



# Kabir Rohit Khanna

+91-7032415828 | kabir.khanna@wadham.ox.ac.uk  

---

## Education

Oct 2022 – Present **University of Oxford** *Wadham College, Oxford, UK*  
(Expected Jun 2023) *MSc. Mathematical and Theoretical Physics*

### Coursework:

- |                              |  |
|------------------------------|--|
| - Quantum Field Theory       | - Introduction to Quantum Information <sup>†</sup> |
| - Advanced Quantum Theory    | - Quantum Matter 1 <sup>†</sup>                    |
| - Groups and Representations | - Random Matrix Theory <sup>†</sup>                |
| - Topological Quantum Theory | - Quantum Matter 2 <sup>†</sup>                    |

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) | - Quantum Electronics and Lasers (9)    |
| - Q. Computation and Information (10)   | - Stochastic Processes (10)             |
| - Mathematical Physics 2 (9)            | - Optical Signal Processing and Quantum |
| - Experimental Techniques for Quantum   | Communication (10)                      |
| Computation and Metrology (9)           |   |

Aug 2019 - Dec 2019 **Technical University of Denmark (DTU)** *Lyngby, Denmark*  
*Exchange Student - Semester 5*

### Relevant coursework:

- |                            |  |
|----------------------------|--|
| - Statistical Physics      | - Discrete Mathematics 2: Algebra      |
| - Advanced Fluid Mechanics | - Signals and Systems in Discrete Time |

---

## Publications

- [1] [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>
- [2] [In preparation] In collaboration with Raghvendra Singh and Dawood Kothawala, *Decoherence by Time Dilation in Curved Spacetimes*.

---

## Research Experience

Oct 2022 - Present **University of Oxford** *Oxford, UK* – **Master's Dissertation**  
**Supervisors** - Prof. Siddharth Parameswaran and Dr. Abhishodh Prakash  
**Title:** *Quantum State Preparation via Measurement-Based Techniques*

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.

---

<sup>†</sup>To be tentatively taken later in the course

- 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

- 2022 OCSI Scholarship awarded by the Oxford Cambridge Society of India.  
2021 Selected<sup>§</sup> 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.

---

## Tutoring and Volunteering

- Jun 2022 - Present **Freelance Math Tutor at Gauthmath**  
- Mathematics expert at Gauthmath, an app that helps students with homework problems.
- Jan 2022 - May 2022 **Teaching Assistant for PH3520 Quantum Physics IIT Madras, Chennai**
- Feb 2021 - May 2021 **Academic Mentor at Saathi IIT Madras, Chennai**  
- Chosen as a part of a Saathi initiative to academically guide three first year students through their initial virtual semesters.
- 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.
- July 2017 - May 2018 **Mathematics Educator at NSS IIT Madras, Chennai**  
- Volunteered to present mathematical concepts through props and presentations to marginalized middle school students in Chennai.

---

## Skills

**Languages/Tools:** Mathematica, L<sup>A</sup>T<sub>E</sub>X, Python, C, MATLAB

**Quantum Computing Libraries:** PennyLane, Qiskit, Braket, Cirq

---

<sup>§</sup>I Did not accept it since I had already begun working with Prof. Saurya Das when the DAAD WISE results were announced.