

# Daniel Dunmore

*Curriculum Vitae*

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## Education

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2024 – present	<b>Ph.D. Student in Pure Mathematics</b> (University of New South Wales) Supervisors: Dr. Anna Romanov, Assoc. Prof. Pinhas Grossman, Dr. Arnaud Brothier Topic: Module Categories over Soergel Bimodules
2019 – 2023	<b>Bachelor of Advanced Science (Honours)</b> (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)

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## Research Interests

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My current research interests include

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

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## Publications

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Cifuentes, J. D., Tantt, T., Gilbert, W. et al., *Bounds to electron spin qubit variability for scalable CMOS architectures*, Nat. Commun. 4299.15 (2024).

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## Talks

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2024, Dec. 5th	<b>Contextualizing Categorical Representation Theory</b> AAMS Student Conference (Australia)
2024, May 1st	<b>Basics of Module Categories</b> Tensor Categories and their Modules Learning Seminar (Australia) <a href="https://sites.google.com/view/tensorcategories/home">https://sites.google.com/view/tensorcategories/home</a>

2023, Nov. 14th	<b>From Subfactors to Richard Thompson's Groups and their Generalizations</b> UNSW Pure Mathematics Honours Seminar (Australia)
2022, Feb. 3rd	<b><math>C^*</math>-Algebras of Discrete Groups</b> AMSIConnect (Australia) <a href="https://vrs.amsi.org.au/student-profile/daniel-dunmore/">https://vrs.amsi.org.au/student-profile/daniel-dunmore/</a>

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## Conferences

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2024, Nov. 18th – 2024, Nov. 29th	<b>Tensor Categories, Quantum Symmetries, and Mathematical Physics</b> MATRIX (Australia) <a href="https://www.matrix-inst.org.au/events/tensor-categories-quantum-symmetries-and-mathematical-physics/">https://www.matrix-inst.org.au/events/tensor-categories-quantum-symmetries-and-mathematical-physics/</a>
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## Teaching

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2024, Jan. 2nd – 2024, Feb. 2nd	<b>An Introduction to Category Theory</b> Informal reading course
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## Awards

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2021	<b>AMSI Vacation Research Scholarship</b> (\$3,000 AUD)
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## Internships

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2020, Sept. – 2021, June	<b>ARC Centre of Excellence for Quantum Computation and Communication Technology</b>
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## Posters

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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).

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## Technical Skills

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