

# PREETHI G

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## EDUCATION

<b>University of Luxembourg, Luxembourg</b> Graduate Researcher, Physics	2025-Present
<b>Indian Institute of Science Education and Research, Thiruvananthapuram</b> Integrated BS-MS with major in Physics and minor in Mathematics	2024
<b>The Ashok Leyland School, Hosur</b> Central Board of Secondary Education - Class 12	2019
<b>The Ashok Leyland School, Hosur</b> Central Board of Secondary Education - Class 10	2017

## 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

<b>International Centre for Theoretical Sciences (ICTS), Bangalore</b> Visiting student under <u>Prof. Manas Kulkarni</u> <ul style="list-style-type: none"><li>Explored the evolution of entanglement entropy under continuous monitorings of a fermionic chain.</li></ul>	Jun 2024 - Jan 2025
<b>School of Physics, IISER Thiruvananthapuram</b> Master Thesis under <u>Prof. Anil Shaji</u> <ul style="list-style-type: none"><li>Exploring classical and quantum regimes to study electron transport in quantum dot arrays, in an attempt to discern the boundary between classical and quantum behaviour in quantum dots</li><li>Studying the Anderson Impurity Model &amp; Master equations to observe quantum effects in Quantum Dots</li><li>Currently using qutip package of python, and High Performance Computing</li></ul>	Aug 2023 - Present
<b>Raman Research Institute, Bengaluru</b> Visiting Student under <u>Dr. Shovan Dutta</u> <ul style="list-style-type: none"><li>Studying Frustrated Quantum Magnetism on Complex Networks</li><li>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.</li><li>Using Mathematica, Julia and high-performance computing for computation; got familiar with iTensor packages in Julia and with MPS-MPO algorithms.</li></ul>	May 2023 - Mar 2024
<b>School of Physics, IISER Thiruvananthapuram</b> Internship under <u>Prof. Anil Shaji</u> <ul style="list-style-type: none"><li>Studied the Transport through Quantum Dots, via Master Equation Approach</li><li>Explored the parameters affecting the semi-classical transport of electrons in Single Quantum Dots</li><li>Extended the study, by producing results for a double-dot system.</li></ul>	May 2021- Sep 2022

## PUBLICATIONS

**Preethi, G., & Dutta, S.** (2024). Frustrated Quantum Magnetism on Complex Networks: What Sets the Total Spin (Version 2). arXiv. <https://doi.org/10.48550/ARXIV.2403.09116>

Ganguly, K., **Gopalakrishnan, P.**, Naik, A., Agarwalla, B. K., & Kulkarni, M. (2025). Quantum trajectories and Page-curve entanglement dynamics (Version 1). arXiv. <https://doi.org/10.48550/ARXIV.2501.12110>

## POSTER PRESENTATIONS

### Frustrated Quantum Magnetism on Complex Networks

Preethi G and Shovan Dutta

Highly Frustrated Magnetism 2024, Chennai  
IIT Madras | Jan 7-13th, 2024

Stability of Quantum Matter in and out of Equilibrium at various scales  
ICTS, Bangalore | Jan 15-26th, 2024

## COMPUTATIONAL SKILLS

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

AWARDS AND ACCOMPLISHMENTS

- Selected for a Visiting Students Program in ICTS, Bangalore2024
- Quantum Excellence Badge from IBM2023
- Offered a Visiting Student Program in Raman Research Institute, Bangalore2023
- Qualified JEE Advanced as one among 38705 candidates out of 161319 candidates appeared2019
- Awarded as the 'Best Outgoing Student' from The Ashok Leyland School, Hosur2019
- International Award for Young People - The Bronze Standard2017
- National Level Runner up in Titan Genius Kidz National Arithmetic Championship - 52014

Awards & Accomplishments in Extra Curricular Activities

- Sports Award Citation honoured by IISER TVM2024
- Secured Gold in Inter-IISER Sports Meet (IISM '23) table tennis championship2023
- Won Silver in mixed doubles and individual event in IISM'23 Table tennis knockouts.2023

WORKSHOPS AND COURSES

Bangalore School of Statistical Physics XV| RRI Bangalore2024

- I gained insights into advanced topics in statistical physics, including stochastic thermodynamics, percolation theory, machine learning, and quantum entanglement.

Stability of Quantum Matter in and out of Equilibrium at various scales | ICTS Bangalore2024

- The two-week conference on extensive research particularly in the field of Quantum Matter, helped me get introduced to ongoing research in open-quantum systems, many body physics and quantum transport.
- Got heavily inspired, by the works of leading researchers all over the world.

International Conference on Highly Frustrated Magnetism 2024 | IIT Madras2024

- The one-week conference helped me gain a deep insight to new research studies around the world in frustrated magnetism, especially with spin liquids and topological factors in magnetism.
- Got to interact with leading experts in the field, getting new ideas and inspiration from their astonishing works.

Qiskit Global Summer School | IBM2023

- Acquired a foundational understanding of Quantum Information and Computation
- Solved a number of computational problems in the lab sessions

Workshop on Quantum Materials| IISER TVM2023

- Helped me to understand the synergy between theoretical ideas and experimental methods for identifying quantum entanglement in quantum materials
- Got to know the challenges faced in practical applications of quantum entanglement theories, from an experimental background perspective

POSITIONS OF RESPONSIBILITES

Illustrator & Designer | Sopanam - The IISER Annual Magazine Club2020-2022

- Illustrated various articles and poems for the magazine Sopanam 2020
- Submitted various artworks for the Art Section and for an Exhibit
- Served as the chief Designer of the magazine, Sopanam 2022

Member of Decision Making Council | Media Society, IISER TVM2020-2022

- Collectively Organized various workshops on photography
- Lead the event Clicktember in 2021
- Handled Social Media Content creation along with a team

Core Committee Member | Table Tennis Club, IISER TVM2021-2024

- Led the women's table tennis team to victory, by securing gold in IISM'23.
- Captained the team at IISM'22 (The Inter IISER Sports Meet)
- Organized Open Tournaments within college premises

Club Head | Sopanam - The IISER Annual Magazine Club2023-2024

- Organized Halloween celebrations at college premises
- Heading the team for Sopanam 2023 magazine publication
- Constantly engaged in club meetings, and maintaining regular interactions with the team

MISCELLANEOUS SKILLS AND INTEREST

Markup	Latex   HTML
Design	Adobe Indesign   Adobe Illustrator   Adobe Photoshop   Adobe After Effects
Sports	Table Tennis   Volleyball
Other Interest	Violin   Travel   Photography   Painting