

GERT VERCLEYEN

Curriculum Vitae

Department of Mathematics, Office 409
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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-Lustzig 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
 Purdue University
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Eric Samperton

Assistant Professor,
 Department of Mathematics,
 Department of Computer Science,
 Purdue University,
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Eric Rowell

Professor, Presidential Impact Fellow
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 Texas A&M,
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Steven Simon

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

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 Stockholm University
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