

# PREETHI G

5th Year Integrated MS - Physics Student  
Indian Institute of Science Education and Research, Thiruvananthapuram  
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## EDUCATION

### Indian Institute of Science Education and Research, Thiruvananthapuram

Integrated BS-MS in Physics with minor in Mathematics

Expected Graduate: 2024

GPA: 3.46 (CGPA:8.34)  
(As of 8th Semester)

- Relevant Coursework : Theory of Open Quantum Systems — Quantum Mechanics I & II — Condensed Matter Theory — Adv. Condensed Matter Theory — Quantum Transport — Quantum Field Theory — Statistical Physics — General Relativity & Cosmology — Complex Analysis — Group Theory — Linear Algebra — Topology

### The Ashok Leyland School, Hosur

Central Board of Secondary Education - Class 12

2019

Percentage: 94

### The Ashok Leyland School, Hosur

Central Board of Secondary Education - Class 10

2017

CGPA: 10

## RESEARCH INTERESTS

Quantum Many Body Dynamics, Open Quantum Systems, Quantum Science and Information, quantum chaos, quantum nanophysics, strongly correlated quantum systems, Condensed Matter Theory, Quantum Magnetism, Statistical Physics, Complex Networks, Topological Effects in Quantum Mechanics.

## RESEARCH EXPERIENCE

### School of Physics, IISER Thiruvananthapuram

Master Thesis under Prof. Anil Shaji

Aug 2023 - Present

- Exploring coherent transport properties of spin qubits in Quantum Dots
- Studying the Anderson Impurity Model Hamiltonian to observe quantum effects in Quantum Dots
- Currently using qutip package of python, and High Performance Computing

### Raman Research Institute, Bengaluru

Visiting Student under Dr. Shovan Dutta

May 2023 - Present

- Studying Frustrated Quantum Magnetism on Complex Networks
- Explored the field of Network Topology, and effect of topology in determining the ground state properties of a system of spins sitting on the nodes of a general and complex networks.
- Using Mathematica, Julia and high-performance computing for computation; got familiar with iTensor packages in Julia and with MPS-MPO algorithms.
- Manuscript under preparation

### School of Physics, IISER Thiruvananthapuram

Internship under Prof. Anil Shaji

May 2021- Sep 2022

- Studied the Transport through Quantum Dots, via Master Equation Approach
- Explored the parameters affecting the semi-classical transport of electrons in Single Quantum Dots
- Extended the study, by producing results for a double-dot system.

## COMPUTATIONAL SKILLS

- Python (Familiar with qutip and qiskit packages)
- Julia
- Wolfram Mathematica
- MATLAB

## AWARDS AND ACCOMPLISHMENTS

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|--|------|
| • Selected for the Visiting Student Program in Raman Research Institute, Bangalore       | 2023 |
| • Qualified JEE Advanced as one among 38705 candidates out of 161319 candidates appeared | 2019 |
| • Awarded as the 'Best Outgoing Student' from The Ashok Leyland School, Hosur            | 2019 |
| • International Award for Young People - The Bronze Standard                             | 2017 |
| • National Level Runner up in Titan Genius Kidz National Arithmetic Championship - 5     | 2014 |

## WORKSHOPS AND COURSES

- |  |      |
|--|------|
| <b>Qiskit Global Summer School</b>   IBM   | 2023 |
| <ul style="list-style-type: none"><li>• Acquired a foundational understanding of Quantum Information and Computation</li><li>• Solved a number of computational problems in the lab sessions</li></ul>   |      |
| <b>Workshop on Quantum Materials</b>   IISER TVM   | 2023 |
| <ul style="list-style-type: none"><li>• Helped me to understand the synergy between theoretical ideas and experimental methods for identifying quantum entanglement in quantum materials</li><li>• Got to know the challenges faced in practical applications of quantum entanglement theories, from an experimental background perspective</li></ul>  |      |
| <b>Advanced course on Special Theory of Relativity</b>   Online course by Prof. HC Verma   | 2020 |
| <ul style="list-style-type: none"><li>• Developed a deeper understanding of the Special Theory of Relativity</li><li>• Got to work on advanced problems in the course involving Galilean Transformations, Lorentz transformations and kinematical applications, Mass –Energy conversion, Transformation of Magnetic and electric fields, E-B fields of a moving charge, Minkowski diagrams</li></ul> |      |

## POSITIONS OF RESPONSIBILITIES

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|---|--------------|
| <b>Illustrator &amp; Designer</b>   <i>Sopanam - The IISER Annual Magazine Club</i>   | 2020-2022    |
| <ul style="list-style-type: none"><li>• Illustrated various articles and poems for the magazine Sopanam 2020</li><li>• Submitted various artworks for the Art Section and for an Exhibit</li><li>• Served as the chief Designer of the magazine, Sopanam 2022</li></ul>   |              |
| <b>Member of Decision Making Council</b>   <i>Media Society, IISER TVM</i>  | 2020-2022    |
| <ul style="list-style-type: none"><li>• Collectively Organized various workshops on photography</li><li>• Lead the event Clicktember in 2021</li><li>• Handled Social Media Content creation along with a team</li></ul>  |              |
| <b>Core Committee Member</b>   <i>Table Tennis Club, IISER TVM</i>  | 2021-Present |
| <ul style="list-style-type: none"><li>• Captained the team at IISM'22 (The Inter IISER Sports Meet)</li><li>• Organized Open Tournaments within college premises</li></ul>  |              |
| <b>Club Head</b>   <i>Sopanam - The IISER Annual Magazine Club</i>  | 2023-Present |
| <ul style="list-style-type: none"><li>• Organized Halloween celebrations at college premises</li><li>• Heading the team for Sopanam 2023 magazine publication</li><li>• Constantly engaged in club meetings, and maintaining regular interactions with the team</li></ul> |              |

## MISCELLANEOUS SKILLS AND INTEREST

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|-----------------------|--|
| <b>Markup</b>         | Latex   HTML   |
| <b>Design</b>         | Adobe Indesign   Adobe Illustrator   Adobe Photoshop |
| <b>Sports</b>         | Table Tennis   Volleyball                            |
| <b>Other Interest</b> | Violin   Travel   Photography   Painting             |