

Dr. Caleb G. McWhorter — CV

Department of Mathematics — St. Thomas Aquinas College

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🌐 <https://coffeeintotheorems.com> • 🌐 <https://github.com/cgmcwhorter>

Education

- ▶ **Ph.D. Mathematics**, May 2021
Syracuse University; Syracuse, NY
Thesis Advisor: Dr. Steven Diaz
- ▶ **M.S. Mathematics**, May 2017
Syracuse University; Syracuse, NY
- ▶ **B.A. Mathematics**, May 2013
B.A. Physics, May 2013
Ithaca College; Ithaca, NY
Mathematics Advisors: Dr. David Brown, Dr. Emilie Wiesner
Physics Advisors: Dr. Dan Briotta, Dr. Matthew Sullivan

Research Interests

- ▶ **Arithmetic Algebraic Geometry**
Elliptic Curves (especially torsion), Computational Arithmetic Algebraic Geometry, Modular Curves, Modular Forms
- ▶ **Number Theory**
Algebraic Number Theory, Elementary Number Theory, Coefficients of Cyclotomic Polynomials, Cryptography, Coding Theory
- ▶ **Other Interests**
Mathematics Education, Mathematical Art, Mathematics Outreach

Employment

- ▶ **St. Thomas Aquinas College**
Assistant Professor of Mathematics, Fall 2021 – Present
- ▶ **American Mathematical Society**
Editor-in-Chief, Graduate Student Blog, Fall 2019 – Present
- ▶ **Syracuse University**
Graduate Instructor, Fall 2014 – Present
- ▶ **SUNY Adirondack**
Adjunct Instructor, Fall 2013 – Spring 2014

► **Cornell University**

Cornell Survey Research Institute, January 2013 – June 2013

► **Rose-Hulman Institute of Technology**

Research Undergraduate Experience, June 2012 – July 2012

Project: A Comparison of Breads as Liquid Drops and Foams

► **Ithaca College**

Academic Assistant, March 2010 – May 2013

Ithaca College Mathematics Help Room, Fall 2012 – Spring 2013

Research Undergraduate Experience, June 2011 – August 2011

Project: A Comparative Analysis of Gains in the MPEX and FCI

Grants & Awards

Grants

- ◇ NSF Grant, DMS 1908497, \$30,000 – Infrastructure Program (Co.P.I. with Dr. Graham Leuschke), 2019 – 2021 — Support Conference Travel for Underrepresented Groups

Awards

- ◇ Outstanding Teaching Assistant Award 2021, Syracuse University
- ◇ Certificate in University Teaching, *Fall 2019*
- ◇ National Forensics Association: National Novice Lincoln Douglass Best Speaker 2010

Publications

- ◇ *Torsion of Rational Elliptic Curves over Nonic Galois Fields*, in preparation
- ◇ *Torsion of Rational Elliptic Curves over Odd Degree Galois Fields*, in preparation

Work in Progress

- ◇ *Densities of Torsion Subgroups of Rational Elliptic Curves over Quadratic Fields*, in progress
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Nonic Fields*, in progress
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Degree 14 & 15 Fields*, in progress

Advising & Mentoring

► **Directed Reading Program**

- Muhammadzhon Badalbaev, Fall 2020, *Project: Combinatorial Game Theory*
- Samuel Wheeler, Spring 2019, *Project: Elliptic Curves And Their Cryptographic Applications*
- Xinxuan Wang, Fall 2018, *Project: Fermat's Last Theorem and Elliptic Curves*

Teaching Experience

Instructor of Record _____

► Syracuse University

- MAT 121: Probability and Statistics for the Liberal Arts I, *Summer 2018, 2019*
- MAT 194: Precalculus, *Summer 2015*
- MAT 222: Probability and Statistics II, *Fall 2019, Spring 2017, 2019*
- MAT 295: Calculus I, *Fall 2016, 2018, Spring 2021*
- MAT 296: Calculus II, *Fall 2017, Spring 2018, Summer 2016*
- MAT 397: Calculus III, *Summer 2017, Spring 2019, Fall 2020*

