

# Grant Molnar

# Curriculum Vitae

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

**MA, Mathematics**, *Dartmouth College*, Hanover, NH Fall 2018 - Winter 2020  
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

## Teaching Experience

**Dartmouth College**, Hanover, NH (Instructor)

Math 8 (Calculus of One and Several Variables) Fall 2021

Math 1 (Algebra and Calculus) Fall 2020

**Dartmouth College**, Hanover, NH (Teacher's Assistant)

Math 100 / Computer Science 49/149 (Decision Theory) Spring 2021

Math 23 (Differential Equations) Winter 2020

Math 3 (Calculus) Fall 2019

Math 22 (Linear Algebra) Spring 2019

Math 22 (Linear Algebra) Fall 2018

**Brigham Young University**, Provo, UT (Instructor)

Math 112 (Calculus I) Summer 2017

**Brigham Young University**, Provo, UT (Teacher's Assistant)

Math 112 (Calculus I) Fall 2017

Math 113 (Calculus II) Winter 2017

**Brigham Young University**, Provo, UT (Grader)

Math 570 (Matrix Analysis) Winter 2017

Math 112 (Calculus I) Fall 2015

## Other Work Experience

BYU Putnam Team 2014 - 2016

Undergraduate Researcher 2013 - 2016

Math Circles Counselor 2013 - 2015

## 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

## Research Publications and Preprints

**Multiplicative summations into algebraically closed fields**, *with Robert Dawson*

Submitted for publication. [arXiv:2111.09938](#)

**Telescopic, multiplicative, and rational extensions of summations**, *with Robert Dawson*

Submitted for publication. [arXiv:2105.04592](#)

**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*

Journal of Number Theory (2021). *Quanta* article. [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](#)

## Expository Notes

**Fast-growing series are transcendental**, *with Robert Dawson*

Unpublished. [arXiv:2102.12995](#)

## Manuscripts in Preparation

**Counting 7-isogenies**, *with John Voight*

**Odd, spoof quasiperfect factorizations**, *with Jonathon Hales*

**Reactive means and the prisoner's dilemma**, *with Feng Fu*

**Visualizing Basel's problem**, *with Mits Kobayashi*

## Git Projects

**Spoof Quasiperfect Factorizations**

Fall 2021

<https://github.com/grantmolnar/Spoof-Quasiperfect-Factorizations>

## Conference Talks

<b>The LCM product and Grönwall's theorem</b> 2021 Maine-Québec Number Theory Conference (virtual)	October 3, 2021
<b>Formal summation of divergent series</b> 2020 Maine-Québec Number Theory Conference (virtual)	September 26, 2020
<b>The arithmetic of modular grids</b> 2019 Maine-Québec Number Theory Conference	October 5, 2019
<b>The arithmetic of modular grids</b> 33 <sup>rd</sup> Automorphic Forms Workshop	March 8, 2019
<b>The arithmetic of modular grids</b> Building Bridges: 4th EU/US Summer School + Workshop on Automorphic Forms	July 17, 2018
<b>Zagier duality in level <math>p</math> modular spaces</b> 32 <sup>nd</sup> Automorphic Forms Workshop	March 21, 2018
<b>Zagier duality in level <math>p</math> modular spaces</b> 2018 BYU Student Research Conference	March 3, 2018
<b>Zagier duality in level <math>p</math> modular spaces</b> Modular Forms are Everywhere Conference	May 24, 2017
<b>Weakly holomorphic modular forms of level 11</b> 31 <sup>st</sup> Automorphic Forms Workshop	March 7, 2017
<b>Weakly holomorphic modular forms of level 11</b> 2017 BYU Student Research Conference	March 4, 2017
<b>Congruence relations in modular forms of prime levels greater than 7</b> 2015 BYU Student Research Conference	March 21, 2015
<b>Residues and independence numbers of graphs</b> 2014 BYU Student Research Conference	March 15, 2014

## Other Talks

<b>Cyclic resolution of singularities</b> Reading Seminar on Hilbert Modular Surfaces	January 25, 2022
<b>What if the Riemann hypothesis is false?</b> Dartmouth Graduate Student Seminar	January 19, 2022
<b>Inverse semigroups: groups without identity</b> Dartmouth Graduate Student Seminar	November 9, 2021
<b>Counting 7-isogenies</b> Dartmouth Algebra and Number Theory Seminar	November 8, 2021
<b>A sober look at pointless topology</b> Dartmouth Graduate Student Seminar	September 21, 2021
<b>Fast-growing series are transcendental</b> Dartmouth Graduate Student Seminar (virtual)	April 21, 2021
<b>Coalgebras and Hopf algebras</b> Reading Seminar on Affine Group Schemes (virtual)	April 15, 2021
<b>Absurd equalities and Runge's method: the degenerate case</b> Dartmouth Algebra and Number Theory Seminar (virtual)	March 30, 2021

