

Dr. Yeeka Yau

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[Personal webpage](#)

School of Mathematics and Statistics

The University of Sydney, Australia

Employment History

Lecturer (Education Focused) <i>School of Mathematics and Statistics, The University of Sydney, Australia</i>	2025 -
Learning Success Advisor (Mathematics) <i>Learning Hub Mathematics, The University of Sydney, Australia</i>	2024
Assistant Professor (Tenure-track) <i>University of North Carolina Asheville, Asheville, North Carolina, USA</i>	July 2023 - Dec 2023
Visiting Assistant Professor <i>Furman University, Greenville, South Carolina, USA</i>	2022 - 2023
Postdoctoral Research Associate <i>The University of Sydney, Australia</i>	2021-2022
Associate Lecturer <i>Mathematics Learning Centre, The University of Sydney, Australia</i>	2019-2020
Summer Intensive Lecturer <i>The University of Sydney, Australia</i>	2018, 2020

Visiting Positions

Visiting Researcher <i>LaCIM Université du Québec à Montréal, Canada</i> Mentor: Professor Christophe Hohlweg	April/May 2022
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Education

Ph.D. in Pure Mathematics, The University of Sydney, Australia – Advisor: A/Prof. James Parkinson – Thesis: Automatic Structures for Coxeter Groups (link)	2017–2021
BS.c. (Adv Maths) Honours in Pure Mathematics, The University of Sydney, Australia – Grade: Honours Class I – Advisor: A/Prof. James Parkinson – Thesis: Automata for Coxeter Groups	2012–2016

Publications and Preprints

Ultra-low elements and join-irreducible gates in Coxeter groups (Y. Yau) pdf (Submitted)	2025
A pair of Garside shadows (P. Przytycki and Y. Yau) pdf <i>Algebraic Combinatorics</i> , vol 7, no. 6, p1879-1885, 2024	2024
An artificial neural network approach to finding the key length of the Vigenère cipher. (C. Millichap, Y. Yau) pdf <i>Cryptologia</i> , 1-17, 2024	2023
Modifying twist algorithms for determining the key length of a Vigenère cipher. (C. Millichap, Y. Yau, A. Pate and M. Carns) pdf <i>Cryptologia</i> , 1-16, 2023	2023
Cone types, automata and regular partitions in Coxeter groups (J. Parkinson and Y. Yau) online version <i>Advances in Mathematics</i> , vol 398, 2022	2022
Coxeter Systems for which the Brink-Howlett automaton is minimal (J. Parkinson and Y. Yau) online version <i>Journal of Algebra</i> , vol 527, p437-446	2019

Research Grants and Funding

Exploring learning environment designs to improve student's sense of belonging in first year statistics and data science courses. <i>University of Sydney</i> SoTL grant: \$11,000 AUD Yeeka Yau (Primary Investigator) Diana Warren, Jaslene Lin, Andy Tran (Co-investigators)	2025-2027
Functional Identities, Nilpotent Rings and Garside Shadows NSF LEAPS-MPS Award: \$197,154 USD Jordan Bounds (Primary Investigator) Yeeka Yau (Primary collaborator and Senior Personnel)	2023-2025
Start up Funding <i>UNC Asheville</i> : \$13,000 USD	2023

Awards

– T.G. Room Medal for most outstanding Pure Mathematics PhD thesis <i>University of Sydney, Australia</i>	2021
– Australian Government Research Training Stipend (PhD) Full Scholarship	2017-2021
– The David G A Jackson Prize for originality and creativity in Pure Mathematics <i>University of Sydney, Australia</i>	2016
– Norbert Quirk Prize No. IV for best essay by an Honours student <i>University of Sydney, Australia</i>	2016
– The Rolf Adams Prize for best Pure Mathematics Honours presentation <i>University of Sydney, Australia</i>	2016

Teaching Experience

Courses taught recently:

- MATH1062 - Mathematics 1B (Statistics) 2025
- MATH1115 - Interrogating Data 2025

Supplementary Learning Tutorials (Learning Hub, University of Sydney):

- MATH1062 - Mathematics 1B (Differential Equations and Statistics) 2024
- DATA1001/1901 - Foundations of Data Science 2024
- PSYC2012 - Statistics and Research Methods for Psychology 2024

Courses taught at UNC Asheville:

- STAT225 - Calculus-Based Statistics 2023
- MATH167 - Precalculus 2023

Courses taught at Furman University:

- MTH120 - Introduction to Statistics 2022, 2023
- MTH150 - Calculus I 2022
- MTH145 - Calculus for Management, Life and Social Sciences 2023

Courses taught at The University of Sydney:

- MATH1002 Linear Algebra (1st year) 2020 Summer School
- MATH1004 Discrete Mathematics (1st year) 2018 Summer School

Supplementary Learning Tutorials (Mathematics Learning Centre, University of Sydney):

- MATH1013 Mathematical Modelling (1st year) 2020
- MATH1004 Discrete Mathematics (1st year) 2020
- Statistics Bridging course 2019
- MATH1014 Intro to Linear Algebra (1st year) 2019
- MATH1111 Intro to Calculus (1st year) 2019

Tutorials and Workshops (University of Sydney):

- MATH1014 Intro to Linear Algebra (1st year Fundamental) 2016
- MATH1003 Integral Calculus and Modelling (1st year) 2016 Summer School
- MATH1002 Linear Algebra (1st year) 2017
- MATH1001 Differential Calculus (1st year) 2017
- MATH2968 Discrete Maths and Graph Theory (2nd year Advanced) 2017
- MATH2022 Abstract and Linear Algebra (2nd year) 2018, 2019
- MATH2023 Analysis (2nd year) 2018
- MATH3069 Geometry and Topology (3rd year) 2018
- MATH3066 Algebra and Logic (3rd year) 2019
- MATH1023 Multivariable Calculus and Modelling (1st year) 2019
- MATH1013 Mathematical Modelling (1st year Fundamental) 2019

Students Supervised

Devin Bryant, Sam Housand, Regan Richardson and Sam Dayton (joint with Jordan Bounds) <i>Functional Identities, Nilpotent Rings and Garside Shadows</i> <i>Furman University, SC, USA</i>	2023-ongoing
Alyssa Pate and Morgan Carns <i>Finding the key length of Vigenère ciphers</i> <i>Furman University, SC, USA</i>	Summer 2023

Selected Talks

Beyond Correctness: Rethinking assessment in Mathematics and Statistics. Roundtable Discussion at ISSOTL 2025 <i>Christchurch, New Zealand</i>	Nov 2025
A pair of Garside shadows. Joint meeting of the AMS, NZMS and AustMS <i>Auckland, New Zealand</i>	Dec 2024
Modifying twist algorithms for determining the key length of a Vigenère cipher. <i>Cryptology Educators Seminar, online</i>	Nov 2023
The Mathematics of Hearing Math & Munchies Series <i>Furman University, SC, USA</i>	Nov 2022
Cone Types, Automata and Regular Partitions in Coxeter groups Spring Topology and Dynamics Conference <i>Rhodes College (online)</i>	Mar 2023
Algebra and Combinatorics Seminar <i>LaCIM Université du Québec à Montréal, Canada</i>	Apr 2022
Groups and Geometries (MATRIX Conference) <i>Sydney, Australia</i>	Dec 2021
Coxeter Systems for which the Brink-Howlett automaton is minimal Symmetries in Newcastle (invited) <i>University of Newcastle, Australia</i>	May 2020
Algebra and Combinatorics Seminar <i>North Carolina State University, USA</i>	Feb 2019
62nd Annual Meeting of the Australian Mathematics Society <i>University of Adelaide, South Australia</i>	Dec 2018
Introduction to Automatic Groups Student Algebra Seminar <i>University of Sydney</i>	Apr 2019

The classification of finite Coxeter groups

Aug 2018

Student Algebra Seminar

University of Sydney

Automata for Coxeter Groups

Oct 2017

Postgraduate Student Seminar Series

University of Sydney

Service

- Accredited PASS (Peer assisted study session) supervisor
- Referee for Rocky Mountain Journal of Mathematics
- Committee member for Diversity, Equity and Inclusion in the Department of Mathematics & Statistics, UNC Asheville.
- Co-founder and faculty advisor for the Data Science and Machine Learning club, Furman University.
- Committee member for Diversity, Equity and Inclusion in the Department of Mathematics, Furman University.

Technical Skills

Programming Languages: Python, SageMath, Magma, Bash/Shell, R, SQL, LaTeX, HTML, CSS

General Interests/Skills: Undergraduate mathematics and statistics education, cryptology, statistics and machine learning.