Teaching Assistant _____

► Syracuse University

- MAT 221: Probability and Statistics I, *Fall 2014*
- MAT 296: Calculus II, *Fall 2014, 2015*
- MAT 397: Calculus III, *Fall 2015, Spring 2016*

► Ithaca College

- Mathematics for Business, *Spring 2013*
- Introductory Statistics, *Fall 2012*
- Calculus I, *Fall 2012*
- Calculus for Decision Making, *Spring 2012*

Mathematics Clinics & Tutoring _____

► Syracuse University

- University Mathematics Clinic, *Fall 2016 – May 2021*
- Mathematics Help Room, *Fall 2015 – Spring 2016, Spring 2017, 2019*

► SUNY Adirondack

- Mathematics & Physics Clinic Instructor, *August 2013 – May 2014 (3 credits each)*

► Ithaca College

- Ithaca College Mathematics Help Room, *Fall 2012 – Spring 2013*
- Academic Assistant, *March 2010 – May 2013*

Departmental & University Service

Departmental Service _____

► Syracuse University

- ◊ Associate Seminar Organizer for Technological Support, Algebra Seminar, Mathematics Department, *August 2020 – May 2021*
- ◊ Colloquium Organizer, Mathematics Graduate Organization, *August 2020 – May 2021*

- ◇ Directed Reading Program Organizer, *February 2019 – May 2021*
- ◇ Organizer, 44th Annual New York State Regional Graduate Mathematics Conference, *2019*
- ◇ Co-Organizer, Annual NYS Regional Graduate Mathematics Conference, *2017, 2018, 2020, 2021*
- ◇ Directed Reading Program Mentor (DRP), *Fall 2018 – May 2021*
- ◇ Website Coordinator & Social Media Manager, *August 2016 – May 2021*
- ◇ President, Mathematics Graduate Organization, *2018 – 2019*
- ◇ Secretary, Mathematics Graduate Organization, *2017 – 2018*
- ◇ Undergraduate Mathematics Committee Graduate Student Representative, *2017 – 2018*
- ◇ Preliminary Exam Help Session Organizer, *2017 – 2018*

University Service _____

► Syracuse University

- ◇ Excellence in Graduate Education (EGE) Faculty Recognition Awards Selection Committee, *February 2021 – April 2021*
- ◇ Agenda Committee, Graduate Student Organization, *November 2020 – May 2021*
- ◇ Pandemic Committee, Graduate Student Organization, *October 2020 – May 2021*
- ◇ Finance Committee, Graduate Student Organization, *September 2019 – May 2021*
- ◇ Teaching Mentor, The Graduate School, *June 2016 – May 2021*
- ◇ Senator, Graduate Student Organization, *August 2019 – May 2021*
- ◇ GRE Preparatory Workshop (Mathematics Portion Instructor), *Fall 2019 – Spring 2020*
- ◇ Teaching Panel, ENL Panel for International Students, *October 2019*
- ◇ Teaching Mentor Selection Committee, The Graduate School, *Spring 2019, 2021*
- ◇ Teaching Panel, Negotiating Student Preparation & Abilities in STEM, *October 2018*
- ◇ Textbook & Course Typist, Whitman School of Management, *Spring 2017 – 2021*
- ◇ Video Captioning, The Graduate School: TA Program Seminars *2016 – 2021*

► Ithaca College

- ◇ Sydney Landon Debate Tournament Judge, *February 2019, 2020, 2021*

Presentations

Invited Talks

- ◇ *Mordell-Weil Groups of Elliptic Curves* November 2019
Arithmetic Geometry Seminar, Binghamton University
- ◇ *Rational Points on Curves* November 2019
Arithmetic Geometry Seminar, Binghamton University

