

Victor Zhang

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Research interests

Diagrammatic categories and algebras: The Lusztig–Vogan categories, module categories over Soergel bimodules, quantum knot invariants from braided tensor categories.

Representation theory: Representations of (real) Lie groups; Representations of S_n in characteristic p .

EDUCATION

University of New South Wales

Sydney, Australia

Ph.D. Mathematics

Feb. 2024 – Aug. 2027 (ongoing)

- *Supervisors:* Anna Romanov (primary) and Pinhas Grossman (secondary).
- *Topic:* Diagrammatic Lusztig–Vogan Categories.
- First candidature assessment passed.

University of New South Wales

Sydney, Australia

B.Sc. (Hons) Advanced Mathematics (First Class Honours)/B.Sc. Computer Science

Feb. 2019 – Dec. 2023

- *Supervisors:* Anna Romanov (primary) and Arnaud Brothier (secondary).
- *Thesis Title:* Diagrammatic Categories in Representation Theory.

PUBLICATIONS AND PREPRINTS

Big data comparison of quantum invariants

2025

with Daniel Tubbenhauer, arXiv:2503.15810 (submitted).

TEACHING

University of New South Wales

Sydney, Australia

- Tutor, *Mathematics 1A* (2024 T1, 2025 T1).
- Tutor, *Discrete Mathematics* (2024 T2, 2024 T3).
- Drop-in centre tutor, First year mathematics (2023 T3 – ongoing).
- Exam Invigilator, First year mathematics (2024 T1, 2024 T2).
- Assessment Marker, First year mathematics (2025 T1).

University of Sydney

Sydney, Australia

- Teaching Assistant, *Models of Computation* (2023 S2).

RESEARCH TALKS

Graph colouring, $SO(3)$ webs and the $B1$ invariant

Mar. 2025

PhD/Masters seminar; University of New South Wales.

The Diagrammatic Lusztig–Vogan category for $SL(2, \mathbb{R})$

Dec. 2024

Australian Mathematical Sciences Students Conference; University of Western Sydney.

The Diagrammatic Lusztig–Vogan category for $SL(2, \mathbb{R})$

Oct. 2024

Math. Research Group Meetings; University of New South Wales.

SEMINAR TALKS

Representations of S_n in characteristic p and the basic representation of $\hat{\mathfrak{sl}}_p$

Aug. 2024

One Tree Island Workshop in Representation Theory.

Real Forms of Lie Groups

Apr. 2024

Math. Research Group Meetings; University of New South Wales.

Drawing Monoidal Categories

Mar. 2024

Tensor Categories Learning Seminar; University of Sydney.

CONFERENCES

Australian Mathematical Sciences Students Conference <i>University of Western Sydney</i>	Dec. 2024
One Tree Island Workshop in Representation Theory <i>One Tree Island, Queensland, Australia</i>	Aug. 2024
UNSW Mathematics Postgraduate Conference <i>University of New South Wales</i>	Aug. 2024
Categorification in Representation Theory <i>University of Sydney</i>	Feb. 2023

SERVICE

Organising: UNSW Math. Research Group Shut-up and Write.

TECHNICAL SKILLS

Computer Algebra Systems: GAP, MAGMA, Maple, Mathematica/Wolframscript, Maxima, SageMath.
General programming: Bash, C, Haskell, Java, Javascript, Python, R, Rust, SQL.