

Educational Background

Fall 2024 **M.Sc. Physics**, *University of Victoria*, Victoria, Canada

- Thesis on quantum virtual cooling via quantum many-body systems of qubits.
- Scholarships: [NSERC CREATE Quantum Computing Program](#), [BCGS](#), [UVic FGS](#) (\$31,500)

2019 - 2023 **B.Sc. Honours Physics**, *McGill University*, Montréal, Canada (GPA: 3.84/4.0)

- Thesis on de Sitter space cosmology compactifications in quantum gravity. 
- Scholarships: 2 [NSERC USRAs](#) with [FRQNT](#), [SURA](#), [SURE](#), [BSA](#) (\$41,600)

Ongoing Experience

Present **Head of Quantum Software**, *BTQ*, Vancouver, Canada

- Leveraged topological data analysis **to strengthen post-quantum consensus protocols**, enhancing scalability and security in cryptographic frameworks.
- **Characterized autonomous network evolution in quantum key distribution (QKD) systems** by examining topological features at multiple scales, improving scalability in distributed quantum-ready infrastructures.

Collaborators: [Prof. Gavin Brennen](#), [Dr. Peter Rohde](#)

Present **Quantum Computing Research Scientist**, *University of Victoria*, Victoria, Canada

- Examined strongly correlated quantum phases **to reach lower-temperature measurement regimes**, improving stability and precision in quantum device operations.
- Applied holographic AdS/CFT frameworks **to streamline complex quantum algorithms** via path integral methods, enabling more efficient quantum computations.

Supervisor: [Prof. Kristan Jensen](#)



Selected Experience

2023 - 2024 **Quantum Neural Network Research Scientist**, *Fudan University*, Shanghai, China

- Developed topological quantum neural networks **to improve generalization in deep learning**, boosting the efficiency of advanced quantum algorithms.
- Employed topological quantum field theory **to better encode quantum information**, supporting scalable and high-fidelity operations in quantum computing.


Supervisors: [Prof. Antonino Marcianò](#), [Prof. Emanuele Zappala](#)

Summer 2022 **String Cosmology Research Scientist**, *McGill University*, Montréal, Canada

- **Increased cosmic string signal extraction efficiency by 1.7x** in noisy environments, enabling broader data sampling via wavelet/match-filter techniques.
- Created custom Python algorithms **to identify string profiles with 45% greater accuracy**, refining correlation-based analytics for astrophysical data. 
- Classified string stability **to constrain signal distributions in evolving spacetime**, improving predictive models for early-universe structures. 



Supervisor: [Prof. Robert Brandenberger](#)

Fall 2021 **Quantum Cosmology Research Scientist**, *McGill University*, Montréal, Canada

- Developed Python-based methods **to isolate fast radio burst signals from noise**, facilitating clearer analyses of black-white hole tunneling. 
- Coordinated with 10+ physicists **to optimize bandwidth calculations using HPC and bash scripts**, accelerating signal refinement and processing.
- Established spatial correlation approaches **to pinpoint burst locations in evolving spacetime**, enhancing positional accuracy in cosmological studies.

Supervisor: [Prof. Victoria Kaspi](#)

2019 - 2020 **Quantum Simulation Research Scientist**, *Vanier College*, Montréal, Canada

- Created innovative solutions **for non-linear PDE Hamilton-Jacobi equations**, generating predictive quantum trajectories in pilot-wave frameworks. 
- Implemented RNN-driven simulations **to model quantum trajectories in real-time**, adapting efficiently to arbitrary potential landscapes in Python. 

Supervisor: [Prof. Ivan Ivanov](#)