

Department of Mathematics, Dartmouth College, 245 Kemeny Hall, Hanover, NH 03755  
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## Education

- PhD, Mathematics**, *Dartmouth College*, Hanover, NH Fall 2018 - Present  
Advisor: John Voight
- MS, Mathematics**, *Brigham Young University*, Provo, UT Winter 2017 - Summer 2018  
Advisors: Michael Griffin and Paul Jenkins  
Thesis: *The arithmetic of modular grids*
- BS, Mathematics**, *Brigham Young University*, Provo, UT Fall 2013 - Fall 2016

## Awards and Fellowships

- Dartmouth Graduate Fellowship Fall 2018 - Summer 2023
- Gridley Fund for Graduate Mathematics Fall 2018 - Summer 2019
- NSF Graduate Research Fellowship Honorable Mention April 2018
- BYU Academic Scholarship Spring 2015 - Winter 2016
- BYU Math Department Scholarship Fall 2016
- BYU Math Department Scholarship Fall 2015
- BYU Academic Scholarship Fall 2013 - Winter 2014

## Publications and Preprints

- The arithmetic of modular grids**, with *Michael Griffin and Paul Jenkins*  
Submitted for publication. arXiv:2012.14403
- Odd, spoof perfect factorizations**, with the *BYU Computational Number Theory Group*  
Submitted for publication. arXiv:2006.10697
- Zagier duality for level  $p$  weakly holomorphic modular forms**, with *Paul Jenkins*  
The Ramanujan Journal **50**, 93–109 (2019). arXiv:1709.10023
- Graphs with the strong Havel-Hakimi property**, with *Michael Barrus*  
Graphs and Combinatorics **32**, 1689–1697 (2016). arXiv:1505.00085

## Manuscripts in Preparation

- Reactive means and the prisoner's dilemma**, with *Feng Fu*
- Telescopic, multiplicative, and rational extensions of summations**, with *Robert Dawson*
- Multiplicative summations into algebraically closed fields**, with *Robert Dawson*
- Odd, spoof quasiperfect factorizations**, with *Jonathan Hales*

## Teaching Experience

<b>Dartmouth College</b> , Hanover, NH (Instructor)	
Math 1 (Algebra and Calculus)	Fall 2020
<b>Dartmouth College</b> , Hanover, NH (Teacher's Assistant)	
Math 23 (Differential Equations)	Winter 2020
Math 3 (Calculus)	Fall 2019
Math 22 (Linear Algebra)	Spring 2019
Math 22 (Linear Algebra)	Fall 2018
<b>Brigham Young University</b> , Provo, UT (Instructor)	
Math 112 (Calculus I)	Summer 2017
<b>Brigham Young University</b> , Provo, UT (Teacher's Assistant)	
Math 112 (Calculus I)	Fall 2017
Math 113 (Calculus II)	Winter 2017
<b>Brigham Young University</b> , Provo, UT (Grader)	
Math 570 (Matrix Analysis)	Winter 2017
Math 112 (Calculus I)	Fall 2015

## Conference Talks

<b>Formal summation of divergent series</b>	September 26, 2020
2020 Maine-Québec Number Theory Conference (virtual)	
<b>The arithmetic of modular grids</b>	October 5, 2019
2019 Maine-Québec Number Theory Conference	
<b>The arithmetic of modular grids</b>	March 8, 2019
33 <sup>rd</sup> Automorphic Forms Workshop	
<b>The arithmetic of modular grids</b>	July 17, 2018
Building Bridges: 4th EU/US Summer School + Workshop on Automorphic Forms	
<b>Zagier duality in level <math>p</math> modular spaces</b>	March 21, 2018
32 <sup>nd</sup> Automorphic Forms Workshop	
<b>Zagier duality in level <math>p</math> modular spaces</b>	March 3, 2018
2018 BYU Student Research Conference	
<b>Zagier duality in level <math>p</math> modular spaces</b>	May 24, 2017
Modular Forms are Everywhere Conference	
<b>Weakly holomorphic modular forms of level 11</b>	March 7, 2017
31 <sup>st</sup> Automorphic Forms Workshop	
<b>Weakly holomorphic modular forms of level 11</b>	March 4, 2017
2017 BYU Student Research Conference	
<b>Congruence relations in modular forms of prime levels greater than 7</b>	March 21, 2015
2015 BYU Student Research Conference	
<b>Residues and independence numbers of graphs</b>	March 15, 2014
2014 BYU Student Research Conference	

## Seminar Talks

<b>A primer in social choice theory</b> Dartmouth Graduate Student Seminar (virtual)	January 20, 2021
<b>Examples of Kedlaya's algorithm</b> Reading Seminar on Classical and Quadratic Chabauty (virtual)	November 19, 2020
<b>The LCM product and Grönwall's theorem</b> Dartmouth Algebra and Number Theory Seminar (virtual)	November 17, 2020
<b>Reactive means and the prisoner's dilemma</b> Dartmouth Graduate Student Seminar (virtual)	October 7, 2020
<b>Formal summation of divergent series: an algebraic approach</b> Dartmouth Algebra and Number Theory Seminar (virtual)	April 28, 2020
<b>On the infinitude of the natural numbers</b> Dartmouth Graduate Student Seminar	February 12, 2020
<b>Variations of Hodge structures</b> Reading Seminar on Shimura Varieties	November 26, 2019
<b>Hodge structures</b> Reading Seminar on Shimura Varieties	November 14, 2019
<b>Savage's expected utility and making good decisions</b> Dartmouth Graduate Student Seminar	November 13, 2019
<b>Geometric and generalized calculus</b> Dartmouth Graduate Student Seminar	October 8, 2019
<b>Summing divergent series</b> Dartmouth Graduate Student Seminar	July 31, 2019
<b>Real analysis: a nonstandard approach</b> Dartmouth Graduate Student Seminar	April 17, 2019
<b>Why save the universe? Set theory with a universal set</b> Dartmouth Graduate Student Seminar	January 16, 2019
<b>The arithmetic of modular grids</b> Dartmouth Graduate Student Seminar	September 26, 2018
<b>The arithmetic of modular grids</b> BYU Master's Thesis Defense	June 22, 2018
<b>Dioids and idempotent geometry II</b> BYU Algebra Seminar	March 13, 2018
<b>Dioids and idempotent geometry I</b> BYU Algebra Seminar	February 27, 2018
<b>Zagier duality in level <math>p</math> modular spaces</b> BYU Number Theory Seminar	February 22, 2018
<b>Average values of arithmetic functions</b> BYU Number Theory Seminar	October 12, 2017
<b>Weakly holomorphic modular forms of level 11</b> BYU Number Theory Seminar	February 9, 2017
<b>Generating functions for canonical bases of certain level 11 weakly holomorphic modular forms</b> BYU Number Theory Seminar	January 26, 2017

