

Matthew Habermann

CV of Matthew Habermann

Personal Information

DoB 12-09-1992,
Place of Birth London,
Citizenship Australian & British

Employment

2021–Present **Research assistant (Post-doc)**, *Quantum Universe Cluster of Excellence, the University of Hamburg*.
Mentor: Tobias Dyckerhoff

Education

- 2017–2021 **PhD in Mathematics**, *University College London, as part of the London School of Geometry and Number Theory*.
Advisor: Yankı Lekili
Thesis title: Homological mirror symmetry for invertible curve singularities
Degree awarded: 28-10-2021
- 2016 **Bachelor of Science in Mathematics with Honours Class I**, *University of Queensland, Brisbane*.
Thesis title: Gauge construction and the Yang–Mills heat flow over real four-manifolds
Advisor: Huy The Nguyen
- 2011–2015 **Bachelor of Science with an Extended Major in Mathematics**, *University of Queensland, Brisbane*.
Includes an exchange year studying at the Technical University of Munich
- 2011–2016 **Diploma of Languages (German)**, *University of Queensland, Brisbane*.

Awards

- University College London Overseas Research Scholarship
- University of Queensland Dean's Commendations for academic excellence
- University of Queensland Exchange Travel Grant for academic merit.

Research interests

- Symplectic topology, algebraic geometry, representation theory, homological mirror symmetry

Publications

- Homological Berglund–Hübsch mirror symmetry for curve singularities, Joint with Jack Smith. *J. Symplectic Geom.* Volume 18 (2020), no. 6, 1515–1574. arXiv: 1903.01351
- Homological mirror symmetry for invertible polynomials in two variables. To appear in *Quantum Topology* (2021). arXiv: 2003.01106.

Preprints

- Homological mirror symmetry for nodal stacky curves. arXiv:2101.12178. Submitted
- A note on Homological Berglund-Hübsch-Henningson mirror symmetry for curve singularities. arXiv: 2205.12947. Submitted

Invited talks

- Oct 2022 Homological Berglund-Hübsch-Henningson mirror symmetry for curve singularities, Geometry seminar, Uppsala university, Sweden.
- May 2022 Homological Berglund-Hübsch-Henningson mirror symmetry for curve singularities, 3CinG conference, Warwick, UK.
- Apr 2021 Homological mirror symmetry nodal stacky curves, Korean Institute of Advanced Study Geometry Seminar (virtual)
- Mar 2021 Homological mirror symmetry nodal stacky curves, UCGEN seminar (virtual)
- Feb 2021 Homological mirror symmetry nodal stacky curves, Higher structures seminar (virtual)
- Feb 2021 Homological mirror symmetry nodal stacky curves, Freemath seminar (virtual)
- Oct 2020 Homological mirror symmetry for two variable invertible polynomials, FD-Seminar, University of Bonn (virtual)
- Jul 2020 Homological mirror symmetry for invertible polynomials in two variables, Fanosearch research group, Imperial College London (virtual)
- Jan 2020 Homological mirror symmetry for invertible polynomials in two variables, Junior geometry at the University of Cambridge

