Sutirtha Paul

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Website: paulsphys.github.io/

My current interests are in hard condensed matter physics, how fundamental questions can arise with increasing complexity in systems and new laws and generalisations are required to explain them. More specifically I am interested in the physics of strongly correlated electron systems and right now I am focussing on understanding the effects of interactions in low dimensions.

Education

University of Tennessee — Knoxville, Tennessee
Graduate Student — August, 2023 -
Advisor: Adrian Del Maestro

Ramakrishna Mission Vivekananda Education and Research Institute — Belur, West Bengal, India
M.Sc. in Physics, CGPA: 9.38/10.00 — September, 2021–June, 2023
Elective Papers: Advanced Condensed Matter Physics,
Advanced Quantum Field Theory (audit)

Asutosh College, University of Calcutta — Kolkata, West Bengal, India
B.Sc. (Honours) in Physics, CGPA: 8.060/10.00 — July, 2018–August, 2021
Elective Papers: Advanced Statistical Mechanics, Advanced Classical Dynamics,
Nuclear and Particle physics, Laser and Fibre optics

Research Experience

Master's thesis: Transport through quantum dot(s) — 2022-2023
Supervisor: Dr. S. Tarat, Professor, Dept. of Physics, RKMVERI

- Studying the various approaches used to calculate current through a quantum dot or dots

Monte-Carlo simulation of 2D Ising model — 2021
Final project for Phy 415: Computer Fundamentals and Computational Physics
Course Instructor: Dr. Sanjoy Biswas, Professor, Dept. of Physics, RKMVERI

- Implemented the metropolis algorithm to simulate the Ising model on a 2D lattice.Report: Here
- Used it to study the properties of spin systems under an external magnetic field, replicating some results of 10.1103/PhysRevB.42.856

Computational Investigation of the Allen-Cahn and Cahn-Hilliard equation — 2020-21
Supervisor: Dr. A.K. Bhattacharjee, Professor, Dept. of Physics, Asutosh College, University of Calcutta

- Developed code solving the nonlinear Allen-Cahn and Cahn-Hilliard equations using spectral methods
- Demonstrated increased accuracy using small lattice sizes. Report: Here Codes: Link to github repository

Presentations

- **Localization and Tunability of ^{4}He Inside Pre-plated Nanopores** *Talk*, 16-21 March, APS Global Physics Summit, 2025

Seminars/Workshops attended

- *Quantum Information Science Summer School*, 15-26 July, 2024, Oak Ridge National Laboratory, Oak Ridge, TN
- *ALCF INCITE GPU Hackathon*, 21-23 May, 2024, Argonne National Laboratory, Lemont, IL
- Workshop on *"Ergodicity and it's breaking: A view from Many Body, QFT and Holography"*, 16-18 March, 2023, RKMVERI
- *Lectures on Conformal Field Theory in D>2 dimensions* by Dr. Ritam Sinha, RKMVERI

Scholarships and Awards

- Awarded UGC-JRF & LS in Joint CSIR-UGC NET — June, 2023
- Qualified Graduate Aptitiude Test in Engineering (GATE) in Physics — February, 2023
- 1st prize in Quiz at the Delight Physics Lab, Kolkata, India — 2020
- Times Spark Scholarship — 2018
  Awarded by Times of India

- 1st prize in Model Presentation (Senior level), Science Fair organised by Institute of Engineering and Management 2017
- Jit Paul Award — 2017
  Awarded to a student of class XI who has demonstrated over the last three years in his action, behaviour and work, human values enshrined in the Indian cultural tradition.

Extracurricular Activities

- Built an auto-levelling quadcopter using an Arduino Uno as a flight controller after taking the master's course Design and Fabrication laboratory.
- Edited the November 2022 issue of the Physics departmental magazine 'Unmesh'
- Speaker in a group presentation contest at the Delight Physics Lab, Kolkata, India and gave a presentation titled "Arrow of Time" based on unidirectional flow of time in February 2020
- Participated in Central Board of State Education (CBSE), State Level Science Exhibition in 2014 and 2015

Skills

- **Computational skills:** Python, Julia, Fortran95, C++, Latex, Gnuplot, Origin

Languages

- Fluent in English, Bengali and Hindi