Research Talks

- ◇ *Torsion Subgroups of Rational Elliptic Curves over Odd Degree Galois Fields* April 2021
Dissertation Defense
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Odd Degree Galois Fields* April 2021
46th Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Odd Degree Galois Fields* November 2020
Binghamton University Graduate Conference in Algebra & Topology (BUGCAT)
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Nonic Galois Fields* November 2019
Binghamton University Graduate Conference in Algebra & Topology (BUGCAT)
- ◇ *Torsion Subgroups of Rational Elliptic Curves over Nonic Galois Fields* October 2019
Maine-Québec Number Theory Conference
- ◇ *Progress in the Classification of Torsion Subgroups of Elliptic Curves* March 2019
44th Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)
- ◇ *Torsion of Elliptic Curves over Number Fields of Small Degree* October 2018
Binghamton University Graduate Conference in Algebra & Topology (BUGCAT)
- ◇ *Torsion of Elliptic Curves over Nonic Fields* March 2018
43rd Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)
- ◇ *A Foam Model for Bread Development* April 2013
16th James J. Whalen Academic Symposium
- ◇ *A Foam Model for Bread Development* February 2013
Ithaca College Physics Seminar
- ◇ *A Foam Model for Bread Development* July 2012
Indiana Undergraduate Research Conference, Indiana University

University & Department Talks

- ◇ *Teaching Online* August 2020
All-University TA Orientation Program

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| ◇ <i>Building an Online Teaching Portfolio</i>
The Graduate School: TA Program Seminars | February 2020 |
| ◇ <i>Assessment in the Classroom</i>
All-University TA Orientation Program | August 2019 |
| ◇ <i>Narcissus, An Autobiography: Evaluating Your Teaching</i>
The Graduate School: TA Program Seminars | October 2018 |
| ◇ <i>Supporting Students Across the Spectrum of Academic Preparation</i>
The Graduate School: TA Program Seminars | October 2018 |
| ◇ <i>What they didn't tell me in orientation: a follow-up workshop for TAs</i>
The Graduate School: TA Program Seminars | September 2018 |
| ◇ <i>Effective Assessment in the Classroom</i>
All-University TA Orientation Program | September 2018 |
| ◇ <i>Welcome to the Mathematics Department: A Guide for the Perplexed</i>
Syracuse University Mathematics Department | August 2018 |
| ◇ <i>Effective Assessment in the Classroom</i>
The Graduate School: Teaching Assistant Orientation | August 2018 |
| ◇ <i>Constructing an Online Teaching Portfolio</i>
The Graduate School: TA Program Seminars | February 2018 |
| ◇ <i>Constructing a Teaching Portfolio</i>
The Graduate School: TA Program Seminars | January 2018 |
| ◇ <i>Revisiting Orientation: A Follow-Up Workshop for TAs</i>
The Graduate School: TA Program Seminars | September 2017 |
| ◇ <i>Integrating Technology in the Classroom</i>
The Graduate School: Teaching Assistant Orientation | August 2017 |
| ◇ <i>Underrepresented Groups in Mathematics</i>
Syracuse University Graduate Mathematics Colloquium | March 2017 |
| ◇ <i>Constructing a Teaching Portfolio</i>
The Graduate School: TA Program Seminars | January 2017 |
| ◇ <i>Revisiting Orientation: A Follow-Up Workshop for TAs</i>
The Graduate School: TA Program Seminars | September 2016 |
| ◇ <i>(Self)Assessment in Teaching</i>
The Graduate School: Teaching Assistant Orientation | August 2016 |

Expository Talks _____

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| ◇ <i>Combinatorial Game Theory: NIM Games and Numbers in the Land of Oz</i>
Syracuse University Graduate Mathematics Colloquium | October 2020 |
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- ◇ *Non-Abelian Chabauty*
45th Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

March 2020
- ◇ *Ranks of Elliptic Curves: Why Rank is (Almost Certainly) Bounded*
Syracuse University Algebra Seminar