<b>High rank elliptic curves with prescribed torsion</b> BYU Number Theory Seminar	December 1, 2016
<b>Heuristics for elliptic curves of high rank</b> BYU Number Theory Seminar	October 20, 2016
<b>A lemma regarding the Feit-Thompson conjecture</b> BYU Number Theory Seminar	November 12, 2015
<b>Algebraic number theory and the Feit-Thompson conjecture</b> BYU Number Theory Seminar	October 1, 2015
<b>On Hensel's lemma</b> BYU Number Theory Seminar	February 12, 2015
<b>On Newton polynomials</b> BYU Number Theory Seminar	March 27, 2014

## Service and Synergistic Activities

### Referee

*Journal of Number Theory*

### K-12 Outreach

Utah Math Olympiad Committee Member	2015 - Present
Exploring Mathematics Camp Leader (Graph Theory)	July 27-31, 2020
Exploring Mathematics Camp Leader (Cryptography)	July 13-17, 2020
Activity Station Leader at Lebanon Ward Pi Day	March 7, 2020
Volunteer at Dartmouth Sonia Kovalevsky Day	May 11, 2019
Activity Station Leader at Dartmouth Science Day	May 4, 2019
Math Circles Guest Speaker on Tropical Algebra	February 24, 2018
Math Circles Guest Speaker on Continued Fractions	October 21, 2017
Proofreader for Utah State Math Contest	February 2017
Math Circles Counselor	2013 - 2015

### Other

Dartmouth Graduate Student Council Representative for Math Department	2020 - Present
• <i>Sexual Misconduct Survey Committee Member</i>	2021 - Present
• <i>Service Committee Member</i>	2020 - Present
• <i>Budget Committee Member</i>	August 2020
Dartmouth Algebra and Number Theory Seminar Coordinator	2019 - Present
BYU Putnam Team Captain	2014 - 2016

## Other

### Mathematical Work

Math Tutor	2013 - Present
Undergraduate Researcher	2013 - 2016

### Achievements and Honors

3 <sup>rd</sup> Place in Virginia Tech Regional Math Competition	October 2016
2 <sup>nd</sup> Place in Search for High Rank Elliptic Curve at 2016 CTNT	August 2016

Eagle Scout December 2012  
Black Belt in Taekwondo August 2012

### Special Training

Dartmouth Mathematics Teaching Seminar Spring 2020  
BYU Mathematics Teaching Seminar Fall 2018

### Computer Skills

Python • C++ • SageMath • Magma • Mathematica

### Academic Interests

Analytic Number Theory • Arithmetic Geometry • Game Theory • Logic

### Personal Interests

Reading • Writing • Philosophy • Rock-Climbing

## Conferences and Summer Schools Attended

*2021 Joint Mathematics Meetings* January 6-9, 2021  
Virtual

*Fall 2020 Algebraic Geometry Northeastern Series* October 23-25, 2020  
Virtual

*2020 Maine-Québec Number Theory Conference* September 26-27, 2020  
Virtual

*14<sup>th</sup> Algorithmic Number Theory Symposium* June 29 - July 4, 2020  
Virtual

*UNCG Summer School in Computational Number Theory and Algebra:  
Ergodic Theory with Applications to Continued Fractions* May 18-22, 2020  
Virtual

*2019 Maine-Québec Number Theory Conference* October 5-6, 2019  
University of Maine, Orono

*Fall 2019 Algebraic Geometry Northeastern Series* September 20-22, 2019  
Boston College, Boston

*33<sup>rd</sup> Automorphic Forms Workshop* March 6-10, 2019  
Duquesne University, Pittsburgh

*Building Bridges: 4<sup>th</sup> EU/US Summer School +  
Workshop on Automorphic Forms and Related Topics* July 9-20, 2018  
Alfréd Rényi Institute of Mathematics, Budapest

*32<sup>nd</sup> Automorphic Forms Workshop* March 19-22, 2018  
Tufts University, Medford

*Modular Forms are Everywhere* May 15-26, 2017  
Max Planck Institute for Mathematics, Bonn

*31<sup>st</sup> Automorphic Forms Workshop* March 6-9, 2017  
East Tennessee State University, Johnson City

*2017 BYU Student Research Conference* March 4, 2017  
Brigham Young University, Provo

2016 *Connecticut Summer School in Number Theory*

University of Connecticut, Storrs

2015 *BYU Student Research Conference*

Brigham Young University, Provo

2014 *BYU Student Research Conference*

Brigham Young University, Provo

August 8-14, 2016

March 21, 2015

March 15, 2014