

Curriculum Vitae

Luuk Stehouwer

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Personal Information

Birth Date April 29th 1994
Citizenship Dutch
Residency Halifax, Canada
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Employment

from 2024 Postdoctoral fellow at University of Dalhousie under supervision of Theo Johnson-Freyd

Education

2019-2023 Max Planck Institute for Mathematics, Bonn, PhD student under supervision of Peter Teichner

2015-2018 University of Amsterdam, MSc Mathematical Physics

2012-2015 University of Amsterdam, BSc Mathematics (Cum Laude with Honours)

2012-2015 University of Amsterdam, BSc Physics and Astronomy (Cum Laude with Honours)

Publications

- *Dagger categories via anti-involutions and positivity* (joint with Jan Steinebrunner), Theory and Applications of Categories, 2024
- *The spin-statistics theorem for topological quantum field theories*, Communications in Mathematical Physics, 2024
- *Reflection Structures and Spin Statistics in Low Dimensions* (joint with Lukas Müller), Reviews in Mathematical Physics, 2024

- *Some properties of Pin^\pm -structures on compact surfaces* (joint with Michael Klug), *Topology and its Applications*, 2023
- *Interacting SPT phases are not Morita invariant*, *Letters in Mathematical Physics*, 2022
- *Classification of crystalline topological insulators through K-theory* (joint with J. de Boer, J. Kruthoff and H. B. Posthuma), *Advances in Theoretical and Mathematical Physics*, 2022

Preprints

- *Weak topological phases in the presence of interactions* (joint with Omar Antolín Camarena, Arun Debray, Cameron Krulewski, Natalia Pacheco-Tallaj and Daniel Sheinbaum), arXiv:2410.10031, 2024
- *A Higher Spin Statistics Theorem for Invertible Quantum Field Theories* (joint with Cameron Krulewski and Lukas Müller), arXiv:2408.03981, 2024
- *Dagger n -categories* (joint with Giovanni Ferrer, Brett Hungar, Theo Johnson-Freyd, Cameron Krulewski, Lukas Müller, Nivedita, David Penneys, David Reutter, Claudia Scheimbauer and Chetan Vuppulury), arXiv:2403.01651, 2024

Theses

- *Unitary fermionic topological field theory*, PhD thesis advised by Peter Teichner, 2024
- *K-theory Classifications for Symmetry-Protected Topological Phases of Free Fermions*, MSc thesis in Mathematical Physics advised by Hessel Posthuma, 2018
- *The Atiyah-Singer Index Theorem*, joint BSc thesis in Mathematics and Physics advised by Hessel Posthuma, 2015

Conference and Seminar Talks

- 01-2025 Talk at the Mathematical Physics Seminar at the Max Planck Institute for Mathematics
- 11-2024 Invited speaker at the Satellite Meeting of the Simons Collaboration for Global Categorical Symmetries at NYU
- 11-2024 Invited speaker at the TQFT & Higher Symmetries Seminar of the Beijing Institute of Mathematical Sciences and Applications

- 10-2024 Invited speaker at Harvard CMSA
- 09-2024 Talk at the Atlantic Category Theory (ATCAT) seminar in Dalhousie
- 09-2024 Talk at Mathematical Physics seminar at Perimeter Institute
- 08-2024 Talk at Topology group seminar, TU Munich
- 07-2024 Invited speaker at the topology seminar of the University of Münster
- 05-2024 Invited speaker at the mathematical physics seminar at the Max Planck Institute for Mathematics Bonn with title “A K-Theoretic Framework for Neutral Fermionic Topological Phases”
- 04-2024 Invited speaker at the University of Western Ontario with title “cutting and pasting manifolds”
- 03-2024 Invited speaker at Conference “Higher Categorical Tools for Quantum Phases of Matter” at Perimeter Institute
- 02-2024 Invited speaker at the online TQFT club
- 02-2024 Invited speaker at the online Global Categorical Symmetries (GCS) Post-doc and Student colloquium on the cobordism hypothesis
- 11-2023 Talk at Atlantic Category Theory (ATCAT) seminar in Dalhousie on “The categorical spin-statistics theorem”
- 07-2023 Talk titled “The role of homotopy fixed points in topological field theory” at the Young Topologists Meeting in EPFL, Lausanne
- 07-2023 Poster presentation at the Bonn International Graduate School poster exhibition titled “Spin-statistics in two-dimensional topological field theory”
- 06-2023 Invited speaker at the online workshop “Dagger Higher Categories” with title “Dagger categories via anti-involutions, and positivity”
- 06-2023 Invited speaker at workshop “Representations in higher structures” at the university of Greifswald with title “classifying dagger 2-groups”
- 11-2022 Poster presentation at the conference “Interactions and Applications of Homotopical Algebra and Geometry” at the University of Luxembourg.
- 10-2022 Talk titled “The spin-statistics theorem for topological field theory” at the mathematical physics seminar at the University of Amsterdam
- 09-2022 Talk titled “Homotopy fixed points in topological field theories” at the conference “Algebraic Topology, in memory of Hans-Joachim Baues” at the Max Planck Institute for Mathematics, Bonn
- 09-2022 Talk titled “Two-dimensional topological field theory and 2-group actions on 2-categories” at the virtual Categories and Companions symposium (CACS)

