Subrata Samanta

Research Scholar (PMRF Fellow), Department of Physics
Indian Institute of Technology, Kanpur, India

Specialization: Theoretical High Energy Physics

PhD Supervisor: Dr. Debtosh Chowdhury, Assistant Professor, IIT Kanpur

General Information

Place and Date of Birth:	Panskura, India | 01 August 1999
Address:	Department of Physics, IIT Kanpur, Kanpur 208016, India
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Research Interests

Theoretical High-Energy Physics	Particle Physics Beyond the Standard Model, Quantum Chromodynamics, Finite Temperature Field Theory.

Education

Aug 2022 - Present	Ph.D. in Physics, Indian Institute of Technology Kanpur, CPI: **9.5**
Sep 2020 - May 2022	M.Sc. in Physics, Indian Institute of Technology Kanpur, CPI: **8.9**
Aug 2017 - Oct 2020	B.Sc. in Physics, University of Calcutta, Percentage: **88.8%** **First class - First position** in College (Scottish Church College, Kolkata)

Achievements and Awards

Aug 2022 - Present	**Prime Minister's Research Fellowship** (Direct Entry, IIT Kanpur)
Mar 2023	Awarded **Dhirendra Mohan Saha Roy Gold Medal** (Scottish Church College, Kolkata)
Mar 2023	Awarded Charu Chandra Chaudhury Medal (Scottish Church College, Kolkata)
Mar 2023	Awarded Mrs. P. R. Das Memorial Medal (Scottish Church College, Kolkata)
Mar 2023	Awarded Pravat Kumar Ghosh Medal (Scottish Church College, Kolkata)
2020 - 2021	Late Srikant Mishra Scholarship, IIT Kanpur

Professional Activities

1st - 13th Jul 2024 *School-cum-workshop*	**Machine Learning for Particle and Astroparticle Physics (ML4HEP)** Institute of Physics, Bhubaneswar, India

Internships

May 2022 - Jul 2022 *Summer Intern*	**Anisotropic SU(3) gauge fields in lattice QCD** National Institute of Science Education and Research, Bhubaneswar, India Advisor: Prof. Subhasish Basak [sbasak@niser.ac.in]

Qualification

Mar 2022	Joint Entrance Screening Test in Physics | AIR: **62** (for PhD)
Jun 2021	Joint CSIR - UGC NET Examination in Physics (JRF)
Apr 2020	Joint Admission test for Masters in Physics | AIR: **69**
Mar 2020	Joint Entrance Screening Test in Physics | AIR: **103** (for IPhD)
Mar 2019	National Graduate Physics Examination

Teaching Experience

Jun 2024 - Jul 2024	Conducting tutorial and workshop at Raghunathbari Ramtarak High School, West Bengal. **Class XI & XII - Physics**
Jun 2024 - Jul 2024	Conducting tutorial and workshop at Deriachak Sri Aurobindo Vidyamath (H.S.), West Bengal. **Class XI & XII - Physics**
Feb 2024 - May 2024	Offered a course on "**Mathematical Methods in Physics - I**" in the PMRF lecture series at the Institute of Smart Structures and Systems.
Aug 2023 - Oct 2023	Conducting live tutorial sessions at Raghunathbari Ramtarak High School, West Bengal. **Class XI & XII - Physics**
Aug 2023 - Oct 2023	Conducting live tutorial sessions at Deriachak Sri Aurobindo Vidyamath (H.S.), West Bengal. **Class XI & XII - Physics**
Aug 2023 - Oct 2023	Mentorship for the physics subject at SATHEE. **Class XII: Electric Charges and Fields** **Class XII: Alternating Currents**
Jan 2023 - Apr 2023	Conducting live tutorials on the course of **Thermal Physics** at NPTEL
Nov 2022 - Feb 2023	Teaching Assistance at IIT Kanpur: Assisted in the following courses. **Undergraduate Phyics Laboratory**

Course-work at IIT Kanpur

Spring 2023	PHY780A: High Energy Physics II PHY680: Particle Physics
Fall 2022	PHY627A: Computer Simulation Methods in Physics PHY690M: Advanced General Relativity & Black Holes
Spring 2022	PHY680A: Particle Physics PHY524A: Atomic, Molecular, and Optical Physics
Fall 2021	PHY461A: Experimental Physics I PHY681A: Quantum Field Theory PHY407A: Special and General Relativity
Summer 2021	PHY441A: Electronics
Spring 2021	PHY412A: Statistical Mechanics PHY432A: Quantum Mechanics II PHY422A: Mathematical Methods II PHY552A: Classical Electrodynamics I PHY526A: Nuclear and Particle Physics
Fall 2020	PHY401A: Classical Mechanics I PHY431A: Quantum Mechanics I PHY473A: Computational Physics PHY421A: Mathematical Methods I PHY667A: High Energy Astrophysics of Binary Star Systems

Computer Skills

Operating systems:	MacOS, Linux/Unix, Windows
Programming languages:	Python, C++, C, Fortran
Calculus languages:	Mathematica
Web development:	Responsive Design

Numerical Skills

Open-source code	**HEPfit** : Markov Chain Monte Carlo package based on Bayesian Statistics

Languages

Mother Tongue:	Bengali
Good:	English, Hindi

Preprints

Apr 2024	Title: "Next-to-Leading Order Unitarity Fits in the Extended Georgi-Machacek Model" Debtosh Chowdhury, Poulami Mondal, **Subrata Samanta** arXiv:2404.18996 [hep-ph].

Publications

May 2022	Title: "Saha-Basu equation of state and its application to Carnot cycle" **Subrata Samanta**, Anish Acharya, Joydip Mitra, Saugata Bhattacharyya Eur. J. Phys. **43**, 045101 (2022)