

# Tamara Hogan

Mathematics PhD student

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## Education

2021–Present **Doctor of Philosophy**, *University of Melbourne & University of Sydney*  
Joint PhD program.

*Thesis title:* Topological approaches to Kashiwara-Vergne theory.

*Supervisor(s):* Marcy Robertson and Zsuzsanna Dancso.

*Description:* Three projects which use various topological equivalences to explore Kashiwara-Vergne theory.

*Expected completion:* May–November 2024.

2018–2020 **M.Sc. (Mathematics and Statistics)**, *University of Melbourne*  
Masters by coursework. Graduated with distinction.

*Thesis title:* Symmetries of trivalent tangles: Approaching the link between Drinfeld associators and Kashiwara-Vergne solutions.

*Supervisor(s):* Marcy Robertson.

*Description:* Constructed a novel sub-set of 4D-knotted objects to explore the relationship between two sets of objects in quantum algebra.

2015–2018 **B.Sc. (Mathematics and Statistics)**, *University of Melbourne*  
Pure mathematics specialisation. Graduated with distinction.

## Publications and pre-prints

- 2023 D. Bar-Natan, Z. Dancso, **T. Hogan**, J. Liu, and N. Scherich. *Knot theoretic interpretation of the Goldman-Turaev Lie bialgebra*. In preparation.
- 2022 Z. Dancso, **T. Hogan**, and M. Robertson. *A knot-theoretic approach to comparing the Grothendieck-Teichmüller and Kashiwara-Vergne groups*. arXiv:2211.11370
- 2021 **T. Hogan**. *The link between Drinfel'd associators and Kashiwara-Vergne solutions*. MATRIX-MFO Tandem Workshop: Invariants and Structures in Low-Dimensional Topology (hybrid meeting), Oberwolfach Reports **42** (2021) pp 2354–2356.

## Awards and scholarships

- 2023 **WIMSIG Cheryl E. Praeger Travel Awards**, *AustMS*, \$2,500 AUD  
Awarded to female and gender diverse mathematicians based in Australia for the purpose of domestic and international travel.
- 2023 **Science Abroad Travelling Scholarships**, *University of Melbourne*, \$2,000 AUD  
Awarded to PhD students at the University of Melbourne for the purpose of travelling abroad for research purposes.

2022 **John & Allan Gilmour Research Award**, *University of Melbourne*, \$4,158.80 AUD  
Awarded to two outstanding graduate research students in the Science Faculty biennially.

2018, **Master of Science (Mathematics and Statistics) Scholarship**, *University of Melbourne*, \$2,000 AUD  
2019×2  
Merit-based award at University of Melbourne. Received a maximum of 3 times.

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## Talks

- Sept 2023 *A knot-theoretic interpretation of the Goldman-Turaev Lie bialgebra*, presented at the University of Melbourne Topology Seminar, in-person (50 minutes).
- May 2023 *On a lift of the Goldman-Turaev Lie bialgebra in genus zero*, presented at the University of Sydney Mathematical Postgraduate Society seminar, in-person (50 minutes).
- Dec 2022 *A knot-theoretic approach to comparing the Grothendieck-Teichmüller and Kashiwara-Vergne groups*, presented at the Topology Special Session of the AustMS Meeting 2022, in-person (20 minutes).
- Sept 2022 *A knot-theoretic approach to comparing the Grothendieck-Teichmüller and Kashiwara-Vergne groups*, presented at the University of Melbourne Topology Seminar, in-person (50 minutes).
- Dec 2021 *Symmetries of 3D and 4D expansions*, presented at the Topology Special Session of the AustMS Meeting 2021, Online (20 minutes).
- Sept 2021 *The link between Drinfel'd associators and Kashiwara-Vergne solutions*, presented at MATRIX-MFO Tandem Workshop: Invariants and Structures in Low-Dimensional Topology, Online (10 minutes).
- Apr 2021 *A basic introduction to planar algebras*, presented at the  $(GT)^2$  PhD Student Symposium, Online (20 minutes).
- Dec 2020 *Symmetries of trivalent tangles: approaching the link between Drinfeld associators and Kashiwara-Vergne solutions*, presented at the Topology Special Session of the AustMS Meeting 2020, Online (20 minutes).

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## Service

- Participated in AustMS Student Body Working Group (2023) to help develop a new student organisation inside AustMS.
- Co-organised the Australian Postgraduate Algebra Colloquium (2022), a fortnightly online student seminar for graduate students in algebra.
- Various informal experience leading student reading groups.