

Alexis Newton

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W431 Math and Science Center
Emory University, Department of Mathematics,
400 Dowman Drive, Atlanta, GA 30322

EDUCATION

Emory University

Ph.D in **Mathematics**

Advisor: David Zureick-Brown

Sept 2020 - May 2025
(expected)

Wake Forest University

M.A. in **Mathematics**

Advisor: Jeremy Rouse

Sept 2018 - May 2020

High Point University

B.A. in **Mathematics** and **English Writing**

Advisor: Jenny Fuselier

Sept 2014 - May 2018

RESEARCH EXPERIENCE

Google Summer of Code 2021, Student Developer for SageMath

Implement Small Groups

Advisor: Mckenzie West

The goal of this project is to improve the conversation between Sage and GAP (the SmallGrp package).

Summer 2021

M.A. Thesis, Wake Forest University

Sums of Two Sixth Powers

Advisor: Jeremy Rouse

Proved that the smallest integer which is a sum of two rational sixth powers and not a sum of two integer sixth powers is 164,634,913 using techniques such as local solvability testing, elliptic curve maps, and the Mordell-Weil Sieve, which is a method for showing a curve C has no rational points.

A. Newton, J. Rouse, Integers that are sums of two rational sixth powers,

Published in *Canadian Mathematical Bulletin*

Fall 2018 - Spring 2020

Cambridge University Press

March 7, 2022

Women in Sage (2019), Sage Days 103 St. Louis, MO

Sage Interactions - Cryptography

Advisors: Amy Feaver and Eva Goedhart

Improving the cryptography functionality and documentation for

<https://wiki.sagemath.org/interact/cryptography>

August 7-9, 2019

Undergraduate Mathematics Honors Thesis, High Point University

Fall 2017 - Spring 2018

Prime Graph Labelings of $C_n \star S_4$

Advisor: Jenny Fuselier

Proved a cycle graph with four vertices, where a star with two edges is “attached” to each cycle vertex exhibits a prime graph labeling for all $n \in \mathbb{N}$, $n \geq 3$.

Published in *Innovation: Journal of Creative and Scholarly Work*

HPU Journal
vol. 7, 2019

TEACHING EXPERIENCE

Instructor of Record, Emory University

Primary instructor for up to 35 students.

Calculus I (MATH 111)

Fall 2022

Graduate Teaching Assistant, Emory University

Graded student assignments, conducted lab sessions for up to 20 students, held office hours.

Foundations of Mathematics (MATH 250)

Fall 2020

Intro to Combinatorics (MATH 330)

Spring 2021

Adv. Calc for Data Sciences (MATH 210)

Fall 2021

Adv. Calc for Data Sciences (MATH 210)

Spring 2022

Graduate Teaching Assistant, Wake Forest University

Graded assignments, held study sessions for classes of up to 30 students, and tutored students in a one-on-one setting.

Calculus with Analytic Geometry II (MST 112)

Fall 2018

Linear Algebra I (MST 121)

Spring 2019

Calculus with Analytic Geometry II (MST 112)

Summer Session I 2019

Calculus with Analytic Geometry I (MST 111)

Summer Session II 2019

Calculus with Analytic Geometry I (MST 111)

Fall 2019

Supplemental Instructor, High Point University

Assisted students within the classroom environment, held independent office hours for extra support, and organized and led guided test review sessions.

Business Calculus

Fall 2016, 2018; Spring 2015, 2016, 2018

Calculus II

Fall 2017

Pre-Calculus

Spring 2017

Topics in Mathematics

Summer 2018

Mathematics Tutor, High Point University

Helped students to excel in mathematics courses and operated both group and independent tutoring sessions.

Classes Tutored: Pre-Calculus, Business Calculus, Calculus I, Calculus II

CAMPUS AND COMMUNITY INVOLVEMENT

- Student Leader for AMS Graduate Student Town Hall: Advocacy and Policy

Issues that Impact Your Education and Research

Nov 2022

- Staff writer for MAA Graduate Student Blog: Learning Through the Ranks

- Co-organizer with Chris Keyes of Graduate Student Seminar on

Fall 2020 - Present

Algebra and Number Theory, Emory University

- Staff Writer for AMS Graduate Student Blog
- Treasurer for Association for Women in Mathematics, Emory University
- Instructor with Emory Math Circle for Middle School Level A/B Fall 2020 - Present
- 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

CONFERENCES AND WORKSHOPS

Oral Presentations:

- AWM Research Symposium (Poster Session) June 2022
University of Minnesota
- Undergraduate Student Seminar Nov 2021
Washington University in St. Lewis
- Graduate Student Seminar on Algebra and Number Theory Feb 2021
Emory University
- Graduate Student Seminar on Algebra and Number Theory Sept 2020
Emory University
- Palmetto Number Theory Series Dec 2019
Clemson University
- Association for Women in Mathematics Brown Bag Series Nov 2019
Wake Forest University
- Number Theory Colloquium Nov 2019
Wake Forest University
- Mathematical Association of America Southeastern Conference March 2018
Clemson University
- Research and Creative Works Symposium March 2018
High Point University
- Research and Creative Works Symposium March 2017
High Point University

Attended:

- Georgia Algebraic Geometry Symposium (UGA) April 2023
- Introductory Workshop: Diophantine Geometry (MSRI) Feb 2023
- IAS Spring Opportunities Workshop Jan 2023
- PCMI 2022 Summer Session (Computation in Number Theory) July-Aug 2022
- CTNT 2022 Summer School (UConn) June 2022
- Anabelian Days Down in Georgia (UGA) May 2022

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- Georgia Algebraic Geometry Symposium (Emory) April 2022
 - Palmetto Number Theory Series (Clemson) Dec 2019
 - Modular Forms, Arithmetic, and Women in Math (Emory) Nov 2019
 - Palmetto Number Theory Series (UNC Charlotte) Sept 2019
 - Sage Days 103 - Women in Sage Aug 2019
 - Barrett Lectures - “Recent Developments in Number Theory” (UT Knoxville) May 2019
 - SERMON (UNC Greensboro) April 2019
 - AWM Piedmont-Triad Conference (WFU) March 2019
 - Mathematical Association of America Southeastern Conference (Clemson) March 2018
 - Mathematical Association of America Southeastern Conference (Mercer) March 2017

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

TECHNICAL SKILLS

Programs: Python, SageMath, MAGMA, C, LaTeX, Maple

College Reading and Learning Association Certified Master Tutor (Level 3): Completed 30+ hours of pedagogical training, 120+ hours of student contact and led multiple tutor training sessions.

ADDITIONAL WORK EXPERIENCE

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| Library Services Student Assistant
<i>Wake Forest University Library</i> | May 2019 - May 2020 |
| Writing Center Tutor
<i>High Point University</i> | Sept 2015 - May 2018 |
| Copy Editor
<i>The Journal of Human Evolution</i> | Oct 2014 - Sept 2015 |