

# Merlin Christ

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## Research interests

Higher category theory, representation theory, noncommutative algebraic geometry.  
Specifically: categorified perverse sheaves, categorifications of cluster algebras, Calabi–Yau categories, relations to Fukaya categories.

## Education

- 04/2020–07/2023 **Ph.D. in Mathematics**, *University of Hamburg*  
Grade: summa cum laude. Thesis: Perverse schobers and cluster categories. Adviser: Tobias Dyckerhoff.
- 03/2020 **Master of Science in Mathematical Physics**, *University of Hamburg*  
Grade: 1.0 with honors.
- 03/2018 **Bachelor of Science in Physics**, *Technical University of Berlin*

## Employment

- 10/2023–present **Institut de Mathématiques de Jussieu - Paris Rive Gauche**, Postdoc (2 years)  
As part of the MathInGreaterParis Fellowship Programme, which is a COFUND Marie Skłodowska-Curie Action. With mentorship by Bernhard Keller.
- 04/2020–09/2023 **University of Hamburg**, University research assistant

## Publications and Preprints

- [1] M. Christ. Spherical monadic adjunctions of stable infinity categories. *Int. Math. Res. Not. IMRN*, 2023(15):13153–13213, 2022.
- [2] M. Christ. Ginzburg algebras of triangulated surfaces and perverse schobers. *Forum Math. Sigma*, 10:72, 2022. Id/No e8.
- [3] M. Christ. Geometric models for derived categories of Ginzburg algebras of  $n$ -angulated surfaces via local-to-global principles. [arXiv:2107.10091](https://arxiv.org/abs/2107.10091), 2021.
- [4] M. Christ. Cluster theory of topological Fukaya categories. [arXiv:2209.06595](https://arxiv.org/abs/2209.06595), 2022.
- [5] M. Christ, T. Dyckerhoff, and T. Walde. Complexes of stable  $\infty$ -categories. [arXiv:2301.02606](https://arxiv.org/abs/2301.02606), 2023.
- [6] M. Christ, F. Haiden, and Y. Qiu. Perverse schobers, stability conditions and quadratic differentials I. [arXiv:2303.18249](https://arxiv.org/abs/2303.18249), 2023.
- [7] M. Christ. Relative Calabi-Yau structures and perverse schobers on surfaces. [arXiv:2311.16597](https://arxiv.org/abs/2311.16597), 2023.
- [8] M. Christ, T. Dyckerhoff, and T. Walde. Lax Additivity. [arXiv:2402.12251](https://arxiv.org/abs/2402.12251), 2024.

- [9] M. Christ, F. Haiden, and Y. Qiu. Perverse schobers, stability conditions and quadratic differentials II: relative graded Brauer graph algebras [arXiv:2407.00154](https://arxiv.org/abs/2407.00154), 2024.

## Honors and Awards

- 2021 **Quantum Universe Best Paper Award**, *Quantum Universe Cluster of Excellence, associated with the University of Hamburg*  
Awarded in the category Ph.D. students for the paper “Spherical monadic adjunctions of stable infinity categories”.
- 09/2022–  
12/2022 **Trimester Program on Spectral Methods in Algebra, Geometry, and Topology**, *Hausdorff Research Institute for Mathematics (HIM), Bonn, Germany*  
Participant of the program.

## Lectures

- 12/2023–  
02/2024 **Mini-course on higher category theory and the (additive) categorification of cluster algebras (Paris, hybrid)**  
Research level lecture course at the IMJ-PRG, 5 lectures. [Lecture notes](#).
- 02/2022–  
04/2022 **A short course on perverse schobers (Beijing, online)**  
Research level lecture course at the Yau Mathematical Sciences Center, Tsinghua University, 8 lectures. [Course page](#) and [lecture notes](#).

## Conference talks

- 09/2024 **Session on Tame categories, geometric models, and homological mirror symmetry (Paderborn)**  
Title: TBA
- 05/2024 **Catégories amassées et symétrie miroir, ANR CHARMS (Strasbourg)**  
Title: Recollement des objets amas-basculant sur une surface
- 05/2024 **CHARMS Summer school (Versailles)**  
Title: Cluster categories of surfaces and topological Fukaya categories
- 10/2023 **Conférence du GDR Théorie de l’Homotopie et Applications (Lille)**  
Title: Complexes of stable infinity-categories
- 06/2023 **Mini-workshop on Symplectic Topology (Imperial College London)**  
Title: Complexes of Fukaya-Seidel categories
- 03/2023 **Mini-workshop on higher categorical methods in algebra and geometry (Hamburg)**  
Title: Spherical categorical complexes
- 12/2022 **Workshop on spectra, triangles, and higher structures (Bonn)**  
Title: Perverse schobers and representation theory

## Seminar talks

- 07/2024 **Mathematics and String theory seminar (Kavli IPMU, Tokyo)**  
Title: Perverse schobers on the spectral curve
- 06/2024 **LAGOON Seminar (international, online)**  
Title: Relative graded Brauer graph algebras and stability conditions

- 04/2024 **Séminaire d'Homotopie et Géométrie Algébrique (Toulouse)**  
Title: Relative Calabi-Yau structures and topological Fukaya categories with coefficients
- 04/2024 **QM Research Seminar (Odense)**  
Title: Complexes of stable infinity-categories and perverse schobers
- 03/2024 **Paris Algebra Seminar (Paris)**  
Title: Complexes of stable infinity-categories and perverse schobers
- 11/2023 **Paris Algebra Seminar (Paris)**  
Title: Relative Calabi-Yau structures and extriangulated cluster categories
- 05/2023 **Oberseminar Algebra (Stuttgart)**  
Title: Graded Brauer graph algebras and constructible sheaves of categories
- 04/2023 **Representation theory seminar (Academia Sinica, Taipei, online)**  
Title: Complexes of stable infinity-categories
- 10/2022 **Clusters and Braids Seminar (international, online)**  
Title: Cluster categories from Fukaya categories
- 01/2022 **Paris Algebra Seminar (Paris)**  
Title: Gluing constructions of Ginzburg algebras and cluster categories
- 09/2021 **Geometric Representation Seminar (YMSC, Beijing, online)**  
Title: An introduction to perverse schobers on surfaces
- 07/2021 **FD Seminar (international, online)**  
Title: Geometric models of Ginzburg algebras via local-to-global principles
- 02/2021 **LAGOON Seminar (international, online)**  
Title: A gluing construction for Ginzburg algebras of triangulated surfaces
- 2021 **Seminar of the Center for Mathematical Physics (Hamburg)**  
Talk 1: Categories of A- and B-branes in topological string theory  
Talk 2: Additive categorification of cluster algebras
- 12/2020 **Groupe d'étude Amas, carquois et géométrie (Paris, online)**  
Title: A gluing construction for the relative Ginzburg algebra of a surface

## Teaching experience

- Summer 2023 Tutor for Linear Algebra II,  
Seminar on Symplectic and Hochschild (co)homology (coorganized)
- Winter 2021/22 Tutor for Linear Algebra I
- Summer 2021 Tutor for Algebraic Topology (master)
- Winter 2020/21 Tutor for Mathematics for Physicists III
- Summer 2020 Tutor for Mathematics for Physicists II
- Winter 2019/20 Student tutor for Algebra I

Summer Student tutor for Linear Algebra II  
2019

Winter Student tutor for Linear Algebra I  
2018/19