

# 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

### The LV-category (and LV-module) for $SU(n, 1)$ , $n \geq 1$

May 2025

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

### 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

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<b>Representation Theory Down Under</b> <i>University of Sydney</i>	Jun. 2025
<b>Australian Mathematical Sciences Students Conference</b> <i>University of Western Sydney</i>	Dec. 2024
<b>One Tree Island Workshop in Representation Theory</b> <i>One Tree Island, Queensland, Australia</i>	Aug. 2024
<b>UNSW Mathematics Postgraduate Conference</b> <i>University of New South Wales</i>	Aug. 2024
<b>Categorification in Representation Theory</b> <i>University of Sydney</i>	Feb. 2023

## SERVICE

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

## TECHNICAL SKILLS

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