Xiangling Xu (许湘灵)

My Website
xu[dot]xiangling[at]inria[dot]fr
Google Scholar
Orcid

Research Interests: Quantum information, quantum foundations, operator algebras, noncommutative polynomials optimization

Education

2023 – now **Ph.D., Inria Saclay Île-de-France & École doctorale IP Paris**
Supervisor: Marc-Olivier Renou
Project: *Quantum correlations in causal structures: characterization and application*

2020 – 2023 **M.Sc. Mathematics, ETH Zürich**
Master Thesis: *Quantum Nonlocality in Bilocal Networks: An Operator Algebraic Perspective*
Semester Project: *Quantum BCOV Theory on Calabi-Yau Manifold*
CGPA: 5.69/6.00

2016 – 2020 **B.Sc. Mathematics and Physics, University of Toronto**
Projects: *Noncommutative Geometry in Gravity, Large-Scale Cosmological Structures, Optical Simulation, Biomechanical Simulation*
CGPA: 3.95/4.00

Publications and Preprints

1. I. Klep, C. Paddock, M.-O. Renou, S. Schmidt, L. Tendick, **X. Xu**, and Y. Zhao, *Quantitative quantum soundness for bipartite compiled bell games via the sequential npa hierarchy*, 2025. arXiv: 2507.17006 [quant-ph]. URL: https://arxiv.org/abs/2507.17006.
2. **X. Xu**, M.-O. Renou, and I. Klep, *Quantitative tsirelson's theorems via approximate schur's lemma and probabilistic stampfli's theorems*, 2025. arXiv: 2505.22309 [quant-ph]. URL: https://arxiv.org/abs/2505.22309.
3. M.-O. Renou, **X. Xu**, and L. T. Ligthart, *Two convergent npa-like hierarchies for the quantum bilocal scenario*, 2024. arXiv: 2210.09065 [quant-ph]. URL: https://arxiv.org/abs/2210.09065.
4. X. Luo, **X. Xu**, and X. Wang, "On the kinematic morphology around haloes," *Monthly Notices of the Royal Astronomical Society*, vol. 518, no. 4, pp. 6059–6064, 2023. DOI: https://doi.org/10.1093/mnras/stac3500.
5. **X. Xu**, "Quantum nonlocality in bilocal networks: An operator algebraic perspective," M.S. thesis, ETH Zurich, 2023. DOI: https://doi.org/10.3929/ethz-b-000613670.

Conferences, Seminars, Workshops

Contributed Talks

Oct 2025 *YQIS25*, Institute of Photonic Sciences (ICFO)
Jul 2025 *IWOTA 2025 Twente*, University of Twente
Jun 2025 *IQC-PCQT-Quantum Saclay Workshop*, Sorbonne University
Sep 2024 *Causalworlds*, Perimeter Institute for Theoretical Physics

Conferences, Seminars, Workshops (continued)

Nov 2023 — *Workshop Defi EQIP*, Inria Lyon
Oct 2023 — *Saclay Quantum Seminar*, Inria Saclay

Poster Sessions

Nov 2024 — *Colloquium GDR TeQ*, Sorbonne University
YQIS24, Inria de Paris

Other Participation

Mar 2025 — 828. WE-Heraeus-Seminar: Operator Theory and Polynomial Optimization in Quantum Information Theory, Bad Honnef
Sep 2024 — VQF Vienna Quantum Foundations Conference, IQOQI Vienna
Nov 2023 — POP23 Workshop on Future Trends in Polynomial OPtimization, LAAS-CNRS Toulouse

Collaborations

Group Visits

Sep 2024 — *Igor Klep*, University of Ljubljana
Two-week visit funded by Erasmus+ Mobility program

Jul 2024 — *William Slofstra*, Institute for Quantum Computing, University of Waterloo
Two-week visit

Dec 2023 — *David Gross*, University of Cologne
One-week visit

Organizations

Mar 2025 - Now — Coorganizer for *Seminars in Commutative and Noncommutative Polynomial Optimization for Quantum Theory*
Coordinating the Gaspard Monge Visiting Professor program for Igor Klep
Co-planning the seminar and the schedule for invited speakers

Mar 2025 — Coorganizer for *828. WE-Heraeus-Seminar at Bad Honnef*
Exploring Operator Theory and Polynomial Optimization in Quantum Information Theory with world-renowned experts
Coordinating with the organizers and inviting some of the speakers

Feb 2024 - Now — Coorganizer of *Project COMPUTE for Quantera*
Coordinating with the members
Making the project poster and website

Sep 2023 — Coorganizer for *Saclay Quantum Seminar on NPA hierarchy*
Planning and organizing the one-day program to bring all quantum groups at Saclay together

Awards and Scholarships

2024 — *Erasmus+ Mobility Program*, funds for visiting the University of Ljubljana
2020 — *McNab Undergraduate Scholarship*, University of Toronto
2017 - 2020 — *Dean's List Scholar*, University of Toronto
2018 — *The Class of 3To and Associates Scholarship in Mathematics and Physics*, University of Toronto

Awards and Scholarships (continued)

- *International Exchange Award*, University of Toronto
- *Bronze Medal*, 2017 University Physics Competition

2017
- *Eileen Doman Award*, University of Toronto
- *Summer Undergraduate Research Program*, Canadian Institute for Theoretical Astrophysics

2016
- *President's Scholar of Excellence Program*, University of Toronto

Teaching Experience

Lecture

Nov 2024
- *Recent trends in parallel, distributed, and quantum computing*
  Master 2 QDCS, Université Paris-Saclay

Teaching Assistance

2022-2023
- *Linear Algebra I & II*
  Department of Mathematics, ETH Zürich

2021-2022
- *Analysis I & II*
  Department of Mathematics, ETH Zürich

Skills

Languages
- Chinese (native), English (fluent), German (beginner)

Coding
- Python (Ncpol2sdpa), Matlab (Yalmip), Mathematica, C Language, LaTeX

Referees

Available on Request