

# 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.

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## Preprints

- Homological mirror symmetry for nodal stacky curves. arXiv:2101.12178. Submitted

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## 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

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## 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 Symplectomorphisms of  $\mathbb{CP}^2$  and  $S^2 \times S^2$ , Symplectic Cut
- Feb 2018 Invertibles in quantum cohomology and  $\pi_1$  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

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## 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

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## 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

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## 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

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## 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).

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## Languages

- English **Native**
- German **Advanced**