

Grant Molnar

Curriculum Vitae

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

PhD, Mathematics , <i>Dartmouth College</i> , Hanover, NH Advisor: John Voight	Fall 2018 - Present
MA, Mathematics , <i>Dartmouth College</i> , Hanover, NH Advisor: John Voight	Fall 2018 - Winter 2020
MS, Mathematics , <i>Brigham Young University</i> , Provo, UT Advisors: Michael Griffin and Paul Jenkins Thesis: <i>The arithmetic of modular grids</i>	Winter 2017 - Summer 2018
BS, Mathematics , <i>Brigham Young University</i> , Provo, UT	Fall 2013 - Fall 2016

Teaching Experience

Dartmouth College , Hanover, NH (Instructor) Math 8 (Calculus of One and Several Variables) Math 1 (Algebra and Calculus)	Fall 2021 Fall 2020
Dartmouth College , Hanover, NH (Teacher's Assistant) Math 100 / Computer Science 49/149 (Decision Theory) Math 23 (Differential Equations) Math 3 (Calculus) Math 22 (Linear Algebra) Math 22 (Linear Algebra)	Spring 2021 Winter 2020 Fall 2019 Spring 2019 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) Math 113 (Calculus II)	Fall 2017 Winter 2017
Brigham Young University , Provo, UT (Grader) Math 570 (Matrix Analysis) Math 112 (Calculus I)	Winter 2017 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](https://arxiv.org/abs/2111.09938)

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

Submitted for publication. [arXiv:2105.04592](https://arxiv.org/abs/2105.04592)

The arithmetic of modular grids, *with Michael Griffin and Paul Jenkins*

Submitted for publication. [arXiv:2012.14403](https://arxiv.org/abs/2012.14403)

Odd, spoof perfect factorizations, *with the BYU Computational Number Theory Group*

Journal of Number Theory (2021). *Quanta* article. [arXiv:2006.10697](https://arxiv.org/abs/2006.10697)

Zagier duality for level p weakly holomorphic modular forms, *with Paul Jenkins*

The Ramanujan Journal **50**, 93–109 (2019). [arXiv:1709.10023](https://arxiv.org/abs/1709.10023)

Graphs with the strong Havel-Hakimi property, *with Michael Barrus*

Graphs and Combinatorics **32**, 1689–1697 (2016). [arXiv:1505.00085](https://arxiv.org/abs/1505.00085)

Expository Notes

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

Unpublished. [arXiv:2102.12995](https://arxiv.org/abs/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

The LCM product and Grönwall's theorem

October 3, 2021

2021 Maine-Québec Number Theory Conference (virtual)

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

Other Talks

Inverse semigroups: groups without identity Dartmouth Graduate Student Seminar	November 9, 2021
Counting 7-isogenies Dartmouth Algebra and Number Theory Seminar	November 8, 2021
A sober look at pointless topology Dartmouth Graduate Student Seminar	September 21, 2021
Fast-growing series are transcendental Dartmouth Graduate Student Seminar (virtual)	April 21, 2021
Coalgebras and Hopf algebras Reading Seminar on Affine Group Schemes (virtual)	April 15, 2021
Absurd equalities and Runge's method: the degenerate case Dartmouth Algebra and Number Theory Seminar (virtual)	March 30, 2021
p-adic Hodge theory Reading Seminar on Classical and Quadratic Chabauty (virtual)	March 2, 2021
Odd, spoof quasiperfect factorizations Dartmouth Algebra and Number Theory Seminar (virtual)	February 9, 2021
A primer in social choice theory Dartmouth Graduate Student Seminar (virtual)	January 20, 2021
Examples of Kedlaya's algorithm Reading Seminar on Classical and Quadratic Chabauty (virtual)	November 19, 2020