Other talks

- Dec 2022 Homological Berglund-Hübsch-Henningson mirror symmetry for curve singularities, Workshop on Singularities and Mirror Symmetry, Glasgow, UK (Contributed talk)
- Apr 2022 An introduction to homological mirror symmetry, part II. Higher structures seminar, University of Hamburg.
- Apr 2022 An introduction to homological mirror symmetry, part I. Higher structures seminar, University of Hamburg.
- Sep 2020 Homological mirror symmetry for non-commutative deformations of weighted projective planes, Symplectic Cut (virtual)
- Jun 2020 On the immersion classes of nearby Lagrangians, Symplectic Cut (virtual)
- Mar 2020 Homological mirror symmetry for two variable invertible polynomials, Symplectic Cut (virtual)
- Feb 2020 A stability phenomenon for symplectic packing, Symplectic Cut
- Nov 2019 Bussi's construction of the perverse sheaf of vanishing cycles, Symplectic Cut
- Jun 2019 Applications of the log PSS map to Lagrangian embeddings and computations of symplectic cohomology, Symplectic Cut
- May 2019 An introduction to homological mirror symmetry for invertible polynomials, KCL/UCL junior geometry seminary
- Feb 2019 Refined disk potentials for immersed Lagrangian surfaces, Symplectic Cut
- Nov 2018 Homotopy groups and Hopf fibrations, ICL junior geometry
- Oct 2018 Topological Fukaya categories of punctured surfaces, Symplectic Cut
- Jul 2018 The Fukaya-Seidel category with applications, BIG Workshop, Jersey
- May 2018 Symplectomorphisms of \mathbb{CP}^2 and $S^2 \times S^2$, Symplectic Cut
- Feb 2018 Invertibles in quantum cohomology and π_1 of symplectic automorphism groups, Symplectic Cut
- Dec 2017 (Non)displaceability of toric fibres via symplectic reduction, Symplectic Cut

- Aug 2016 The Heisenberg vertex algebra, University of Queensland QFT Seminar
- Apr 2016 The reverse Poincaré inequality, University of Queensland Analysis Seminar
- Mar 2016 Higher regularity for harmonic maps, University of Queensland Analysis Seminar
- Mar 2016 Structure theory for \mathfrak{sl}_2 , University of Queensland QFT Seminar

Service

- 2022 Referee for *Compositio Mathematica*, *Advances in Mathematics*.

Conference Attendance

- Sep 2022 Periods in mirror symmetry, Edinburgh, UK.
- Jul 2022 Convexity in contact and symplectic topology, Institute Henri Poincaré, Paris, France.
- May 2022 3CinG conference, Warwick, UK.
- Mar 2022 Recent developments in Lagrangian Floer Theory, Simons Center for Geometry and Physics, Stony Brook, USA.
- Sep 2021 Conference in honour of Sir Michael Atiyah, Isaac Newton Institute, Cambridge
- Aug 2019 International conference on symplectic topology, IMPA, Rio de Janeiro
- Mar 2019 Categorical Symplectic Topology, University of Cambridge

Workshop Attendance

- Dec 2022 Workshop on Singularities and Mirror Symmetry, Glasgow, UK
- Aug 2019 School of symplectic topology, IMPA, Rio de Janeiro
- Jul 2018 British Isles Geometry Conference, Jersey
- Nov 2016 W-Algebras, University of Melbourne
- Jan 2016 Calculus of Variations, RMIT University Melbourne

Seminars Organised

- Sep 2019 – Symplectic cut seminar, with Yankı Lekili
- Dec 2020
- Sep 2019 – The UCL/KCL junior geometry seminar, with Daniel Platt
- Jun 2020

Teaching Experience

- 2018-2021 **Tutor**, *King's College London*.
 - Algebraic Geometry, 2021
 - Galois Theory, 2021
 - Topology, 2019
 - Linear Algebra and Geometry I, 2019
 - Algebraic Curves, 2018, 2019
 - Linear Algebra and Geometry II, 2019
- 2019 **Summer School Tutor**, *London School of Economics*.
 - ME306: Real Analysis
- 2017 **Tutor**, *University of Melbourne*.
 - MAST10006: Calculus II,
 - MAST20029: Engineering Mathematics.

2013-2016 **Tutor**, *University of Queensland*.

- MATH1050: Mathematical Foundations
- MATH1051: Calculus and Linear Algebra I,
- MATH1052: Multivariate Calculus and Ordinary Differential Equations,
- MATH2400: Mathematics Analysis,
- MATH3405: Differential Geometry,
- MATH3403: Partial Differential Equations,
- STAT2201: Analysis of Engineering and Scientific Data (super tutor).

Languages

English **Native**

German **Advanced**