<b><math>p</math>-adic Hodge theory</b>	March 2, 2021
Reading Seminar on Classical and Quadratic Chabauty (virtual)	
<b>Odd, spoof quasiperfect factorizations</b>	February 9, 2021
Dartmouth Algebra and Number Theory Seminar (virtual)	
<b>A primer in social choice theory</b>	January 20, 2021
Dartmouth Graduate Student Seminar (virtual)	
<b>Examples of Kedlaya's algorithm</b>	November 19, 2020
Reading Seminar on Classical and Quadratic Chabauty (virtual)	
<b>The LCM product and Grönwall's theorem</b>	November 17, 2020
Dartmouth Algebra and Number Theory Seminar (virtual)	
<b>Reactive means and the prisoner's dilemma</b>	October 7, 2020
Dartmouth Graduate Student Seminar (virtual)	
<b>Formal summation of divergent series: an algebraic approach</b>	April 28, 2020
Dartmouth Algebra and Number Theory Seminar (virtual)	
<b>On the infinitude of the natural numbers</b>	February 12, 2020
Dartmouth Graduate Student Seminar	
<b>Variations of Hodge structures</b>	November 26, 2019
Reading Seminar on Shimura Varieties	
<b>Hodge structures</b>	November 14, 2019
Reading Seminar on Shimura Varieties	
<b>Savage's expected utility and making good decisions</b>	November 13, 2019
Dartmouth Graduate Student Seminar	
<b>Geometric and generalized calculus</b>	October 8, 2019
Dartmouth Graduate Student Seminar	
<b>Summing divergent series</b>	July 31, 2019
Dartmouth Graduate Student Seminar	
<b>Real analysis: a nonstandard approach</b>	April 17, 2019
Dartmouth Graduate Student Seminar	
<b>Why save the universe? Set theory with a universal set</b>	January 16, 2019
Dartmouth Graduate Student Seminar	
<b>The arithmetic of modular grids</b>	September 26, 2018
Dartmouth Graduate Student Seminar	
<b>The arithmetic of modular grids</b>	June 22, 2018
BYU Master's Thesis Defense	
<b>Dioids and idempotent geometry II</b>	March 13, 2018
BYU Algebra Seminar	
<b>Dioids and idempotent geometry I</b>	February 27, 2018
BYU Algebra Seminar	
<b>Zagier duality in level <math>p</math> modular spaces</b>	February 22, 2018
BYU Number Theory Seminar	
<b>Average values of arithmetic functions</b>	October 12, 2017
BYU Number Theory Seminar	
<b>Weakly holomorphic modular forms of level 11</b>	February 9, 2017
BYU Number Theory Seminar	

<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

## Leadership and Community Service

### Referee

<i>Journal of Number Theory</i>	2018 - Present
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### Reviewer

<i>zbMATH Open</i>	2021 - Present
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### 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

### Other

Dartmouth Algebra and Number Theory Seminar Organizer	2019 - Present
Dartmouth Graduate Student Council Finance Officer	2021 - Present
◦ <i>Budget Committee Member</i>	Summer 2021
Dartmouth Graduate Student Council Healthcare Committee Co-Chair	2022 - Present
Dartmouth Directed Reading Program Mentor (Fractional Calculus)	Winter 2022
Dartmouth Graduate Student Council Representative for Math Department	2020 - 2021
◦ <i>Service Committee Member</i>	2020 - 2021
◦ <i>Budget Committee Member</i>	Summer 2020
BYU Putnam Team Captain	2014 - 2016

## Computer Skills

### Fluent in...

Bash • Python • SageMath •  $\text{\LaTeX}$

### Experience with...

C++ • HTML • Git • Magma • Mathematica • MatLab

## Other

### 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
Gold Palm Eagle Scout	December 2012
Black Belt in Taekwondo	August 2012

### Special Training

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

### Academic Interests

Analytic Number Theory • Arithmetic Geometry • Game Theory • Logic

### Personal Interests

Reading • Writing • Philosophy • Hiking • Rock-Climbing

## Conferences and Summer Schools Attended

2021 <i>Maine-Québec Number Theory Conference</i>	October 2-3, 2021
Virtual	
<i>Spring 2021 Algebraic Geometry Northeastern Series</i>	May 4-5, 2021
Virtual	
<i>21<sup>st</sup> Algebra, Geometry and Combinatorics Day</i>	April 10, 2021
Virtual	
<i>2021 Joint Mathematics Meetings</i>	January 6-9, 2021
Virtual	
<i>Fall 2020 Algebraic Geometry Northeastern Series</i>	October 23-25, 2020
Virtual	
<i>2020 Maine-Québec Number Theory Conference</i>	September 26-27, 2020
Virtual	
<i>14<sup>th</sup> Algorithmic Number Theory Symposium</i>	June 29 - July 4, 2020
Virtual	
<i>UNCG Summer School in Computational Number Theory and Algebra: Ergodic Theory with Applications to Continued Fractions</i>	May 18-22, 2020
Virtual	
<i>2019 Maine-Québec Number Theory Conference</i>	October 5-6, 2019
University of Maine, Orono	
<i>Fall 2019 Algebraic Geometry Northeastern Series</i>	September 20-22, 2019
Boston College, Boston	

<i>33<sup>rd</sup> Automorphic Forms Workshop</i> Duquesne University, Pittsburgh	March 6-10, 2019
<i>Building Bridges: 4<sup>th</sup> EU/US Summer School + Workshop on Automorphic Forms and Related Topics</i> Alfréd Rényi Institute of Mathematics, Budapest	July 9-20, 2018
<i>32<sup>nd</sup> Automorphic Forms Workshop</i> Tufts University, Medford	March 19-22, 2018
<i>Modular Forms are Everywhere</i> Max Planck Institute for Mathematics, Bonn	May 15-26, 2017
<i>31<sup>st</sup> Automorphic Forms Workshop</i> East Tennessee State University, Johnson City	March 6-9, 2017
<i>2017 BYU Student Research Conference</i> Brigham Young University, Provo	March 4, 2017
<i>2016 Connecticut Summer School in Number Theory</i> University of Connecticut, Storrs	August 8-14, 2016
<i>2015 BYU Student Research Conference</i> Brigham Young University, Provo	March 21, 2015
<i>2014 BYU Student Research Conference</i> Brigham Young University, Provo	March 15, 2014