

GERT VERCLEYEN

Curriculum Vitae

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🌐 Webpage



Employment

2024–present **Golomb Visiting Assistant Professor, Purdue University.**

Education

- 2019–2024 **PhD, Theoretical Physics, Maynooth University, Ireland**, Advisor: J. K. Slingerland.
On Low-Rank Multiplicity-Free Fusion Categories
- 2018–2019 **PhD, Theoretical Physics, Ghent University, Belgium**, Advisor: F. Verstraete.
- 2016–2018 **Master in Mathematics, Major in Theoretical Physics, Minor in research, Ghent University, Belgium.**

Research Interests

My research focuses on finding and probing properties of (multiplicity-free) fusion categories. To do so I develop software using computational algebra to solve consistency equations arising from commutative diagrams. The software and data are part of packages such as Anyonica.wl and, since recently, TensorCategories.jl. I make as much data available online on the AnyonWiki.

Papers

- 2025 G. Vercleyen. Tables of practical invariants for distinguishing multiplicity-free fusion categories up to rank 7. 07 2025. arXiv:2507.00652.
- 2025 T. Maciazek, M. Conlon, G. Vercleyen, and J. K. Slingerland. Extending the planar theory of anyons to quantum wire networks. *SciPost Phys.*, volume 18, page 074. SciPost, 02 2025.
- 2024 G. Vercleyen. On low-rank multiplicity-free fusion categories. *PQDT - Global*, page 215, 2024.
- 2023 G. Vercleyen and J. K. Slingerland. On low rank fusion rings. *Journal of Mathematical Physics*, volume 64, page 091703, 09 2023.

Talks

The talks with a * are invited talks.

- 2025 ***Complete invariants and minimal fields of multiplicity-free fusion categories, AMS Fall Sectional meeting.**
- *The AnyonWiki, a digital repository for fusion categories and anyon models, AMS Fall Sectional meeting.**
- *Techniques for categorifying multiplicity-free fusion rings, Mathematics seminar Kaiserslautern.**
- Anyonica and the AnyonWiki, Hopf25 Conference on Hopf algebras, quantum groups, monoidal categories and related structures.**

- 2024 **Anyonica and the AnyonWiki**, ARTIN in Leeds, Conference on Biracks and Biquandles: Theory, applications, and new perspectives.
- ***Knots and quantum computing**, Topology Seminar Purdue.
- ***Intro to Anyonica**, Quantum Research Group Seminar at Purdue.
- Anyonica and the AnyonWiki**, Thematic Program in Field Theory and Topology at Notre Dame University.
- Anyonica and the AnyonWiki**, Great Lakes Mathematical Physics Meeting.
- ***On Low-Rank Multiplicity-Free Fusions Categories**, Quantum groups and monoidal categories seminar at Universite Libre Bruxelles.
- 2022 ***Knots and quantum computing**, Mathematics seminar at Osnabruck.
- ***Knots and quantum computing**, Doctoral mini-course on Combinatorial p -Kazhdan-Lusztig Theory.
- ***Geometric Algebra**, Maynooth theoretical physics seminar.

Teaching

- 2024–2025 **Lecturer**, Lectures on Ordinary Differential Equations (MA266), Purdue University.
- 2021 **Teaching Assistant**, Tutorials on Special Relativity for 3rd-year physics students, Maynooth University.
- 2021 **Teaching Assistant**, Tutorials on Probability and Statistics for 3rd-year engineering students, Maynooth University.
- 2021 **Teaching Assistant**, Tutorials on Quantum Mechanics for 2nd-year physics students, Maynooth University.
- 2020 **Teaching Assistant**, Tutorials on Vectors and Matrices for 1st-year engineering students, Maynooth University.
- 2019 **Teaching Assistant**, Tutorials on Quantum Computing for graduate physics and mathematics students, Ghent University.

Referees

Colleen Delaney

Associate Professor,
Department of Mathematics,
Department of Physics and Astronomy
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Eric Samperton

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Department of Computer Science,
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Eric Rowell

Professor, Presidential Impact Fellow
Department of Mathematics
Texas A&M,
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Steven Simon

Professor of Physics and
Professorial Fellow of Somerville College
Rudolf Peierls Centre for Theoretical Physics
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Eddy Ardonne

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