

Kabir Rohit Khanna

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Education

- Sep 2023 – Present **University of Massachusetts, Amherst** *PhD. (Physics)*
Supervisor: Prof. Romain Vasseur
- Oct 2022 - Jun 2023 **University of Oxford** *Wadham College, Oxford, UK*
MSc. Mathematical and Theoretical Physics
Coursework:
- Quantum Field Theory
 - Advanced Quantum Theory
 - Groups and Representations
 - Topological Quantum Theory
 - Introduction to Quantum Information
 - Quantum Matter 1
 - Non-equilibrium Statistical Physics
 - Quantum Matter 2
- Aug 2017 – May 2022 **Indian Institute of Technology Madras** *Chennai, Tamil Nadu*
Dual Degree - B.Tech in Engg. Design + M.Tech in Quantum Science & Technology
CGPA: 9.41/10 - Rank: 3/57
Relevant coursework: Grade Scale: 10
- General Relativity and Cosmology (10)
 - Q. Computation and Information (10)
 - Mathematical Physics 2 (9)
 - Experimental Techniques for Quantum Computation and Metrology (9)
 - Quantum Electronics and Lasers (9)
 - Stochastic Processes (10)
 - Optical Signal Processing and Quantum Communication (10)
- Aug 2019 - Dec 2019 **Technical University of Denmark (DTU)** *Lyngby, Denmark*
Exchange Student - Semester 5
Relevant coursework:
- Statistical Physics
 - Advanced Fluid Mechanics
 - Discrete Mathematics 2: Algebra
 - Signals and Systems in Discrete Time

Publications

- [1] [*In preparation*] **Kabir Khanna**, Abhishodh Prakash, and Siddharth Parameswaran, *Measurement as a Generator of Anomalies and Long-range Entanglement*
- [2] [*At the review stage in Physical Review A*] **Kabir Khanna** and Saurya Das, *GUP Corrections to the Jaynes-Cummings Model*, arXiv (2022). <https://doi.org/10.48550/arXiv.2209.10152>
- [3] [*At the review stage in Physical Review D*] Raghvendra Singh, **Kabir Khanna**, and Dawood Kothawala, *Decoherence due to Spacetime Curvature*, arXiv (2023). <https://doi.org/10.48550/arXiv.2302.09038>

Research Experience

- Oct 2022 - June 2023 **University of Oxford** *Oxford, UK* – **Master's Dissertation**
Supervisors - Prof. Siddharth Parameswaran and Dr. Abhishodh Prakash
Title: *Long Range Entanglement via Anomalies From Measurements*
- Aug 2021 - May 2022 **IIT Madras** *Chennai, India* – **Master's Thesis** — *Grade: 10/10*

Supervisor - Prof. Dawood Kothawala

Title: *Aspects of Quantum Information in Curved Spacetimes*

- *Part 1* - Decoherence due to Time Dilation in Curved Spacetimes.

- *Part 2* - A pedagogical introduction to the BH information paradox.

Jun 2021 - Sep 2022 **University of Lethbridge Remote – Research Internship**

Supervisor - Prof. Saurya Das

Topic: Effects of quantum gravity on the Jaynes Cummings model via GUP.

Jan 2021 - Jun 2021 **Robert Bosch GmbH Bangalore, India – R&D intern in Quantum Machine Learning**

Topic: Applying NISQ algorithms like QAOA to real use case problems to look for potential speedups and gauge the efficacy of quantum algorithms in the industry.

Jun 2019 - Jul 2019 **Wolfram Summer School Waltham, Massachusetts – Summer Research Student**

Supervisors - Christopher Wolfram and Jonathan Gorard

Topic: Aggregation Systems

- Contribution to the Wolfram Function Repository can be found [here](#).

- A short write-up can be found [here](#).

Awards and Recognitions

2023 Awarded the Graduate Fellowship worth \$5000 by UMass Amherst.

2022 OCSI Scholarship awarded by the Oxford Cambridge Society of India.

2021 Selected[§] for the DAAD WISE Research Scholarship.

2019 Selected to participate in a tuition-funded semester exchange at DTU, Denmark.

2019 Awarded partial funding to attend the Wolfram Summer School at Waltham, Massachusetts.

2018 Awarded the best volunteer at NSS IITM.

2017 Silver medal for obtaining a top 4000 rank in JEE Advanced 2017 out of 1.2 million students.

2015 Awarded the best outgoing student from school, DPS Secunderabad.

Teaching and Volunteering

Sept 2023 - Dec 2023 **Teaching Assistant for Phys 118 - Energy and Society** *UMass Amherst*

Jan 2022 - May 2022 **Teaching Assistant for PH3520 Quantum Physics** *IIT Madras, Chennai*

May 2018 - Jul 2018 **Mathematics and Physics Tutor** *Lamdon School, Leh*

- Tutored over 200 high school and middle school students of a remote town near the Himalayas in mathematics and physics.

Skills

Languages/Tools: Mathematica, L^AT_EX, Python, C, MATLAB

Quantum Computing Libraries: PennyLane, Qiskit, Braket, Cirq

[§]I Did not accept it since I had already begun working with Prof. Saurya Das when the DAAD WISE results were announced.