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*
My Webpage

Employment

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

Education

2019–2024 **PhD, Theoretical Physics**, *Maynooth University*, Ireland, Advisor: J. K. Slingerland.

2018–2019 **PhD, Theoretical Physics**, *Ghent University*, Belgium.

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, recently, TensorCategories.jl. I make as much data as possible available online on the AnyonWiki.

Papers

2026 **Fabian Mäurer, Ulrich Thiel, and Gert Vercleyen**, *F-symbols and R-symbols for the Drinfeld center of the Haagerup subfactor*, arXiv:2601.20012.

2025 **Liu, Zhengwei, Sebastien Palcoux, Yunxiang Ren, and Gert Vercleyen**, *Triangular prism equations and categorification*, arXiv:2203.06522.

2025 **G. Vercleyen**, *Tables of practical invariants for distinguishing multiplicity-free fusion categories up to rank 7*, 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 an * are invited talks.

10-2025 ***Complete invariants and minimal fields of multiplicity-free fusion categories**, *AMS Fall Sectional meeting on "Advances in Quantum Topology, Tensor Categories, and Diagrammatic Algebras"*, Virtual Conference.

10-2025 ***The AnyonWiki, a digital repository for fusion categories and anyon models**, *AMS Fall Sectional meeting on "New Horizons for Quantum Error Correction: Categorical Approaches to Topological Codes"*, Virtual conference.

07-2025 ***Techniques for categorifying multiplicity-free fusion rings**, *Mathematics seminar*, Kaiserslautern, Germany.

04-2025 **Anyonica and the AnyonWiki**, *Hopf25 Conference on Hopf algebras, quantum groups, monoidal categories and related structures*, Brussels, Belgium.

12-2024 **Anyonica and the AnyonWiki**, *ARTIN in Leeds, Conference on Biracks and Biquandles: Theory, applications, and new perspectives*, Leeds, UK.

11-2024 ***Knots and quantum computing**, *Topology Seminar Purdue*, Indiana, USA.

09-2024 ***Intro to Anyonica**, *Quantum Research Group Seminar at Purdue*, Indiana, USA.

06-2024 **Anyonica and the AnyonWiki**, *Thematic Program in Field Theory and Topology at Notre Dame University*, Indiana, USA.

05-2024 ***On Low-Rank Multiplicity-Free Fusions Categories**, *Quantum groups and monoidal categories seminar at Universite Libre Bruxelles*, Brussels, Belgium.

06-2024 **Anyonica and the AnyonWiki**, *Great Lakes Mathematical Physics Meeting*, Michigan, USA.

12-2022 ***Knots and quantum computing**, *Mathematics seminar at Osnabruck*, Osnabruck, Germany.

06-2022 ***On Low Rank Fusion Rings**, *BIMSA-Tsinghua Quantum Symmetry Seminar*, Virtual Conference.

04-2022 ***Knots and quantum computing**, *Doctoral mini-course on Combinatorial p-Kazhdan-Lustzig Theory*, Ghent, Belgium.

03-2022 ***Geometric Algebra**, *Maynooth theoretical physics seminar*, Maynooth, Ireland.

Teaching

2025-current **Lecturer**, *Lectures on Linear Algebra and Differential Equations (MA266)*, Purdue University.

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.

Teaching reviews

See `https://www.ratemyprofessors.com/professor/3051482` for an overview of student reviews of my teaching.

Reviewing

I have reviewed papers for

- Communications in Mathematical Physics. Impact factor (5-year) 2.7, citescore 4.9.
- Journal of Physics A: Mathematical and Theoretical. Impact factor (5-year) 2.1, citescore 3.8.

Awards

My research poster titled "On Low Rank Multiplicity-Free Fusion Categories" won a poster award of 600 euro at the Young Researchers School on Topological aspects of low-dimensional quantum physics.

Referees

The referees with an * are my current mentors at Purdue University.

- Colleen Delaney*
  Assistant Professor
  Department of Mathematics & Department of Physics and Astronomy
  Purdue University
  email: colleend@purdue.edu

- Eric Samperton*
  Assistant Professor
  Department of Mathematics & Department of Computer Science
  Purdue University
  email: eric@purdue.edu

- Eric Rowell
  Professor, Presidential Impact Fellow
  Department of Mathematics
  Texas A & M
  email: rowell@math.tamu.edu

- Steven Simon
  Professor of Physics and Professorial Fellow of Somerville College
  Rudolf Peierls Centre for Theoretical Physics
  Oxford University
  email: steven.simon@physics.ox.ac.uk

- Julia Plavnik
  Associate Professor
  Department of Mathematics
  Indiana University
  email: jplavnik@iu.edu