

Zishen Qu

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Education

2022–	PhD	University of Illinois at Urbana-Champaign Mathematics
2020–2022	MMath	University of Waterloo Combinatorics & Optimization (Advisors: Joseph Cheriyan and Yu-Ru Liu)
2014–2020	BMath	University of Waterloo Pure Mathematics and Combinatorics & Optimization

Publications

Submitted

2. S. Purkayastha, Z. Qu, and A. Zahabi. *Asymptotics of quiver superconformal index*. (arXiv:2509.12123 [hep-th]).
1. A. V. Kostochka, M. Ritter, Z. Qu, and D. B. West. *Caterpillars with n vertices are reconstructible from subgraphs with at most $n/2 + 1$ vertices*. (arXiv:2511.23309 [math.CO]).

Accepted

1. Z. Qu and D. B. West. *Another Proof of the Generalized Tutte–Berge Formula for f -Bounded Subgraphs*. Journal of Graph Theory.

Published

3. P. Hompe, Z. Qu, and S. Spirkl. *Improved bounds for the triangle case of Aharoni’s rainbow generalization of the Caccetta–Haggkvist conjecture*. Discrete Mathematics, 2024.
2. A. Chaniotis, Z. Qu, and S. Spirkl. *Minimal induced subgraphs of the class of 2-connected non-Hamiltonian wheel-free graphs*. Discrete Mathematics, 2023.
1. J. Cheriyan, S. Hajebi, Z. Qu, and S. Spirkl. *Minimal induced subgraphs of two classes of 2-connected non-Hamiltonian graphs*. Discrete Mathematics, 2022.

Employment

- 2025 **Rarefied Technologies**, Research Intern
- 2020 **University of Waterloo**, Undergraduate Research Assistant
(Supervisor: Xiaoheng Jerry Wang)
- 2019 **University of Waterloo**, Undergraduate Research Assistant
(Supervisor: Joseph Cheriyan)
- 2016–2017 **Sunnybrook Health Sciences Centre**, Imaging Research
- 2016 **Environment and Climate Change Canada**, Ice Model Research Assistant

Grants, Awards, and Honours

- 2026 Hogan Fellowship
- 2022–2025 NSERC Postgraduate Scholarships – Doctoral (PGS D)
- 2021 Sinclair Graduate Scholarship
- 2020 NSERC Undergraduate Student Research Award
- 2019 NSERC Undergraduate Student Research Award
- 2014–2019 Syncrude Higher Education Award Program
- 2015 University of Waterloo Merit Scholarship
- 2014 Alexander Rutherford High School Achievement Scholarship

Selected talks

- 2026 Graph Theory and Combinatorics Seminar, University of Illinois at Urbana-Champaign,
Recognizability of bipartite graphs with small cards
- 2025 CanaDAM 2025, University of Ottawa,
Recognizability of bipartite graphs with small cards
- 2023 Graph Theory and Combinatorics Seminar, University of Illinois at Urbana-Champaign,
A generalized Tutte-Berge formula for f -bounded subgraphs
- 2022 8th Czech-Slovak International Symposium on Graph Theory, Combinatorics,
Algorithms and Applications, Charles University
Minimal induced subgraphs of two classes of 2-connected non-Hamiltonian graphs
- 2022 Graphs and Matroids Seminar, University of Waterloo
Minimal induced subgraphs of two classes of 2-connected non-Hamiltonian graphs
- 2019 Spring 2019 Undergraduate Research Program, University of Waterloo
Listing Minimum Capacity (s, t) -Cuts
- 2019 Canadian Undergraduate Mathematics Conference, Queen’s University at Kingston
Borel’s Proof of the Heine-Borel Theorem
- 2018 Canadian Undergraduate Mathematics Conference, University of Saskatchewan
Graph Homomorphisms
- 2017 Canadian Undergraduate Mathematics Conference, Université du Québec à Montréal
The Hadamard Conjecture
- 2016 Canadian Undergraduate Mathematics Conference, University of Victoria
The No-three-in-line Problem

Teaching

University of Illinois at Urbana-Champaign

- 2025 Math 231: Calculus II, Teaching Assistant (Spring and Fall)
- 2024 Math 231E: Engineering Calculus, Teaching Assistant
- 2024 Math 257: Linear Algebra with Computational Applications, Teaching Assistant
- 2023 Math 241: Calculus III, Teaching Assistant
- 2023 Math 231: Calculus II, Teaching Assistant (ranked as excellent)¹
- 2022 Math 221: Calculus I, Teaching Assistant

University of Waterloo

- 2022 CO 454 Scheduling, Teaching Assistant
- 2022 CO 481 Introduction to Quantum Information Processing, Teaching Assistant
- 2021 CO 487/687 Applied Cryptography, Teaching Assistant
- 2021 CO 454 Scheduling, Teaching Assistant
- 2021 CO 250 Introduction to Optimization, Teaching Assistant
- 2020 CO 227 Introduction to Optimization (Non-Specialist Level), Teaching Assistant

Service

- 2025 **Illinois Mathematics Lab**, Graduate Student Mentor
Developing Software to Find Arithmetic Progressions of Primes
- 2024 **Illinois Mathematics Lab**, Graduate Student Mentor
ColorTaiko!
- 2022–2023 **Graduate Affairs Committee**, Member
- 2019 **The Pure Math Club**, President
- 2015, 2016, 2017, 2018 *mathNEWS*, Editor

Referee

- Annals of Combinatorics
- Eurocomb (conference)

¹list of teachers ranked as excellent by their students, based on student evaluations