Abhinaba Pahari

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Summary

Dedicated Physics graduate student with a strong foundation in Quantum Computing, Quantum Information and Computational physics, currently working in quantum computing techniques in condensed matter systems, seeking to leverage expertise in quantum computing. Committed to advancing knowledge in quantum technologies through innovative research and collaboration.

Education

Indian Institute of Technology, Kharagpur, India July 2023 – May 2025
Master of Science in Physics

- GPA: 9.46/10.0 [Till Date]
- **Relevant Coursework:** Quantum Computing, Quantum Information Processing, Quantum Optics, Condensed Matter Physics, Atomic and Molecular Physics, Mathematical Physics etc.

Jadavpur University, Kolkata, India Jan 2021 – June 2023
Bachelor of Science in Physics

- GPA: 9.31/10.0
- **Relevant Coursework:** Quantum Mechanics, Solid State Physics, Condensed Matter Physics, Physics using Computer Simulation, Nuclear and Particle Physics, Nonlinear Dynamics etc.

Experience

Summer Intern May 2024 – Aug 2024
Atomic, Molecular and Quantum Information Lab, IIT Kharagpur

- Studied various theoretical aspects of Continuous Variable Quantum Information, especially entanglement in two mode photon added squeezed states.
- Studied about application of Wigner Representation and how it simplifies the description of entanglement in various systems.

Skills

Core Skills: Quantum Computing | Quantum Information | Quantum Circuit Design using Qiskit | Quantum Algorithms | Problem Solving in Physics
Programming Language: Python | FORTRAN | C | C++
Data manipulation and Analysis: Numpy | Matplotlib | Pandas | GnuPlot | SciKit learn | Scipy
Soft Skills : Communication Skills | Organizational Skills | Decision making | Team building

Projects

Hybrid Quantum Classical Algorithm for solving Fermi Hubbard Model in NISQ devices using Circuit Approach | Masters Thesis Project *Ongoing*

- Simulation of Fermi Hubbard model using Quantum Circuit approach integrated with Classical algorithms.
- Tools Used: Python, QisKit, C++, PennyLane, TensorFlow

Wigner Representation in Quantum Optics and its Application in Understanding Two Mode Entanglement *Completed Aug 2024*

- Studied various theoretical aspects of Continuous Variable Quantum Information, especially entanglement in two mode photon added squeezed states.
- Tools Used: Mathematics, Python

Quantum Description of Electron Diffraction in Single Slit | Term Project *Completed Nov 2023*

- Term project on exact solution of Schrodinger's equation for incident plane electron wave on single slit
- Tools Used: Mathematics, Python

Study on High Energy Interactions Using Nuclear Emulsion | Bachelors Project (Completed) *Completed May 2023*

- Studied the multiplicity distributions of different tracks in nuclear emulsion and analyzed the pseudorapidity distribution to predict the interaction process using FORTRAN 90.
- Tools Used: FORTRAN 90, Gnuplot

IoT based Air Quality Monitoring System | Innovation Lab Project *Ongoing*

- Arduino based system integrated with various sensors to monitor real time air quality and upload the data in a web server for analysis and prediction.
- Tools Used: Arduino UNO, NodeMCU

Awards and Achievements

- Secured All India Rank 66 in CSIR NET Physical Science 2024 with Junior Fellowship Award.
- Secured All India Rank 12 in IIT JAM Physics 2023 with a score 65.67 out of 100.
- Secured All India Rank 208 in GATE Physics 2024 with GATE score of 637.
- Recipient of Academic Excellence Award from West Bengal Council of Higher Secondary Education, Government of West Bengal.
- Recipient of INSPIRE Scholarship from the Department of Science and Technology, Government of India (Since 2020).
- Received JBNSTS Junior Scholarship Award (batch of 2018).
- National Topper in National Graduate Physics Examination 2023.

Languages

- English (Professional working proficiency)
- Bengali (Native or bilingual proficiency)
- Hindi (Limited working proficiency)