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	b. 2024 – Aug. 2027 (ongoing)
• Supervisors: Anna Romanov (primary) and Pinhas Grossman (secondary).	
 <i>Topic</i>: Diagrammatic Lusztig-Vogan Categories. First candidature assessment passed 	
University of New South Wales	Sydnoy 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).	1000 8010 2000 8080
• 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, <i>Mathematics 1A</i> (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 (2025-11).	
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 $SL(2, \mathbb{R})$ Australian Mathematical Sciences Students Conference; University of Western Sydney.	Dec. 2024
The Diagrammatic Lusztig–Vogan category for $SL(2, \mathbb{R})$ Math. Research Group Meetings; University of New South Wales.	Oct. 2024
Seminar Talks	
Representations of S_n in characteristic p and the basic representation of One Tree Island Workshop in Representation Theory.	$\mathbf{f} \ \hat{\mathfrak{sl}}_p$ Aug. 2024
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 University of Western Sydney	Dec. 2024
One Tree Island Workshop in Representation Theory <i>One Tree Island, Queensland, Australia</i>	Aug. 2024
UNSW Mathematics Postgraduate Conference University of New South Wales	Aug. 2024
Categorification in Representation Theory University of Sydney	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.