Xueyu (Eileen) Pan

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Education

Monash–Warwick Alliance Australia–United Kingdom
Doctor of Philosophy (Pure Mathematics) *Oct 2021–present*

- Supervisors: Assist. Prof. Adam Thomas (Warwick) & Assoc. Prof. Heiko Dietrich (Monash)

Monash University Australia
Master of Philosophy (Pure Mathematics) *Jul 2019–Jul 2021*

- Main supervisor: Assoc. Prof. Heiko Dietrich
- Pure Mathematics (H1 First class Honours).
- Thesis: Groups of small order type.
  This research consists of theoretical and computational investigation of the construction and identification of groups of small order types.

Bachelor of Science (Honours) *Feb 2018–Dec 2018*

- Supervisor: Dr Daniel Mathews
- Pure Mathematics (H1 First class Honours).
- Thesis: An introduction to the coloured Jones polynomial.
  The thesis gives an overview of the foundations of knot theory, and an introduction to the coloured Jones polynomial from two points of view: topological and algebraic. I looked into computations of the coloured Jones polynomial for link diagrams and implemented them in Mathematica.

Bachelor of Education (Honours) and Bachelor of Science *Feb 2014–Dec 2017*

- BEd: Secondary Education.
- BSc major: Mathematics; minor: Chemistry.

Awards

Monash Warwick Alliance Joint PhD Scholarships (Warwick)
Awarded based on academic record and research experience. *2021–present*

Oberwolfach Leibniz Fellowsship (Mathematisches Forschungsinstitut Oberwolfach)
2021

Australia Government Research Training Program (RTP) Stipend
Awarded based on academic record and prior research experience. *2019–2021*

Monash International Tuition Scholarship (MITS)
Awarded based on competitive academic record. *2019–present*

Simon Marais Mathematics Competition — Top quartile listing for pairs
Awarded by ranking. *2018*
My partner and I were ranked in the top quartile (pairs) among all participants (undergraduate students from across the Asia-Pacific).

Alan Pryde Study Grant
A Monash University award for excellent academic achievements. *2018*

Maria Athanassenas Honours Scholarship
A Monash University award for excellent academic achievements. *2018*

Monash International Leadership Scholarship
Awarded for maintaining distinct academic achievements throughout undergraduate studies. *2014–2017*

Research interests and output

My main research interests are in group theory. I had some exposure to topology and algebraic geometry. I am also interested in homological algebra, Lie algebras, and computational algebra.

Arising from my MPhil studies, a collaboration with my MPhil supervisor Dr Dietrich and Prof. Eick led to a paper published in 2021, and a complementary software package for the computer algebra system GAP is available on GitHub. More details are as follows:

Groups whose orders factorise into at most four primes
Journal of Symbolic Computation. *2021*
A joint paper with Assoc. Prof. Heiko Dietrich and Prof. Bettina Eick.

SOTGrps – GAP package
Available at [github.com/xpan-eileen/sotgrps_gap_pkg]. *2020*
This package extends the functionalities of GAP's SmallGroups Library.

Talks

I have presented talks about my research and general mathematics topics on the following occasions.

Young Group Theorists workshop
Exceptional finite groups of Lie type and their primitive actions. *Les Diablerets, Sept 2022*

2021 MFO Computational Group Theory
Constructing and identifying groups of small order type. *MFO, Aug 2021*

2021 Zassenhaus Groups and Friends Conference
Groups of small order type. *Binghamton University, Jun 2021*

64th Annual Meeting of the Australian Mathematical Society
Groups of small order type. *University of New England, Dec 2020*

3rd Australia Algebra Conference
Groups of small order type. *RMIT University, Nov 2019*

LunchMaths seminar
Great Feuds in mathematics. *Monash University, Apr 2019*

Honours thesis presentation
An introduction to the coloured Jones polynomial. *Monash University, Nov 2018*

Combinatorics presentation
Alternating-sign matrices. *Monash University, Jun 2018*

Computational group theory presentation
More group actions. *Monash University, Jun 2018*

LunchMaths seminar
Fiddly Maths — How to play the violin and the maths behind it. *Monash University, Apr 2018*

Extracurricular activities

Apart from the undergraduate coursework and my research studies, I also actively participate in reading groups.

Lie algebras
Weekly meetings *Online, Dec 2020–Jan 2021*
Reading and discussing topics on Lie algebras and Lie groups.

Topics in algebra
Weekly meetings *Monash University, Apr 2019–present*
Reading and discussing various topics such as homological algebra, representation theory, and finite group theory.

Geometry on surfaces
Weekly seminars *Monash University, Jul 2018–Nov 2018*
Reading and discussing the book *Geometry on surfaces* by John Stillwell.

Teaching experiences

Graduate Teaching Associate UK
University of Warwick *Jan 2022 – present*

- Supervision for 1st year maths students.
- TA for the 2nd year Algebra II module (Groups and Rings).
- I was responsible for marking student assignments, providing written feedback, and running weekly supervisions and tutorials.

Teaching Aassociate Australia
Monash University *Feb 2018– Oct 2021*

- Tutored subjects: Analysis of change, Differential geometry, Techniques for modelling, Algebra and number theory I & II.
- I was responsible for marking student assignments, providing written feedback, and running weekly tutorials with up to 20 students in each class.
- Written student comments about my teaching (from anonymous student surveys): "Strong subject knowledge, able to walk through methods using multiple examples. Friendly and approachable personality makes the subject enjoyable and not tedious." "Explains how to be (mathematically) rigorous and expects us to be as well. The explanations are understandable and useful." Quantitative report from 2020's Student Evaluation: "Overall I was satisfied with Eileen's teaching" — 100% "strongly agree".

Student teacher Australia
Secondary colleges in Victoria *2014–2018, 94 days in total*
During placements, I prepared and delivered lessons to classes ranging from Year 7 to Year 12, including VCE Mathematical Methods, VCE Chemistry, and general mathematics and science subjects.

AIESEC Global Teacher (Volunteer) Hungary
Leöwey Klára Gimnázium (Pécs) *Jan 2016–Feb 2016*
I volunteered to assist classroom teaching, offer after-school support to disadvantaged students, and prepare materials for students to practise oral English skills in a high-school.

Nonacademic activities

Violinist
Monash Philharmonic Orchestra *2014–2016*
The MPO is part of the Monash University Philharmonic society, which is a student-run nonprofit society based at Monash University's Clayton campus. I played the violin (I) in the orchestra for three years, and took part in every MPO spring and autumn performance during those years.

Skills

Languages: Chinese (native), English (proficient), German (basic)
Programming languages: C (introductory), Python (introductory)
Softwares: LaTex, Mathematica, GAP, MAGMA
Musical instruments: violin, cello, ukulele