




Curriculum Vitae

Xun Lin

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Affil Max Planck Institute for Mathematics, Bonn

Education

- 2014 – 2018  **Undergraduate student. Southern University of Science and Technology, Shenzhen.** Mathematics.
- 2018 – 2023  **Ph.D, Yau Mathematical Sciences Center, Tsinghua university, Beijing.** Mathematics. Supervisor: *William Donovan*
- Sept 2023 – Sept 2025  **Postdoc, Max Planck Institute for Mathematics, Bonn**

Research

- 14  Higgs objects over noncommutative varieties. (with Shizhuo Zhang) In progress.
- 13  Fully faithful functors, skyscraper sheaves, and birational equivalence (with Chunyi Li, and Xiaolei Zhao). arXiv:2402.12573 [math.AG], 2024.
- 12  IVHS via Kuznetsov components and categorical Torelli theorems for Veronese double cones (with Jørgen Vold Rennemo and Shizhuo Zhang). In preparation.
- 11  Categorical Torelli theorem for Verra threefolds and fourfolds (with Zhiyu Liu, and Shizhuo Zhang). In preparation.
- 10  Singular category: Hodge theory and (birational) categorical Torelli theorem for nodal Fano threefolds (with Fei Xie, Daniele Faenzi, and Shizhuo Zhang). In preparation.
- 9  Three approaches to categorical Torelli theorem for cubic threefold of non-Eckardt type via equivariant Kuznetsov components (with Sebastian Casalaina-Martin, Xianyu Hu, Shizhuo Zhang, Zheng Zhang). arXiv:2405.20554 [math.AG].
- 8  Kuznetsov's Fano threefold conjecture via Hochschild-Serre algebra (with Shizhuo Zhang). arXiv:2311.06450 [math.AG], 2023. Submitted.
- 7  Serre Algebra, Matrix factorization and categorical Torelli theorem for hypersurfaces (with Shizhuo Zhang). Accepted by Math. Ann.
- 6  Infinitesimal categorical Torelli theorems for Fano threefolds (with Augustinas Jacovskis, Zhiyu Liu, Shizhuo Zhang). Journal of Pure and Applied Algebra, Volume 227, Issue 12, 2023, 107418.
- 5  Some remarks of Hochschild homology and semi-orthogonal decompositions. arXiv:2112.10312 [math.AG], 2021. Submitted.
- 4  Indecomposability of the bounded derived categories of Brill-Noether varieties (with Chenglong Yu). Proc. Amer. Math. Soc. 152 (2024), 1457-1465.
- 3  On nonexistence of semi-orthogonal decompositions in algebraic geometry. arXiv:2107.09564 [math.AG], 2021. Submitted.
- 2  Categorical Torelli theorems for Gushel–Mukai threefolds (with Augustinas Jacovskis, Zhiyu Liu, and Shizhuo Zhang). J. London Math. Soc., 109: e12878.
- 1  Noncommutative Hodge conjecture. J. Noncommut. Geom. 17 (2023), 1367–1389.

Honors

Awards
















2021  **Ruolin prize for graduate student, Yau Mathematical Sciences Center, 2021.**

Scholarships

 **Basic scholarship of Tsinghua University for graduate students, 2018 - 2023.**

 **Yau MSC scholarship, 2018-2022.**

Talks

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| Feb 2024 |  Obserseminar in MPIM. Infinitesimal categorical Torelli: an application to Kuznetsov' Fano 3-folds conjecture. |
| Sept 2023 |  5 minutes talk in JTP program of Hausdorff center, Bonn. A genralized theorem of Bondal Orlov reconstruction for fully faithful embedding. |
| April 2023 |  Seminar of Advance Topics in Algebra and Geometry, Tsinghua university. A new proof of Torelli for cubic 4-folds. |
| March 2023 |  Geometric representation theory seminar, Tsinghua university. Infinitesimal categorical Torelli. |
| Nov 2022 |  Tsinghua preprint seminar. Hodge theory of combinatorics: an introduction. |
| Oct 2022 |  Tsinghua preprint seminar. Categorical Torelli. |
| July 2022 |  University of Warwick, online poster session of VBAC seminar. Indecomposibility of the bounded derived categories of Brill-Noether varieties. |
| April 2022 |  Stony Brook university, algebraic geometry seminar. Nonexistence of semi-orthogonal decompositions and sections of para-canonical systems. |
| March 2022 |  Cornell university, algebraic geometry seminar. Nonexistence of semi-orthogonal decompositions and sections of para-canonical systems. |
| Jan 2022 |  Southern University of Science and Technology, Shenzhen, Geometry and Topology seminar. Nonexistence of semi-orthogonal decompositions and sections of para-canonical systems. |
| Fall 2021 |  Tsinghua University, student seminar, VGIT and derived categories. |
| Sept 2021 |  Tata Institute of Fundamental Research, India. Nonexistence of semi-orthogonal decompositions and the base locus of para-canonical systems. |
| June 2021 |  Edinburgh University, Internal seminar. Derived categories of symmetric product of curves. |
| May 2021 |  Tsinghua University, Geometry representation seminar. Noncommutative Hodge conjecture. |
| March 2021 |  Southern University of Science and Technology, Shenzhen. Noncommutative Hodge conjecture. |

Talks (continued)

- Shanghaitech University, Shanghai. Noncommutative Hodge conjecture.
- Fall 2019 Tsinghua University, student algebraic geometry seminar. Examples of Shimura varieties.
- Spring 2019 Tsinghua University, student algebraic geometry seminar. Derived Torelli of K_3 surfaces.
- Tsinghua University, student algebraic geometry seminar. Nonexistence of semi-orthogonal decompositions and sections of canonical bundle.
- Fall 2018 Tsinghua University, student algebraic geometry seminar. Geometry of moduli space of sheaves on surfaces.

Teaching

- 2018 General Topology, Teaching Assistant. Tsinghua University.
- Mathematical Analysis, Teaching Assistant. Tsinghua University.
- 2019 Functional Analysis, Teaching Assistant.
- Calculus A, Teaching Assistant. Tsinghua University.
- 2020 Algebraic geometry I, Teaching Assistant. Tsinghua University.
- 2022 Algebra I in Qiuzhen college, Teaching Assistant. Tsinghua University.

Visiting and conferences/workshops

- June 4 - June 22, 2024 Shanghai center for mathematical sciences, Fudan University.
- May 26 - May 31, 2024 Stockholm University, Sweden.
- Jan 22, 2024 - Jan 26, 2024 University of Genova, Genova.
- Dec 15, 2023 - Dec 20, 2023 University of Oslo, Oslo.
- Sept 2023 - Dec 2023 Hausdorff Center for Mathematics, JTP program, Bonn.
- July 26, 2023 - August 10, 2023 Sichuan University, Chengdu.
- July 10, 2023 - July 21, 2023 Tsinghua University, Beijing.
- March 2022 - June 2022 Cornell University, Ithaca.
- March, 2021 Shanghaitech University, Shanghai.
- Sept 2019 Liverpool University, Liverpool.

Visiting and conferences/workshops (continued)

May 2019

📌 Sun Yat-Sen University, GuangZhou.

📌 University of Science and Technology in China, Hefei.

Languages

Native

📌 Cantonese, Madarin Chinese

Advanced

📌 English