The LCM product and Grönwall's theorem Dartmouth Algebra and Number Theory Seminar (virtual)	November 17, 2020
Reactive means and the prisoner's dilemma Dartmouth Graduate Student Seminar (virtual)	October 7, 2020
Formal summation of divergent series: an algebraic approach Dartmouth Algebra and Number Theory Seminar (virtual)	April 28, 2020
On the infinitude of the natural numbers Dartmouth Graduate Student Seminar	February 12, 2020
Variations of Hodge structures Reading Seminar on Shimura Varieties	November 26, 2019
Hodge structures Reading Seminar on Shimura Varieties	November 14, 2019
Savage's expected utility and making good decisions Dartmouth Graduate Student Seminar	November 13, 2019
Geometric and generalized calculus Dartmouth Graduate Student Seminar	October 8, 2019
Summing divergent series Dartmouth Graduate Student Seminar	July 31, 2019
Real analysis: a nonstandard approach Dartmouth Graduate Student Seminar	April 17, 2019
Why save the universe? Set theory with a universal set Dartmouth Graduate Student Seminar	January 16, 2019
The arithmetic of modular grids Dartmouth Graduate Student Seminar	September 26, 2018
The arithmetic of modular grids BYU Master's Thesis Defense	June 22, 2018
Dioids and idempotent geometry II BYU Algebra Seminar	March 13, 2018
Dioids and idempotent geometry I BYU Algebra Seminar	February 27, 2018
Zagier duality in level p modular spaces BYU Number Theory Seminar	February 22, 2018
Average values of arithmetic functions BYU Number Theory Seminar	October 12, 2017
Weakly holomorphic modular forms of level 11 BYU Number Theory Seminar	February 9, 2017
Generating functions for canonical bases of certain level 11 weakly holomorphic modular forms BYU Number Theory Seminar	January 26, 2017
High rank elliptic curves with prescribed torsion BYU Number Theory Seminar	December 1, 2016
Heuristics for elliptic curves of high rank BYU Number Theory Seminar	October 20, 2016

A lemma regarding the Feit-Thompson conjecture BYU Number Theory Seminar	November 12, 2015
Algebraic number theory and the Feit-Thompson conjecture BYU Number Theory Seminar	October 1, 2015
On Hensel's lemma BYU Number Theory Seminar	February 12, 2015
On Newton polynomials 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 • \LaTeX

Experience with...

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

Other

Achievements and Honors

3 rd Place in Virginia Tech Regional Math Competition	October 2016
2 nd 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> Virtual	October 2-3, 2021
<i>Spring 2021 Algebraic Geometry Northeastern Series</i> Virtual	May 4-5, 2021
21 st <i>Algebra, Geometry and Combinatorics Day</i> Virtual	April 10, 2021
2021 <i>Joint Mathematics Meetings</i> Virtual	January 6-9, 2021
<i>Fall 2020 Algebraic Geometry Northeastern Series</i> Virtual	October 23-25, 2020
2020 <i>Maine-Québec Number Theory Conference</i> Virtual	September 26-27, 2020
14 th <i>Algorithmic Number Theory Symposium</i> Virtual	June 29 - July 4, 2020
<i>UNCG Summer School in Computational Number Theory and Algebra: Ergodic Theory with Applications to Continued Fractions</i> Virtual	May 18-22, 2020
2019 <i>Maine-Québec Number Theory Conference</i> University of Maine, Orono	October 5-6, 2019
<i>Fall 2019 Algebraic Geometry Northeastern Series</i> Boston College, Boston	September 20-22, 2019
33 rd <i>Automorphic Forms Workshop</i> Duquesne University, Pittsburgh	March 6-10, 2019
<i>Building Bridges: 4th EU/US Summer School + Workshop on Automorphic Forms and Related Topics</i> Alfréd Rényi Institute of Mathematics, Budapest	July 9-20, 2018
32 nd <i>Automorphic Forms Workshop</i> Tufts University, Medford	March 19-22, 2018

<i>Modular Forms are Everywhere</i>	May 15-26, 2017
Max Planck Institute for Mathematics, Bonn	
<i>31st Automorphic Forms Workshop</i>	March 6-9, 2017
East Tennessee State University, Johnson City	
<i>2017 BYU Student Research Conference</i>	March 4, 2017
Brigham Young University, Provo	
<i>2016 Connecticut Summer School in Number Theory</i>	August 8-14, 2016
University of Connecticut, Storrs	
<i>2015 BYU Student Research Conference</i>	March 21, 2015
Brigham Young University, Provo	
<i>2014 BYU Student Research Conference</i>	March 15, 2014
Brigham Young University, Provo	