




# Curriculum Vitae

## Xun Lin















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## 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     **Posdoc, 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     Categorical Torelli theorem for Veronese double cone. (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     Categorical Torelli theorem via equivariant Kuznetsov component of a cubic threefold. (with Xianyu Hu, Sebastian Casalaina-Martin, Shizhuo Zhang, Zheng Zhang) In preparation.
- 8     Kuznetsov's Fano threefold conjecture via Hochschild-Serre algebra (with Shizhuo Zhang), arXiv:2311.06450 [math.AG], 2024. Submitted.
- 7     Serre Algebra, Matrix factorization and categorical Torelli theorem for hypersurfaces (with Shizhuo Zhang), arXiv:2310.09927 [math.AG], 2024. Submitted.
- 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), to appear in Proceedings of the American Mathematical Society.
- 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), to appear in Journal of London Mathematical Society.
- 1     Noncommutative Hodge conjecture. J. Noncommut. Geom. 17 (2023), 1367–1389.

## Honors

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### 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)

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- 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

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- 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 seminars


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- Jan 22, 2024 - Jan 26, 2024 University of Genova, Italy.
- Dec 15, 2023 - Dec 20, 2023 University of Oslo, Norway.
- Sept 2023 - Dec 2023 Hausdorff Center for Mathematics, JTP program.
- July 26, 2023 - August 10, 2023 Sichuan University, China.
- July 10, 2023 - July 21, 2023 Tsinghua University, China.
- March 2022 - June 2022 Cornell University.
- March, 2021 Shanghaitech University, Shanghai.
- Sept 2019 Liverpool University, UK.
- May 2019 Sun Yat-Sen University, GuangZhou.
- University of Science and Technology in China, Hefei.


## Languages

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### Native

 Cantonese, Madarin Chinese

### Advanced

 English