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

Invited talks

April 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

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	Symplectomorphims 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

Conference Attendance

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

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

Teaching Experience

2018-Present **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**