Sayonee Ray

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Objective

I am a researcher in computational physics, with expertise in machine learning and deep learning techniques. I excel in communicating and working with teams from different backgrounds, driving collaborations faster.

Experience

POST-DOCTORAL FELLOW | 1QBIT AND UNIVERSITY OF WATERLOO | 4TH JANUARY 2021 – 31ST DECEMBER 2021

· Principal postdoctoral researcher in a joint academic-industry position, working in quantum computation and machine learning algorithms.

POST-DOCTORAL FELLOW | UNIVERSITY OF NEW MEXICO, UNITED STATES | 2ND OCTOBER 2017 – 31ST DECEMBER 2020

· Developed novel theory and scientific codes on simulation techniques in quantum information theory and many-body physics; publications in internationally acclaimed journals; presented talks at conferences and invited seminars at national laboratories, industries and universities; developed and worked in international collaborations with Australia, Japan, United Kingdom, and the United States.

Education

PH.D. | 7TH SEPTEMBER 2017 | INDIAN INSTITUTE OF SCIENCE, BANGALORE, INDIA

· Field: Theoretical and computational physics
· Sub-field: Condensed matter and solid-state physics
· Dissertation topic: Topology and quantum phases in low-dimensional fermionic systems. link

M.S. | 10TH OCTOBER 2012 | INDIAN INSTITUTE OF SCIENCE, BANGALORE, INDIA

· Major: Physics
· Related coursework: Mathematics, Mathematical physics, Statistical physics.

B.SC. | JULY 2010 | PRESIDENCY COLLEGE, UNIVERSITY OF CALCUTTA, INDIA

· Major: Physics Hons
· Division: 1st class. University topper.

Skills & Abilities

ACCOMPLISHMENTS

· Contributed to grant proposal, received Google Focus award 2018.
· National Science Foundation post-doctoral fellowship in theoretical physics, 2017-2020.
· Graduate student fellowship awarded by the Council of Scientific and Industrial Research, Govt. of India from 2012 – 2017. All India Rank: 36

- Undergraduate fellowship named 'Innovation in Science Pursuit for Inspired Research (INSPIRE)' fellowship awarded by the Govt. of India, 2008 – 2010.

LEADERSHIP AND COMMUNITY ACTIVITY
- Program committee for the Southwest Quantum Information and Technology (SQuInT) workshop 2020.
- Chair and discussion leader at the Quantum Technologies session, Gordon Conference, Massachusetts, 2018.
- Departmental seminar organizer at University of New Mexico, 2018-2020.
- Journal referee for scientific journals like Optics Express.

TEACHING
- Lecturer and tutor of advanced graduate courses. Link available here: course website

PROGRAMMING
Core: Python, Julia, MATLAB, Mathematica.
Additional: SQL for data science related projects.

PUBLICATIONS
- *Simulating a measurement-induced phase transition for trapped ion,* arxiv: 2106.03769 (2021) https://arxiv.org/abs/2106.03769
- *Accessing different topological classes and types of Majorana edge states in 1D p-wave superconductors using perturbations*, arXiv:2003.08299 (2020) link
- *Photo-induced SU(3) topological material of spinless fermions*, Phys. Rev. B 95, 165425 (2017). link
- *Boosted one-dimensional superfluids on a lattice*, Annals of Physics, Vol. 384, 71-84 (2017) link
- *Complexity of sampling bosonic random walkers on a lattice in the presence of weak interactions* (manuscript in preparation).
- *Efficient simulation of robust observables in noisy quantum systems* (manuscript in preparation).
- *Disorder-free localization and error propagation in the Kitaev honeycomb model* (manuscript in preparation).