Ashlin V Thomas

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Ashlin-V-Thomas • AshlinVThomas • Birthdate: 30 March 2004

About Me

I am an Integrated MSc. student at the National Institute of Science Education and Research(NISER) Bhubaneswar, India. Currently, I am pursuing a major degree in physics and a minor degree in mathematics; and have completed five semesters of the course.
My curiosity towards physics was sparked by the mathematical descriptions of natural phenomena. This curiosity grew into a deep respect for the various mathematical methods used to understand the world around us, guiding me on a path to becoming an aspiring theoretical physicist with a keen interest in unraveling the mysteries of the universe through mathematics.

Education

National Institute of Science Education and Research — **Bhubaneswar**
Integrated MSc. (Physics), CGPA: 9.75 — *2022–Present*

Citadel Residential School — **Kerala**
AISSCE (CBSE Class 12), 99.2% — *2021–2022*
Centum in Physics & Chemistry

Citadel Residential School — **Kerala**
AISSE (CBSE Class 10), 98.4% — *2019–2020*

Research Experience

Raman Research Institute — **Bangalore**
Phase Space Quantization in Open Quantum Systems — *Summer 2024*
- Conducted research with Dr. Shovan Dutta on semi-classical quantization in open quantum systems

IISER Pune — **Pune**
Isoperimetric Problems — *Winter 2023*
- Worked with Dr. Anisa Chorwadwala on shape optimization
- Explored mathematical techniques to solve isoperimetric problems

School of Mathematical Sciences, NISER — **Bhubaneswar**
Planar Differential Equations — *Summer 2023*
- Worked with Dr. Anupam Pal Choudhury on planar systems
- Studied analytical solutions and graphical analysis of systems of differential equations

School of Physical Sciences, NISER — **Bhubaneswar**
Nonlinear Dynamics and Chaos Theory — *Summer 2023*
- Worked with Dr. Sayantani Bhattacharyya
- Explored nonlinear dynamics and chaos in physical systems

Academic Skills & Coursework

Technical Skills: Python (95%), Mathematica (90%), LaTeX(90%), Linux (80%)

Physics Coursework: Classical Mechanics, Quantum Mechanics I & II, Condensed Matter Physics, Statistical Mechanics, Electromagnetism I & II, Nonlinear Dynamics, Mathematical Physics I & II, Special Theory of Relativity

Mathematics Coursework: Linear Algebra, Group Theory, Real Analysis, Metric Spaces

Language Proficiency: English (Professional), Malayalam (Native), Hindi (80%)

Awards & Achievements

- Achieved the highest CGPA in the batch of 2022 at the end of the academic year 2022-23
- Achieved the highest CGPA among all Int. MSc students in the odd semester of 2023-24
- Achieved the highest CGPA among all Int. MSc students in the even semester of 2023-24
- Recipient of Innovation in Science Pursuit for Inspired Research (INSPIRE) Scholarship issued by Department of Science and Technology - Government of India
- District topper in All India Senior School Certificate Examination (AISSCE) 2022 with centum in physics and chemistry
- Received awards from Central Travancore Sahodaya Complex for subject topper in Physics, Chemistry and Mathematics in class 12 examination
- Secured third position at the Science Expo 2019 held at the Department of Physics, Catholicate College, Pathanamthitta

Research Interests

Physics: Quantum many body physics, Condensed matter theory, Quantum information, Open quantum systems, Correlated quantum systems

Mathematics: Spectral theory, Differential equations, Operator algebras

Interdisciplinary: Machine learning in physics, Quantum computation

Key Contributions

Talk: Harmonizing Classical & Quantum Mechanics :

- Presented a semi-classical approach to quantum systems using the Wigner-Weyl transform, bridging classical and quantum mechanics.
- YouTube Video
- Presentation Slides

Project: Nonlinear Dynamics :

- Analyzed population interaction models using nonlinear dynamics, focusing on fixed points, stability, and bifurcations.
- Project Report

Project: Google PageRank Algorithm :

- Implemented and analyzed the PageRank algorithm using stochastic matrices and eigenvector analysis to rank web pages.
- Project Report
- Presentation Slides