

# Devashish Tupkary

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[website](#)

## PRINCIPAL RESEARCH INTERESTS

Quantum Information and Quantum Cryptography, Quantum Key Distribution, Open Quantum Systems

## ACADEMIC BACKGROUND

*Ph.D. Physics (Quantum Information)* 2023-Present  
[Institute for Quantum Computing, University of Waterloo](#)  
Mike and Ophelia Laziridis Fellowship

*M.Sc. Physics (Quantum Information)* 2020-2022  
[Institute for Quantum Computing, University of Waterloo](#)

- Thesis Title : [Improved Keyrates for Quantum Key Distribution from two-way Classical Communication](#)
- Relevant Coursework : Quantum Information Processing, Implementation of Quantum Information Processing, Theory of Quantum Information, Applied Quantum Cryptography. CGPA: 96.25/100.

*B.Sc. (Research) Physics* 2016-2020  
[Indian Institute of Science](#)

- Graduated First Class with Distinction.
- Relevant Coursework : Quantum Mechanics 1, Quantum Mechanics 2, Quantum Computation, Quantum Measurements and Control, Quantum Information Theory, Information Theory, Theoretical Foundations of Cryptography. CGPA: 9.2/10, Physics GPA: 9.5/10.

## PUBLICATIONS, PRESENTATIONS, PREPRINTS

- *Security Proof for Variable-Length Quantum Key Distribution.* Devashish Tupkary, Norbert Lütkenhaus, [arXiv:2307.00576](#).
- *Postselection technique for optical prepare-and-measure QKD protocols.* Shlok Nahar, Devashish Tupkary, Yuming Zhao, Norbert Lütkenhaus, (Manuscript under Preparation).
  1. **Poster** : *Postselection technique for optical prepare-and-measure QKD protocols*, [QCRYPT 2023](#).
- *Using Cascade in Quantum Key Distribution.* Devashish Tupkary, Norbert Lütkenhaus, [arXiv:2311.01600](#).
  1. **Poster** : *Using Cascade in Quantum Key Distribution*, [QCRYPT 2023](#), [CGQC 2023](#), IQC Graduate Conference (Best Poster Award, Second Place)
- *Searching for Lindbladians obeying local conservation laws and showing thermalization.* Devashish Tupkary, Abhishek Dhar, Manas Kulkarni, and Archak Purkayastha, [Phys. Rev. A 107, 062216](#).
  1. **Invited Talk** : *Lindbladians obeying local conservation laws and showing thermalization.* [CQIQC Seminar](#), University of Toronto, 10th Feb 2023. [video link](#).

- *Fundamental Limitations in Lindblad Descriptions of systems weakly coupled to baths.* Devashish Tupkary, Archak Purkayastha, Abhishek Dhar, Manas Kulkarini. [Phys. Rev. A 105, 032208.](#)
  1. **Talk :** *Thermalization and non-equilibrium phenomena in open spin chains.* [Non-Hermitian Physics summer school](#), ICTS Bangalore, 20th March 2021. [video link.](#)
  2. **Poster :** *Fundamental pathologies in Lindblad descriptions of systems weakly coupled to baths.* [Quantum Thermodynamics Summer School, ETH Zurich.](#) [poster link.](#)
- *Improved Keyrates for Quantum Key Distribution from two-way classical communication.* Devashish Tupkary, Norbert Lütkenhaus. **Poster :** [QCrypt 2022](#), 30th August 2022. [CGQC 2023](#), 25th January 2023.
- *Towards a device-independent witness to tri-partite quantum resources.* Devashish Tupkary, Koon Tong Goh, Ignatius Primaatmaja, Charles Lim, Valerio Scarani.
  1. **Talk :** [Quantum Frontiers and Fundamentals](#), Raman Research Institute, Bangalore, 13th-18th January 2020.
  2. **Poster :** *Constraints on Correlations in the Triangle-network:* [Senior Undergraduate Research Conference](#) Azim Premji University, Bangalore, 6th-7th Dec 2019.

## SCHOLARSHIPS AND AWARDS

- [Mike and Ophelia Laziridis Fellowship](#) - Fellowship during graduate degree. Includes tuition and stipend. 2023-Presents
- [Long Term Visiting Student Program, International Centre for Theoretical Studies - Tata Institute of Fundamental Research](#) - Among a dozen students selected for a year-long funded research project. 2019
- [Madhava Mathematical Competition. Rank 6](#) - A nationwide mathematics competition for undergraduate students. Attended the Madhava Mathematics Competition camp at the Indian Statistical Institute, Bangalore. 2017
- [Vijyoshi Science Camp](#) - Attended the Vijyoshi Science Camp held for KVPY Fellows in the year 2015 and 2016.
- [Kishore Vaigyanik Protsahan Yojana \(KVPY-SA Fellowship\). Rank 39](#) - Fellowship during undergraduate degree 2016-2020
- [National Bal Shree Honour for Creative Scientific Innovation](#) - One of the three highest national honours for children by the Government of India.
- [IIT-JEE \(Advanced\) Rank 312](#) - A nationwide entrance exam for college admissions to the IITs, written by millions of candidates. 2016
- [Indian National Math Olympiad](#) - *Ranked below 70 nationally* 2016
- [Qualified INPhO](#) - Ranked in the top 35 of Indian National Physics Olympiad. Attended the International Physics Olympiad Orientation and Selection camp at Homi Bhabha Centre for Science Education, Mumbai. May 2016.
- [National Talent Search Examination](#) - Among 1000 students awarded the NTSE Scholarship nationally in each year. 2012-2016

## POSITIONS OF RESPONSIBILITY

- Co-Organizer of the QKD Security Proof Workshop at IQC Waterloo. 2022,2023
- Co-Organizer of the weekly IQC Student Seminar Series. 2023-Present