Daniel Dunmore

Curriculum Vitae

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Education

2024 – present | **Ph.D. Student in Pure Mathematics** (University of New South Wales)
Supervisors: Dr. Anna Romanov, Assoc. Prof. Pinhas Grossman, Dr. Arnaud Brothier
Topic: Module Categories over Soergel Bimodules

2019 – 2023 | **Bachelor of Advanced Science (Honours)** (University of New South Wales)
Majors: Pure Mathematics, Advanced Physics
Cumulative WAM: 80
Honours Supervisor: Dr. Arnaud Brothier
Honours Topic: From Subfactors to Richard Thompson's Groups and their Generalizations
Honours WAM: 85 (First Class Honours)

Research Interests

My current research interests include

- categorification and categorical representation theory, such as with respect to the category of Soergel bimodules;
- planar algebras, subfactor theory and fusion categories;
- group theory and representation theory, primarily with respect to infinite simple groups such as Thompson-like groups and their unitary representations;
- topological quantum field theory and low-dimensional topology.

Publications

Cifuentes, J. D., Tanttu, T., Gilbert, W. et al., *Bounds to electron spin qubit variability for scalable CMOS architectures*, Nat. Commun. 4299.**15** (2024).

Mai, P. Y., Pereira, P. H., Alonso, L. A. et al., *Enhancement of Electric Drive in Silicon Quantum Dots with Electric Quadrupole Spin Resonance*, to appear in Physical Review Letters.

Talks

2025, Apr. 7th | **The Banach–Tarski Paradox and Amenability**
UNSW Masters/PhD Student Seminar (Australia)

2024, Dec. 5th	**Contextualizing Categorical Representation Theory** AAMS Student Conference (Australia)
2024, May 1st	**Basics of Module Categories** Tensor Categories and their Modules Learning Seminar (Australia) `https://sites.google.com/view/tensorcategories/home`
2023, Nov. 14th	**From Subfactors to Richard Thompson's Groups and their Generalizations** UNSW Pure Mathematics Honours Seminar (Australia)
2022, Feb. 3rd	***C****-Algebras of Discrete Groups** AMSIConnect (Australia) `https://vrs.amsi.org.au/student-profile/daniel-dunmore/`

Conferences

2024, Nov. 18th – 2024, Nov. 29th	**Tensor Categories, Quantum Symmetries, and Mathematical Physics** MATRIX (Australia) `https://www.matrix-inst.org.au/events/tensor-categories-quantum-symmetries-and-mathematical-physics/`

Internships

2020, Sept. – 2021, June	**ARC Centre of Excellence for Quantum Computation and Communication Technology**

Posters

Samuel, J., Dunmore, T., Dunmore, D., Saraiva, A., Coppersmith, S. N., *Bloch Sphere Model for Two Spin-$\frac{1}{2}$ Systems*, presented as part of the UNSW Talented Students Program (2020).

Technical Skills

- Proficient in C, Assembly, MATLAB/Octave, Python, Mathematica, C++, PHP, JavaScript and HTML5.
- Experience with COMSOL Multiphysics and LiveLink for MATLAB.