 2020	Foundations of Mathematics (MATH 250)
Spring 2021	Intro to Combinatorics (MATH 330)

Graduate Teaching Assistant (Wake Forest University)

Fall 2018	Calculus with Analytic Geometry II (MST 112)
Spring 2019	Linear Algebra I (MST 121)
Summer '19	Calculus with Analytic Geometry II (MST 112)
Summer '19	Calculus with Analytic Geometry I (MST 111)
Fall 2019	Calculus with Analytic Geometry I (MST 111)
Spring 2020	Calculus with Analytic Geometry I (MST 111)

Computational Experience

Programs	Python, SageMath, MAGMA, C, LaTeX, Maple
June - **Aug 2021**	**Google Summer of Code 2021** Student Developer for SageMath Topic: Implement Small Groups Advisor: Mckenzie West *The goal of this project was to improve the conversation between Sage and GAP (the SmallGrp package).*
Aug 2019	**Women in Sage (2019)** Sage Days 103 St. Louis, MO Topic: Sage Interactions - Cryptography Advisors: Amy Feaver and Eva Goedhart *Improving the cryptography functionality and documentation for* https://wiki.sagemath.org/interact/cryptography

Organization and Outreach

Nov 2022	Student Leader for AMS Graduate Student Town Hall *Topic: Advocacy and Policy Issues that Impact Your Education and Research*
July 2022 - Sep 2024	Staff writer for Mathematical Association of America MAA Graduate Student Blog: Learning Through the Ranks
Fall 2020 - Spring 2024	Co-organizer of RANT, Graduate Student Seminar on Algebra and Number Theory *Emory University*
Oct 2021- Nov 2021	Staff Writer for American Mathematical Society Graduate Student Blog: By and for graduate students
Fall 2020 - Spring 2024	Instructor with Emory Math Circle for Middle School Level A/B *Worked to plan and lead math exploration activities for middle school students* *in the Atlanta community.*
Fall 2022, Fall 2024	Volunteer for Julia Robinson Math Festival, *Emory University*

Fall 2022,   Emory Math Directed Reading Program
Fall 2021   *Mentored two students for a program matching undergraduates with graduate*
              students to read and discuss a mathematical text.
              Topic: Computational Number Theory

Conferences and Seminars

Invited Talks

Sept 2024   Colloquium Talk: "The Game of Nim"
             Barnard College

Jan 2024   JMM 2024: "Quartic torsion and quartic points on some rank 0 modular curves"
             Special Session on Arithmetic Geometry with a View Towards Computation

Sept 2023   AWM Research Symposium: "Sums of Rational Sixth Powers"
             Atlanta Clarke University

Nov 2021   Undergraduate Student Seminar: "Sums of Rational Sixth Powers"
             Washington University in St. Lewis

Contributed Talks

Sept 2024   Palmetto Number Theory Series
             Wake Forest University

April 2024   Texas-Oklahoma Representations and Automorphic Forms XIII (Speed Talk)
             University of North Texas

June 2022   Association for Women in Mathematics Research Symposium (Poster Session)
             University of Minnesota

Dec 2019   Palmetto Number Theory Series
             Clemson University

Nov 2019   Number Theory Colloquium
             Wake Forest University

March 2018   Mathematical Association of America Southeastern Conference
             Clemson University

Selected Conference and Workshop Attendance

April 2023   Georgia Algebraic Geometry Symposium (UGA)

Feb 2023   Introductory Workshop: Diophantine Geometry (MSRI)

Jan 2023   IAS Spring Opportunities Workshop

Aug 2022   PCMI 2022 Summer Session (Computation in Number Theory)

June 2022   CTNT 2022 Summer School (UConn)

May 2022   Anabelian Days Down in Georgia (UGA)

April 2022   Georgia Algebraic Geometry Symposium (Emory)

Nov 2019   Modular Forms, Arithmetic, and Women in Math (Emory)

Sept 2019   Palmetto Number Theory Series (UNC Charlotte)

Aug 2019   Sage Days 103 - Women in Sage (St. Louis)

May 2019   Barrett Lectures - "Recent Developments in Number Theory" (UT Knoxville)

April 2019   SERMON (UNC Greensboro)

March 2019   AWM Piedmont-Triad Conference (WFU)

March 2018   Mathematical Association of America Southeastern Conference (Clemson)

March 2017   Mathematical Association of America Southeastern Conference (Mercer)

Awards and Honors

Pi Mu Epsilon Honorary National Mathematics Society Member

High Point University Presidential Scholar

High Point University Honors Scholar

HPU Mathematics and Computer Science Departmental Honors

High Point University 2018 Tutor of the Year

Alpha Lambda Delta Honors Fraternity Member

Membership

Association for Women in Mathematics Club Member, Wake Forest University

Pi Mu Epsilon Member, Wake Forest University

Math Club Member, Wake Forest University

Mathematics, Actuarial Science, Computer Science, and Statistics Club Member, High Point University

Volunteer Mathematics Tutor at Johnson Street Global Studies Middle School, NC

Tutor Club Member, High Point University

Women's Club Soccer Team Member, High Point University