YUEZHAO LI

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Einsteinweg 55, 2333 CC Leiden, Netherlands

Personality

Nationality Chinese
Date of birth 18.04.1996
Languages Chinese (Native), English (Fluent), German (Intermediate), Dutch (Beginner)

Education

Universiteit Leiden 2021 — 2025
PhD candidate in mathematics *Netherlands*

- Thesis: Spectral localisers and aperiodic topological phases in noncommutative geometry.
- Supervisor: Dr. Bram Mesland.

Georg-August-Universität Göttingen 2018 — 2021
Master in mathematics, with minor in physics *Germany*

- Thesis: Invariants for topological insulators coming from decompositions of coarse spaces.
- Thesis advisor: Prof. Dr. Ralf Meyer.

Peking University 2013 — 2018
Bachelor in physics, with minor in mathematics *China*

- Thesis: Phase transition and critical phenomena.
- Thesis advisor: Prof. Dr. Limei Xu.

Research

Research interest

- Noncommutative geometry of topological materials via groupoids and coarse geometry.
- Spectral truncation method in index pairing and bivariant K-theory.
- Unbounded Kasparov theory and its application to index theory.

Preprints

[1] Y. Li. *Robustness of topological phases on aperiodic lattices* (2025). arXiv: 2504.04817.
[2] Y. Li and B. Mesland. *The odd spectral localiser via asymptotic morphisms and quasi-projections* (2025). arXiv: 2506.17143.

In preparation

[3] Y. Li. *Fell bundles from dynamics of Delone sets* (2025). In preparation.
[4] Y. Li and G. C. Thiang. *Symmetry-breaking topological phases* (2025). In preparation.

Thesis

[5] Y. Li. *Spectral localisers and aperiodic topological phases in noncommutative geometry*. Doctoral thesis. Leiden University, 2025.
[6] Y. Li. *Invariants of topological insulators from decomposition of coarse spaces*. Master thesis. Georg-August-Universität Göttingen, 2021.

Teaching

- ◇ Fall 2025: Functional analysis, teaching assistant.
- ◇ Spring 2024: Operator algebras, teaching assistant.
- ◇ Fall 2024: Functional analysis, teaching assistant.
- ◇ Spring 2023: Differentiable manifolds II, teaching assistant.
- ◇ Fall 2023: Functional analysis, teaching assistant.
- ◇ Spring 2022: Differentiable manifolds II, teaching assistant.
- ◇ Fall 2021: Functional analysis, teaching assistant.

Conferences, workshops and seminars

Participation

- ◇ August 2025: NCG Day, Leiden, Netherlands.
  Talk: *On topological phases of aperiodic matter*.
- ◇ June 2025: C*-algebras, coarse geometry and physics, Greifswald, Germany.
  Talk: *The spectral localiser via E-theory*.
- ◇ April 2025: Applications of noncommutative geometry to gauge theories, field theories, and quantum space-time, Marseille, France.
  Short talk: *On robustness of topological phases*.
- ◇ October 2024: Noncommutativity behind the dunes, Delft, Netherlands.
- ◇ August 2024: OdenSeaG 2024, Odense, Denmark.
- ◇ May 2024: Leiden-Birmingham meeting, Leiden, Netherlands.
  Talk: *A hitchhiker's guide to topological insulators in noncommutative geometry*.
- ◇ April 2024: Group operator algebras and noncommutative geometry, Marseille, France.
- ◇ November 2023: Leiden-Luxembourg PhD Away Day, Leiden, Netherlands.
  Talk: *Noncommutative geometry in index theory and physics*.
- ◇ October 2023: Autumn school on large-scale geometry, Göttingen, Germany.
  Short talk: *Models of aperiodic topological insulators*.
- ◇ May 2023: Noncommutative Geometry and Operator Algebras, NSeaG 2023, Bonn, Germany.

Organisation

- ◇ January 2023: 5th Conference of Settat on Operator Algebras and Applications.
  Co-organiser, with Francesca Arici, Marcel de Jeu, Rachid El Harti and Dimitris Gerontogiannis.
- ◇ I am an organiser of several Leiden local NCG seminars and have taken notes for them.

Research visits

- ◇ July 2025: Leibniz Universität Hannover, Germany. Hosted by Dr. Eske Ewert.
  Talk: *The spectral localiser via E-theory*.
- ◇ January 2025: Universität Greifswald, Germany. Hosted by Prof. Dr. Matthias Ludewig.
  Talk: *Understanding strong and weak topological phases*.
- ◇ October 2024: BICMR, China. Hosted by Dr. Guo Chuan Thiang.
- ◇ September 2024: East China Normal University, China. Hosted by Prof. Dr. Hang Wang.
  Talk: Index theory of spectral truncations and the localisation algebra.
- ◇ September 2024: Sichuan University, China. Hosted by Dr. Xingni Jiang and Dr. Yunfeng Shi.