CLÉMENT FORTIN

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EDUCATION

McGill University, Montréal, Canada *Sep. 2023 –*
PhD Physics
Supervisors: Prof. Tami Pereg-Barnea, Prof. Kai Wang

McGill University, Montréal, Canada *May 2022 – May 2023*
MSc Mathematics
Supervisor: Prof. Vojkan Jakšić

CY Institute for Advanced Studies, Cergy-Pontoise, France *May 2022 – Jul. 2022*
Visiting MSc Student at the AGM Laboratory
Supervisor: Prof. Armen Shirikyan

McGill University, Montréal, Canada *Sep. 2019 – May 2022*
BSc Joint Honours in Physics and Mathematics, First Class Honours

RESEARCH INTERESTS

- Topological band theory, non-Hermitian systems.
- Quantum photonics, many-body physics, disordered quantum systems.

PUBLICATIONS

Research

1. C. Fortin, K. Wang and T. Pereg-Barnea, *Unifying Anderson transitions and topological amplification in non-Hermitian chains*, preprint (2025). arXiv:2509.05842
2. C. Fortin, K. Wang and T. Pereg-Barnea, *Topological amplification of the bosonic Kitaev chain with nonuniform loss*, Phys. Rev. B **112**, 064208 (2025). arXiv:2412.09744
3. K.E.M. Church and C. Fortin, *Computer-assisted methods for analyzing periodic orbits in vibrating gravitational billiards*, Int. J. Bifurcation Chaos (2021). (Selected as a **Feature Article**)

Thesis

C. Fortin, *Central Limit Theorem and Large Deviations of the Maximum Likelihood Estimator.* Master's thesis. McGill University (2023).

PRESENTATIONS AND POSTER SESSIONS

- **International Workshop on Topological Photonics and Beyond 2025** in Tianjin, China: *Sep. 2025*
  Lyapunov exponents in disordered non-Hermitian models.
- **APS Global Physics Summit 2025** in Anaheim, United States: *Mar. 2025*
  Non-Hermitian topological phase transition of the bosonic Kitaev chain.
- **CONFETI 2025, INTRIQ** in Bromont, Canada: *Jan. 2025*
  Non-Hermitian topology in bosonic systems.
- **ICTP Conference on Advances in Topological Condensed Matter** in Trieste, Italy: *Nov. 2024*
  Non-Hermitian topological phase transition of the bosonic Kitaev chain.
- **Institute of Photonic Sciences (ICFO)** in the Quantum Optics Theory group in Barcelona, Spain: *Oct. 2024*
  Topological amplification in the bosonic Kitaev chain.
- **Fall 2024 INTRIQ meeting** in Bromont, Canada: *Oct. 2024*
  Non-Hermitian topological phase transition of the bosonic Kitaev chain.
- **MaQTech Annual Retreat** in Ottawa, Canada: *Jul. 2024*
  Non-Hermitian topology of the bosonic Kitaev chain.
- **PQS2D Annual Retreat** in Ottawa, Canada: *Jul. 2024*
  Non-Hermitian topology of the bosonic Kitaev chain.

AWARDS

- **Best Poster Award** at Topological Photonics and Beyond 2025, Nankai University: ¥1,000 CNY *Sep. 2025*
  Awarded by Nature Reviews Electrical Engineering
- **Chalk Rowles fellowship**: $11,120 CAD *Sep. 2025*
  McGill Faculty of Science fellowship awarded to two graduate students in physics.
- **Emily Ross Crawford scholarship**: $1,000 CAD *Sep. 2020*
  McGill Faculty of Science scholarship awarded to undergraduate candidates of high academic merit.

SCIENTIFIC ARTICLE REVIEWING

Journals: Physical Review Letters, Physical Review Research, Physical Review A.

UNDERGRADUATE RESEARCH EXPERIENCE

McGill University, Montréal, Canada *May 2021 – Aug. 2021*
Supervisor: Prof. Vojkan Jakšić
- Quantum information theory, parameter estimation of classical Markov chains.

McGill University, Montréal, Canada *Sep. 2020 – Dec. 2020*
Supervisor: Prof. Daryl Haggard
- Data analysis of the supermassive black hole Sgr. A* using the Bayesian Blocks algorithm.

McGill University, Montréal, Canada *May 2020 – Aug. 2020*
Supervisor: Prof. Jean-Philippe Lessard
- Computer-assisted methods for dynamical systems.

RELEVANT EXPERIENCE

Teaching Assistantships (McGill University)
Preparation of tutorial sessions. Substituting lectures. Holding office hours. Marking of assignments and examinations.
List of courses:
- PHYS 230 – Dynamics of Simple Systems *Sep. 2025 – Dec. 2025*
- PHYS 457 – Honours Quantum Mechanics II *Jan. 2025 – May 2025*
- PHYS 551 – Quantum Theory *Sep. 2024 – Dec. 2024*
- PHYS 457 – Honours Quantum Mechanics II *Jan. 2024 – May 2024*
- PHYS 352 – Honours Electromagnetic Waves *Sep. 2023 – Dec. 2023*
- MATH 141 – Calculus 2 *Jan. 2023 – May 2023*
- MATH 455 – Honours Analysis 4 *Jan. 2023 – May 2023*
- MATH 454 – Honours Analysis 3 *Sep. 2022 – Dec. 2022*

Teaching Assistantships (CY Institute for Advanced Studies)
Preparation of weekly lectures. Marking assignments. List of courses:
- Information-theoretic notions of entropy *May 2022 – Jul. 2022*
- Complex Analysis *May 2022 – Jul. 2022*
- Finite State Markov Chains *May 2022 – Jul. 2022*

SciLearn Peer Collaboration Teaching Assistant (McGill University) *Jan. 2023 – May 2023*
- Providing guidance to undergraduate students in mathematics.

Volunteer for the Physics & TSI Outreach group (McGill University) *Sep. 2023 –*
- Helping run outreach activities for the general public and prospective graduate students.

PROGRAMMING

Languages: Mathematica, Python, MATLAB, Bash, LaTeX.

LANGUAGES

Fluent: French, English. **Intermediate**: Spanish, German. **Beginner**: Serbo-Croatian.