- 06-2022 Poster presentation and gong show talk at the conference on global categorical symmetries at the Perimeter Institute
- 05-2022 Talk titled “Symmetric monoidal infinity categories and ring spectra” at the IMPRS seminar at the Max Planck Institute for Mathematics in the lecture series “Infinity categories”
- 05-2022 Invited speaker at ATCAT seminar at Dalhousie university with title “Group actions on categories”
- 05-2022 Invited speaker at seminar about orientations of ring spectra at University of Utrecht with title “Introduction to the Witten genus”
- 05-2022 Talk titled “Spin-statistics and unitarity for low-dimensional topological field theories” at the seminar on mathematics of quantum field theory at the Max Planck Institute for Mathematics, Bonn
- 05-2022 Talk in the lecture series “some computations of positive TQFTs” at the spring school on field theories and algebraic topology in the Bergse Bossen in Driebergen
- 11-2021 Invited speaker at conference “generalized cohomology and physics” at ICTP Trieste with title “topological field theory with fermionic symmetry”
- 08-2021 Talk titled “Symmetry-protected topological phases in the Bogliubov-de Gennes Framework” at the seminar on mathematics of quantum field theory at the Max Planck Institute for Mathematics, Bonn
- 07-2021 Poster presentation and gong show talk at the virtual junior conference on higher structures in QFT and string theory
- 06-2021 Talk titled “Spin-Statistics for Topological Field Theories” at the virtual Bonn International Graduate School (BIGS) conference
- 06-2021 Talk titled “Two-dimensional Topological Field Theories and Spin-Statistics” at the virtual conference “Topology in Distinct Flavours”
- 10-2020 Talk titled “From topological phases to eta invariants” at the seminar on mathematics of quantum field theory at the Max Planck Institute for Mathematics, Bonn
- 10-2020 Talk titled “Free fermion symmetries and particle-hole reversal” at the seminar on mathematics of quantum field theory at the Max Planck Institute for Mathematics, Bonn
- 08-2018 Gong show talk at the conference “higher algebra and mathematical physics” at the Max Planck Institute for Mathematics, Bonn

Teaching experience

- 17/18 Teaching assistant at the KdVI wiskundeclub for excellent high school students
- 17/18 Teaching assistant (exercise classes) in elementary geometry at the University of Amsterdam
- 16/17 Teaching assistant (exercise classes) in analysis of metric spaces at the University of Amsterdam
- 16/17 Teaching assistant (exercise classes) in mathematics for physicists (partial differential equations) at the University of Amsterdam
- 15/16 Tutor of the double bachelor students in mathematics & physics at the University of Amsterdam
- 13/14 Teaching assistant (exercise classes) in basic mathematics for chemists at the University of Amsterdam

Other activities

- 24/25 Reviewer for Mathematical Reviews
- 24/25 Referee for Communications in Mathematical Physics
- 24/25 Member of the International Association of Mathematical Physics (IAMP)
- 24/25 Volunteer for the EDI committee of the AARMS
- 23/24 Successfully completed the graduate course CNLT5000 for teaching in higher education at Dalhousie university
- 23/24 Organizer of the TQFT spring school
- 17/18 Organizer of the master orientation program for third year bachelor students in mathematics at the University of Amsterdam
- 17/18 Personal assistant of professor Jasper Stokman, director of the mathematical masters at the University of Amsterdam
- 16/17 Personal assistant of professor Lenny Taelman, director of the mathematical masters at the University of Amsterdam

Languages

Dutch Native

English Fluent

German Conversational
Western Armenian Basic