GERT VERCLEYEN

Curriculum Vitae

Department of Mathematics, Office 409
Purdue University,
150 N. University Street,
West Lafayette,
IN 47907-2067,
USA
✉ *gert.vercleyen@protonmail.com*
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 as possible 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
✉ colleend (at) purdue.edu

Eric Samperton
Assistant Professor,
Department of Mathematics,
Department of Computer Science,
Purdue University,
✉ eric (at) purdue.edu

Eric Rowell
Professor, Presidential Impact Fellow
Department of Mathematics
Texas A&M,
✉ rowell (at) math.tamu.edu

Steven Simon
Professor of Physics and
Professorial Fellow of Somerville College
Rudolf Peierls Centre for Theoretical Physics
Oxford University
✉ steven.simon (at) physics.ox.ac.uk

Eddy Ardonne
Professor,
Department of Physics,
Stockholm University
✉ ardonne (at) fysik.su.se