

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 ∞ -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: 3-Calabi–Yau categories arising from surfaces: gluing and geometric models
- 08/2024 **International Conference on Representations of Algebras, ICRA 21 (Shanghai)**
Title: Cluster categories for higher Teichmüller theory
- 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

- 10/2024 **Séminaire d’Algèbre et Géométrie (Versailles)**
Title: Cluster categories and Fukaya categories of surfaces

- 10/2024 **Symplectix seminar (Paris)**
Title: From Lefschetz fibrations to sheaves of categories
- 08/2024 **Algebra Seminar (Tsinghua University/YMSC, Beijing)**
Title: Relative Calabi–Yau structures and perverse schobers
- 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 Tutor for Algebraic Topology (master)
2021

Winter Tutor for Mathematics for Physicists III
2020/21

Summer Tutor for Mathematics for Physicists II
2020

Winter Student tutor for Algebra I
2019/20

Summer Student tutor for Linear Algebra II
2019

Winter Student tutor for Linear Algebra I
2018/19