

# Xiangling Xu (许湘灵)

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🌐 <https://scholar.google.com/citations?user=cI2Q634AAAAJ&hl=en>

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**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 Quanterra*  
                          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)

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- 2017  *International Exchange Award*, University of Toronto
- 2017  *Bronze Medal*, 2017 University Physics Competition
- 2017  *Eileen Doman Award*, University of Toronto
- 2017  *Summer Undergraduate Research Program*, Canadian Institute for Theoretical Astrophysics
- 2016  *President's Scholar of Excellence Program*, University of Toronto



## Teaching Experience

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### 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

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- Languages  Chinese (native), English (fluent), German (beginner)
- Coding  Python (Ncpol2sdpa), Matlab (Yalmip), Mathematica, C Language,  $\text{\LaTeX}$

## Referees

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Available on Request