



AKASH KUMAR SINGH

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Education

Indian Institute of Science Education and Research (IISER), Tirupati **Aug. 2018 – Aug 2023**
BS-MS in Physics *Tirupati, Andhra Pradesh*

Defence Institute of Advanced Technology, Pune **Aug. 2023 – Present**
M.Tech in Quantum Computing *Pune, Maharashtra*

Relevant Coursework

- Quantum Mechanics 1 and 2
- Quantum Information
- Quantum Computing
- Optics and Photonics
- Digital system design using FPGA
- Linear Algebra
- Statistical Thermodynamics
- Electrodynamics
- Probability and Statistics
- Structures of Mathematics
- Data Science 1 and 2
- Operations Research
- Discrete Mathematics

Experience

MS Thesis at IISER Bhopal **May 2022 - June 2023**
-Supervised by Dr. Ankur Raina, Electrical Engineering and Computer Science, IISER Bhopal

- Encoder for CSS codes using Measurement Based Quantum Computing (Used ZX-Calculus)

Quantum Computing India (QCI) **May 2021 - Aug 2021**
Quantum Hardware Learning Circle

- Developed a understanding of different Quantum Hardware approaches and about Qiskit Metal.

Projects

Quantum N-Queens Solver | *Qiskit, Python* **Feb 2021 - April 2021**

- Worked on Quantum N-queen solver using Qiskit for fulfillment of Term paper requirement for Quantum Mechanics 2 course.
- Understood the concept behind the N-Queen problem and how Quantum computing can help to solve it faster with less time and resource complexity
- Implemented it on Qiskit for a 4x4 case.

Quantum Approach to Non-Linear Dynamics **Mar 2021 - April 2021**

- The aim of the project was to discuss a formalism that can make use of power of Universal Quantum Computers to simulate and solve classical non linear dynamics problem. This was done as a fulfillment of term paper requirement for Non-Linear Dynamics Course.
- The method of an arbitrary classical dynamical system extension to the quantum system was developed with example of Logistic Model.

Certifications

QKRISHI X IISER Tirupati: Course on Quantum Computing **May 2022 - July 2022**

iQuHack 2022 : participated in annual Hackathon organized by iQuise, MIT **January 2022**

Qubit X Qubit: Introduction to Quantum Computing Course sponsored by IBM **October 2020 - May 2021**

- * Developed a foundational understanding of Quantum Computing with topics including Introductory Linear Algebra, coding with Qiskit, Quantum Mechanics, Quantum Algorithms and applications.

Qworld Challenge: Global Quantum Programming Workshop 2020 **Nov 2020**

- * Completed Programming exercises in Qiskit using Qworld Introductory Tutorial Bronze.

Quantum winter Hackathon 2020 organized by BosonQ Psi and Quantum Computing India **Dec 2020**

- * Understood concepts of Computational fluid Dynamics and advantages of Quantum Computing to solve such problems.

Qiskit Global Summer School 2020 : Certificate of Quantum Excellence **July 2020 - Aug 2020**

Technical Skills

Languages: Python, Fortran, Java, HTML, Latex

Technologies/Frameworks: Qiskit, Github

Leadership / Extracurricular

QSoD-The Quantum Computing Society of DIAT, Pune

Founding Member

Sept 2023 – Present

DIAT, Pune

QUIISER-The Quantum Computing and Information Club of IISER Tirupati

Co-Founder

Jan 2021 – June 2023

IISER Tirupati

Institute Innovation Council(IIC)

Core Member

Aug 2020 – January 2022

IISER Tirupati

IIC Online Sessions: Promote Innovation, IPR, Entrepreneurship, and Start-ups

Participant

Apr 2020-May 2020

MHRD's, Innovation Cell

Innovation and Entrepreneurship in a Post-Covid World

Excellent Performance

Jun 2020-Aug 2020

RMSOEE, IIT Kharagpur