

Dr. Tapobroto Bhanja

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Google Scholar — INSPIRE HEP — ORCID — Vidwan

Academic Profile

- Theoretical physicist with expertise in **General Relativity, Quantum Field Theory, and Cosmology**.
- Research interests: **Gravitational collapse, Dark Matter phenomenology, Black hole physics**.

Current Position

Assistant Professor, Department of Physics, University of Science and Technology Meghalaya.

Previous Appointments

Assistant Professor, P. D. Patel Institute of Applied Sciences, CHARUSAT, Gujarat

- **Postdoctoral Fellow**, International Centre for Cosmology, CHARUSAT (2020–2022)
- **NPDF Fellow**, Department of Physics, IIT Guwahati (2017–2020)
- **Visiting Researcher**, Institute of Physics, Bhubaneswar (2020)

Education

- **Ph.D. in Physics**, Banaras Hindu University, 2018
- **M.Sc. in Physics**, Banaras Hindu University, 2011
- **B.Sc. in Physics (Hons.)**, University of Calcutta, 2009

Research Interests

- **Astrophysics and General Relativity**: Gravitational collapse, Energy extraction, Phase transitions
- **Cosmology and Particle Physics**: Dark Energy, Dark Matter, Exotic fields
- **Gauge Theory and BRST Formalism**: Supersymmetric QFT, Higher-dimensional models

Selected Publications (Recent)

- “Magnetic Penrose Process and Kerr Black Hole Mimickers”, *Phys. Rev. D*, 110, 123035 (2024).
- “Particle Motion in a Non-Vacuum Charged Naked Singularity”, *Eur. Phys. J. C*, 84, 383 (2024).
- “Gravitational Collapse of Scalar and Vector Fields”, *Phys. Rev. D*, 108, 044049 (2023).
- Full list: Google Scholar

Teaching Experience

Postgraduate Courses:

- Quantum Mechanics, Classical Mechanics, Statistical Mechanics, Atomic and Molecular Physics
- Nuclear Astrophysics (NPTEL Local Chapter Mentor)

Undergraduate Courses:

- Engineering Physics, Physical Optics,

Awards and Fellowships

- National Postdoctoral Fellowship, DST-SERB, India (2017–2020)
- Postdoctoral Fellowship, ICC, CHARUSAT (2020–2022)
- CSIR-SRF, BHU Ph.D. Fellowship, JEST Qualified
- Gujarat State Eligibility Test (2023)

Supervision and Academic Leadership

- **Ph.D. Students (Co-supervisor):** 2 ongoing
- **PG Dissertations:** 4 completed — **UG Projects:** 3 completed
- Coordinator: Summer Research Internships (SRIP2022–2024), STETPIS-4

Workshops and Conferences Attended (Selected)

- FDP, NEP-2020 ORIENTATION & SENSITIZATION. UGC-Malaviya Mission Teacher Training Centre (MMTTC), University of Hyderabad, Hyderabad, (2024).
- FDPs on NEP-2020, Feynman Lectures Series (2023–2024)
- Conference, International Conference on “New Trends in Field Theories”, Banaras Hindu University, Varanasi (2016)
- Workshop, UGC Workshop on Physics of Particles, Nuclei and Related Instrumentation Banaras Hindu University, Varanasi (2015)
- XXIX SERC Main School on Theoretical High Energy Physics, BITS Pilani, Goa (2014)