

Haochen Wu

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Education

- *Dartmouth College*, Hanover, NH, expected May 2026
Ph.D. in Mathematics
Thesis Advisor: John Voight, Asher Auel
- *Wake Forest University*, Winston-Salem, NC, May 2021
M.A. in Mathematics
Thesis Advisor: Jeremy Rouse
GPA: 3.945
- *Wake Forest University*, Winston-Salem, NC, May 2019
B.S. in Mathematics
Honors in Mathematics
Minor in Music
Thesis Advisor: Jeremy Rouse
Overall GPA: 3.782; Mathematics GPA: 3.942

Research Interests

Algebraic number theory, quadratic forms

Academic Experience

- PhD Thesis (in progress)
 - Prove the equivalence of the category of oriented, nondegenerate, primitive binary quadratic modules over a Dedekind domain R under oriented similarities and the category of oriented fractional ideals of quadratic R -algebras under oriented isomorphisms.
 - Make explicit the relationship between orthogonal modular forms obtained for positive definite binary lattices over the ring of integers of totally real number fields and Hilbert modular forms.
- Master Thesis
 - Title: On the number of representations by primitive positive-definite integer -valued quaternary quadratic forms
 - Prove that there exists a primitive positive-definite integer-valued quaternary quadratic form Q represents a positive integer more times than each element in a given finite set of primitive positive-definite integer-valued quaternary quadratic forms.
- Undergraduate Thesis
 - Title: Ordered Bell numbers and sum of two squares
 - Investigate modular properties of ordered Bell numbers and show that the heuristic probability that infinitely many of ordered Bell numbers are primes is 1.

- Construct the formula to show that there are infinitely many integers m such that each of $m+1$, $m+2$, $m+4$, $m+5$, and $m+8$ is a sum of two squares.

Contributed Talks

- *Generalized Gauss composition and orthogonal modular forms for binary quadratic forms*, Southern Regional Number Theory Conference, Louisiana State University, March 29-30, 2025
- *On the number of representations by primitive positive-definite integer-valued quaternary quadratic forms*, Joint Mathematics Meeting AMS Special Session on Quadratic Forms and Theta Functions, Virtual, January 6, 2021

Conferences Attended

- Southern Regional Number Theory Conference, Louisiana State University, March 29-30, 2025
- Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation Annual Meeting, New York, Jan 15-16, 2025
- Joint Mathematics Meetings, Seattle, Jan 8-11, 2025
- Algebraic Geometry Northeastern Series, Dartmouth College, Nov 8-10, 2024
- Sixteenth Algorithmic Number Theory Symposium, Massachusetts Institute of Technology, July 18, 2024
- CTNT 2024 Conference, University of Connecticut, June 14-16, 2024
- Langenhop Lecture & SIU Conference in Integral Quadratic Forms, Southern Illinois University, May 16-17, 2024
- Dartmouth-UVM Day, Dartmouth College, Feb 10, 2024
- Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation Annual Meeting, New York, Jan 11-12, 2024
- Joint Mathematics Meetings, San Francisco, Jan 3-6, 2024
- Maine-Québec Number Theory Conference, University of Maine, September 31-October 1, 2023
- Monthly Meeting of Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation, Dartmouth College, September 16, 2023
- University of North Carolina at Greensboro Summer School: Applications of Expander Graphs to Number Theory and Computer Science, May 24-28, 2021
- Joint Mathematics Meetings AMS Special Session on Quadratic Forms and Theta Functions, Virtual, January 6, 2021
- PAImetto Joint Arithmetic, Modularity, and Analysis Series, University of South Carolina, September 19-20, 2020
- Connecticut Summer School in Number Theory Conference, Virtual, June 12-14, 2020
- Arithmetic Geometry is Online in Zoom, Everyone, Virtual, March 25, 2020
- PAImetto Number Theory Series XXXIII, Clemson University, December 14-15, 2019
- Southeast Regional Meeting on Numbers, University of North Carolina at Greensboro, April 13-14, 2019

Professional Experience

- *Instructor*, Dartmouth College
 - Math 8: Calculus of Functions of One and Several Variables, Fall 2024
 - Math 3: Calculus, Fall 2023
- *Teaching Assistant*, Dartmouth College
 - Math 13: Calculus of Vector-Valued Functions, Spring 2023
 - Math 24: Linear Algebra, Spring 2023
 - Math 11: Accelerated Multivariable Calculus, Fall 2022
 - Math 13: Calculus of Vector-Valued Functions, Winter 2022
 - Math 3: Calculus, Fall 2021
- *Teaching Assistant*, Wake Forest University, September 2019 – May 2021
 - MTH 121: Linear Algebra, Spring 2021
 - MTH 121: Linear Algebra, Fall 2020
 - MTH 117: Discrete Mathematics, Summer 2020
 - MTH 121: Linear Algebra, Summer 2020
 - MTH 112: Calculus with Analytic Geometry II, Spring 2020
 - MTH 113: Multivariable Calculus, Fall 2019
- *Tutor*, Math Center, Wake Forest University, September 2018 – May 2021

Awards

- Outstanding Graduate Student Award in Mathematics, 2020
- Dean's List at Wake Forest University, 2016-2019.
- The Joseph Pleasant and Marguerite Nutt Sloan Memorial Fund, 2017-2018.
- Boteler Prize for the Pursuit of Excellence in Music, 2018.