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
                                                                            2012–18

○ International A-Levels: Mathematics (A*), Further Mathematics (A*), Physics (A*), Chemistry (A*)
○ A-Levels: Further Mathematics (Additional) (A*), Chinese (B)
○ 10 GCSEs (7A*, 3B)

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, 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

o Mentor for one student for Twoples, 2024

o Pure Mathematics Departmental Director of Mathematics Graduate Student Association, Waterloo 2024

o Council member of Graduate Student Association, Waterloo 2024

o President of Pride Factors, Waterloo 2024

o Marker for high school mathematics contests, Waterloo 2024

o Mentor for two students for Directed Reading Programme, Waterloo 2024

o Organiser for a student reading group on schemes and cohomology, Waterloo 2024

o Outreach and Communications Chair of Spectra, 2024

o Assistant for problem solving classes, Warwick 2022

o 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.