

AJ Fong

Department of Pure Mathematics – University of Waterloo

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Research Interests

Algebraic geometry, number theory, machine learning in mathematics

Education

University of Waterloo

PhD in Pure Mathematics

2023–

Advisor: Prof David McKinnon

University of Warwick

Master of Mathematics (with Honours)

2018–22

Key modules: Elliptic Curves, Algebraic Geometry, Algebraic Number Theory.

St Paul's Convent School

International A-Levels

2012–18

Mathematics (A*), Further Mathematics (A*), Physics (A*), Chemistry (A*)

Awards

Croucher Foundation

Croucher Scholarship

2024–26

University of Waterloo

Pure Mathematics Excellence Entrance Award

2023–24

Preprints

[1] Angelica Babei, Barinder Banwait, AJ Fong, Xiaoyu Huang, and Deependra Singh. Machine learning approaches to the Shafarevich–Tate group of elliptic curves. eprint: [arXiv:2412.18576](https://arxiv.org/abs/2412.18576), December 2024.

Teaching

Waterloo.....

2024, Spring: MATH 237 Calculus 3 for Honours Mathematics, Teaching Assistant

2024, Winter: MATH 136 Linear Algebra 1 for Honours Mathematics, Teaching Assistant

2024, Winter: Tutoring Centre, Teaching Assistant

2023, Fall: MATH 135 Algebra for Honours Mathematics, Teaching Assistant

2023, Fall: ECE 206 Adv Calculus 2 for Electrical Engineers, Teaching Assistant

Warwick.....

2021–22: Supervisor for first-year students

Marking assignments for five first-year undergraduate students. Organised twice-weekly sessions of problems, examples and assignment feedback.

Service.....

- Mentor for one student for Twoples, 2024
- Pure Mathematics Departmental Director of Mathematics Graduate Student Association, Waterloo 2024
- Council member of Graduate Student Association, Waterloo 2024
- President of Pride Factors, Waterloo 2024
- Marker for high school mathematics contests, Waterloo 2024
- Mentor for two students for Directed Reading Programme, Waterloo 2024
- Organiser for a student reading group on schemes and cohomology, Waterloo 2024
- Outreach and Communications Chair of Spectra, 2024
- Assistant for problem solving classes, Warwick 2022
- Mentor for eight students at Problem Solving Matters 2021

Talks and Conferences

2024, 7–9 June: *Galois representations on the Picard groups of surfaces*, Ontario Graduate Mathematics Conference, Waterloo, Canada.

2024: Several talks in graduate student seminars at Waterloo, including *The mathematics of juggling*, *The combinatorics of toric varieties*, etc.

Additional Skills

Languages: Cantonese (native), English (bilingual), Mandarin (bilingual)

Programming: \LaTeX , Python, MATLAB, Java

Activities and Interests

Jazz and Ballet Dance: Trained to CSTD Grade 7 in the former and RAD Intermediate Foundation in the latter.

Contract Bridge: Played with the Warwick University Bridge Club.

References

References available upon request.