

Curriculum Vitae

Dr. Sudipto Singha Roy

Date of Birth: 26 May 1989

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Google Scholar: <https://scholar.google.com/citations?user=H6pl5OQAAAAJ&hl=en>

Professional Appointments

Feb 2024 – Present

Assistant Professor, Department of Physics

Indian Institute of Technology (Indian School of Mines), Dhanbad, India

Feb 2022 – Feb 2024

Postdoctoral Fellow with Prof. Philipp Hauke

INO-CNR BEC Center, Department of Physics, University of Trento, Italy

Nov 2018 – Jan 2022

Postdoctoral Fellow with Prof. Germán Sierra

Instituto de Física Teórica (IFT), Universidad Autónoma de Madrid, CSIC, Spain
(Severo Ochoa Program)

Sept 2017 – Aug 2018

Postdoctoral Fellow with Prof. Joonwoo Bae

Department of Applied Mathematics, Hanyang University (ERICA), South Korea

Education

Ph.D. (2012–2017)

Quantum Information Theory

Harish-Chandra Research Institute, Prayagraj, India

Advisor: Prof. Ujjwal Sen

M.Sc. in Physics (2010–2012)

Indian Institute of Technology Bombay, Mumbai, India

CGPA: 8.6/10

B.Sc. (Hons) in Physics (2007–2010)

Ramakrishna Mission Vidyamandira, Howrah, University of Calcutta, India

First Class (72.25%)

Awards and Achievements

- INSPIRE Scholarship (2007–2012), Government of India
- Merit-cum-Means Scholarship, IIT Bombay (2012)
- Infosys Prize, Harish-Chandra Research Institute (2017)
- Severo Ochoa Postdoctoral Fellowship
- IOP Trusted Reviewer Status
- Faculty Research Scheme (FRS) Grant, IIT (ISM) Dhanbad (2024)
- Advanced Research Grant (ARG), ANRF (Co-PI, 2025)
- Prime Minister Early Career Research Grant (PMECRG), ANRF (PI, 2026)

Research Interests

- Quantum Information Theory
- Entanglement in multipartite quantum systems
- Quantum many-body systems and thermalization
- Quantum chaos and non-equilibrium dynamics
- Tensor network methods (DMRG, MPS)
- Open quantum systems and non-Markovian dynamics
- Non-Hermitian quantum systems

Research Specialization

Characterization of entanglement in pure and mixed quantum systems, quantum channel discrimination, and multipartite correlations.

Interface between quantum information and many-body physics, including fermionic systems, thermalization, and localization.

Expertise in tensor network techniques and dynamics of open and non-Hermitian quantum systems.

Teaching Experience

Winter 2023–24

- Computational Physics (PHD502)

Summer 2023–24

- Electrodynamics (PHC208)

Monsoon 2024–25

- Quantum Computation and Information (NPHD/PHD510)
- Computation & Simulation (PHC517)
- B.Tech First-Year Physics Lab (PHI102)

Winter 2024–25

- Computational Physics (PHD/NPHD502)
- B.Tech First-Year Physics Lab (NPHI102)

Monsoon 2025–26

- Quantum Computation and Information (NPHD/PHD510)
- Computation & Simulation (PHC517)

Winter 2025–26

- Computational Physics (PHD/NPHD502)
- B.Tech First-Year Physics Lab (NPHI102)

Student Supervision

Ph.D. Students

- Arkaprava Sil (July 2024 –)
- Prasant Mallik (July 2024 –)

Undergraduate

- Hyndavi Anand (2025)

Postgraduate

- Rudraksh Kaushik (2026)
- Souvik Kundu (2026)

Summer Projects

- Avik Devsharma (IISER Kolkata, 2024)
- Saikat Panja (IIT (ISM) Dhanbad, 2025)
- Radhika Agrawal (IIT (ISM) Dhanbad, 2025)

Administrative Responsibilities

- Co-in-Charge, M.Sc. Physics Laboratory
- Member, Departmental Postgraduate Committee (DPGC)
- Social Media In-Charge
- Editor, Departmental Newsletter *Physics Pulse*

Refereeing Activities

Reviewed articles for:

- American Physical Society (APS) journals
- Journal of Physics A: Mathematical and Theoretical
- Quantum Information and Computation (Rinton Press)
- Quantum
- Journal of Modern Optics