# Matthew Habermann

*CV of Matthew Habermann*

## Personal Information

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

## Employment

2021– **Research assistant (Wissenschaftlicher Mitarbeiter)**, *Cluster of Excellence, Quantum Universe within the University of Hamburg*.

## Education

2017-2021 **PhD in Mathematics**, *University College London, as part of the London School of Geometry and Number Theory*.
Advisor: Yankı Lekili (Imperial College London)
Thesis title: Homological mirror symmetry for invertible curve singularites

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 staky curves. arXiv:2101.12178. Submitted

## Invited talks

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|---|---|
| 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 two variable invertible polynomials, 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

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| 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 $\pi_1$ 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 |

## Conference Attendance

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| Aug 2019 | International conference on symplectic topology, IMPA, Rio de Janeiro |
| Mar 2019 | Categorical Symplectic Topology, University of Cambridge |

## Workshop Attendance

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| 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

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| Sep 2019 – present | 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

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| English | **Native** |
| German | **Advanced** |
| French | **Intermediate** |