March 2019
- ◇ *To Infinity & Beyond: The Tale of really Big NUMBERS!*
Syracuse University Mathematics Graduate Colloquium

September 2018
- ◇ *Introduction to Algebraic Number Theory & Arithmetic Geometry*
Syracuse University Graduate Mathematics Colloquium

April 2018
- ◇ *Hungry, Hungry, Homology (Parts I & II)*
Syracuse University Graduate Mathematics Colloquium

September 2017
- ◇ *Perfectoid Spaces*
Syracuse University Algebra Seminar

April 2017
- ◇ *Adic & Perfectoid Spaces*
42nd Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

March 2017
- ◇ *Analysis on Surreal Numbers*
41st Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

April 2016
- ◇ *A Zero Divisor Conjecture for Hopf Algebras*
40th Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

April 2015
- ◇ *Elliptic Curves, Galois Representations, and their L-functions*
Syracuse University Graduate Mathematics Colloquium

October 2014
- ◇ *The Critical Thread: The Symmetric Group in Galois Theory, Representation Theory, Representations of Lie Algebras, Combinatorics, and Topology*
Ithaca College Undergraduate Mathematics Thesis Presentation

May 2013

Conferences and Workshops

Conferences _____

- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

April 2021
- Joint Mathematics Meeting (JMM)

January 2021
- Binghamton University Graduate Conference in Algebra & Topology (BUGCAT)

November 2020
- Maine-Québec Number Theory Conference

September 2020
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC)

March 2020
- Binghamton University Graduate Conference in Algebra & Topology (BUGCAT)

November 2019

- Maine-Québec Number Theory Conference *October 2019*
- Union College Mathematics Conference *September 2019*
- Annual Upstate Number Theory Conference *April 2019*
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC) *March 2019*
- Binghamton University Graduate Conference in Algebra & Topology (BUGCAT) *October 2018*
- Québec-Maine Number Theory Conference *October 2018*
- Annual Upstate Number Theory Conference *April 2018*
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC) *March 2018*
- Maine-Québec Number Theory Conference *October 2017*
- Annual Upstate Number Theory Conference *April 2017*
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC) *March 2017*
- Québec-Maine Number Theory Conference *October 2016*
- Route 81 Conference on Commutative Algebra and Algebraic Geometry *September 2016*
- Super QVNTS - Kummer Classes and Anabelian Geometry *September 2016*
- International Conference on Representations of Algebras (ICRA) *August 2016*
- Annual Upstate Number Theory Conference *April 2016*
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC) *March 2016*
- Annual New York State Regional Graduate Mathematics Conference (ANYSRGMC) *March 2015*
- Elliptic Curves@UCONN *May 2014*

Workshops _____

- Arizona Winter School: Nonabelian Chabauty *March 2020*
- 33rd Automorphic Forms Workshop *March 2019*
- Arizona Winter School: Topology & Arithmetic *March 2019*
- Connecticut Summer School in Number Theory *June 2018*
- Arizona Winter School: Iwasawa Theory *March 2018*
- Arizona Winter School: Perfectoid Spaces *March 2017*

Skills

- ▶ **Mathematics Programs:** Sage, MAGMA, Mathematica, MATLAB, Maple, Minitab, SPSS, Geogebra, Surface Evolver, (La)TeX
- ▶ **Presentational Programs:** Beamer, Microsoft Word, Microsoft Powerpoint, Microsoft Excel, Pages, Keynote, Inkscape, GoogleDocs, GoogleForms, GoogleSheets, GoogleSlides
- ▶ **Programming:** C++, Python, Java, GoogleScript, WordPress
- ▶ **Languages:** English, Spanish (Intermediate), German (Beginner), French (Beginner)
- ▶ **Debate:** Lincoln-Douglas, Parliamentary, Open/Public Forum, Worlds, Policy
- ▶ **Music:** Classically Trained Violinist

References

Dr. Steven Diaz

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Dr. Graham Leuschke

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