

Applications are invited for the Doctor of Philosophy (PhD) program in Physics for Spring 2026

**Minimum Eligibility criteria (Educational Qualification):**

- A **MS degree** with at least **60% aggregate marks** (55% for reserved categories) in any field of **Physical Sciences, or Mathematical Sciences, or allied disciplines, OR**
- A **4-year BS degree** with at least **75% aggregate marks** (70% for reserved categories) in **Physical Sciences, OR**
- **Final-year MS/BS students** who have not yet obtained their degree may also apply. However, they must complete their **MSc/MS/BS degree with the required aggregate marks at the time of admission.**

**Selection Channels:**

1. **Self-Funded Category:** Candidates applying through this channel must satisfy the **minimum eligibility criteria** and **possess a valid PhD fellowship**, such as **UGC/CSIR-JRF or NET Category-1.**
2. **Institute-Funded Category:** Candidates applying through this channel must satisfy the **minimum eligibility criteria** and must have a **valid rank** in one of the following national-level examinations: **GATE (rank < 500), JEST (rank < 500), NET-LS (all ranks), NET Category-2 (all ranks), NET Category-3 (Percentile > 75%).** Candidates with INSPIRE Fellowship should apply only if they possess the **“Provisional Offer of Research Studentship under INSPIRE Fellowship”.**

The selection of candidates will be carried out **as per the Government of India (GoI) norms.** Candidates belonging to reserved categories must submit the relevant certificates and supporting documents.

**Available Positions (Page-1/2)**

**Prof. Amit Ghosal (Condensed Matter Physics Theory)**

**Available Positions: Self Funded: 01 & Institute Funded: 01**

1. Study of spatio-temporal correlations across thermal and quantum melting in two dimensional systems with long-range interacting particles, both in the presence and absence of impurities.
2. Investigation of correlated quantum matter in inhomogeneous environments, and the transient phase arising from strong non-equilibrium dynamics in such systems.

**Prof. Ayan Banerjee (Optics/Spectroscopy)**

**Available Positions: Self Funded: 01**

1. Device and bio-sensor development using optical tweezers: Generating novel mesoscopic architectures using microbubbles generated by thermo-optical tweezers based on directed self-assembly, developing devices for chemical and bio-sensing, and studying the science of self assembly.
2. Optical tweezers for trapping particles in air: Developing 3d optical tweezers for trapping absorbing microparticles and uncovering the physics behind the trapping and observed dynamics.
3. Non-equilibrium statistical mechanics using Optical Tweezers: development of Brownian engines in active matter, fundamental studies including resetting, measuring active forces inside biological entities, etc.

**Prof. Bhavtosh Bansal (Condensed Matter Physics Experiment)**

**Available Positions: Self Funded: 02 & Institute Funded: 01**

1. Statistical physics of phase transitions; Physics in very high magnetic fields; Light-matter interaction and spectroscopy

**Prof. Arindam Kundagrami (Biological Phys, Nonlinear dynamics, Statistical Phys, Soft Condensed Matter Phys)**

**Available Positions: Self Funded: 01 & Institute Funded: 01**

1. Theoretical Soft Condensed Matter Physics, Polymer Physics, Biological Physics
2. (Specifically) Theory of Phase Transitions and Kinetics of Phase Separation and Phase Formation in homopolymers, biopolymers, intrinsically disordered proteins (IDPs); Liquid-liquid phase separation in biomolecular condensates

**Prof. Bheema Lingam Chittari (Condensed Matter Physics Theory)**

**Available Positions: Self Funded: 01 & Institute Funded: 01**

1. Study of Electronic, Magnetic and topological properties of 2D and Bulk materials by Density Functional Theory (DFT) approach.

**Prof. Bipul Pal (Condensed Matter Physics Experiment)**

**Available Positions: Self Funded: 01 & Institute Funded: 01**

1. Probing opto-electronic properties of materials by ultrafast time-resolved optical spectroscopy

**Prof. Chandan Datta (Quantum Information and Computation Theory)**

**Available Positions: Self Funded: 01 & Institute Funded: 01**

1. Quantum Resource Theory, Quantum Entanglement, Quantum Communication, Quantum Thermodynamics

**Prof. Chiranjib Mitra (Condensed Matter Physics Experiment/ Quantum Information)**

**Available Positions: Self Funded: 01**

1. Quantum Information Processing using NV centres in diamond
2. Topological Insulators, Majorana Fermions and Weyl Semi-metals

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Available Positions (Page-2/2)

**Prof. Dhananjay Nandi** (Optics/Spectroscopy)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Kinematically complete measurements in electron collisions with gas phase atmospherically and biologically important molecules.
2. Electron/Laser collision studies on gas phase isolated and/or cluster molecules.

**Prof. Golam M Hossain** (Gravitational Physics and Astrophysics)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Quantum fields in curved spacetime and relativistic astrophysics of compact stars

**Prof. Goutam Dev Mukherjee** (Condensed Matter Physics Experiment)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Studies on quantum materials at extreme conditions

**Prof. Kamaraju Natarajan** (Condensed Matter Physics Experiment)

**Available Positions:** [Self Funded: 02](#)

1. Experimental Condensed Matter Physics (Using experimental tools of Ultrafast, THz and Second Harmonic generation to probe Magnetic and non-magnetic quantum materials)

**Prof. Koushik Dutta** Astrophysics, Gravitation and Cosmology)

**Available Positions:** [Self Funded: 01](#)

1. Early universe cosmology, Dark matter in cosmology

**Prof. Partha Mitra** (Condensed Matter Physics Experiment)

**Available Positions:** [Self Funded: 01](#)

1. Experimental Condensed Matter- Spintronics

**Prof. Ritesh K. Singh** (High Energy Physics)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Searching new and exotic physics at particle collider and neutron stars

**Prof. Rumi De** (Biological Physics, Nonlinear dynamics, Statistical Physics, Soft Condensed Matter Physics)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. To develop theoretical and computational models to understand the collective dynamics of active, out-of-equilibrium systems by using the tools from statistical physics, nonlinear dynamics, and soft condensed matter physics

**Prof. Satyabrata Raj** (Condensed Matter Physics)

**Available Positions:** [Self Funded: 04](#)

1. Electronic and Magnetic structure of strongly correlated systems by synchrotron based Photoemission Spectroscopy (Both AI- and AR-PES) (*experiment*)
2. Electronic, Optical, Magnetic, and Transport properties of novel Nanomaterials (*experiment*)
3. Electronic, Optical, and Magnetic structure of 2D and 3D-strongly correlated systems by Density Functional Theory (DFT) approach (*theory*)

**Prof. Sourin Das** (Condensed Matter Physics Theory)

**Available Positions:** [Self Funded: 03](#)

1. Quantum Machine Learning and its application in Quantum Many Body Physics.
2. Topological Josephson junction and its application to Superconducting Qubits.
3. Quantum heat engineering and role of quantum statics

**Prof. Subhasis Sinha** (Condensed matter and Statistical physics (Theory))

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Ultracold quantum gases, Non equilibrium quantum dynamics, Quantum Chaos, Open quantum systems.

**Prof. Supratim Sengupta** (StatPhys/Biophys/NLD)

**Available Positions:** [Self Funded: 01](#) & [Institute Funded: 01](#)

1. Dynamical Systems, Networks, Game Theory.
2. Statistical Physics of learning and applications of reinforcement learning.

**Additional benefits:**

- Every PhD student will be sponsored to attend an international conference abroad based on the availability of institute funds.
- Chairman's Medal of Commendation for excellence in extracurricular activities for PhD students.
- Every PhD student is entitled to 30 academic leave days per year.

**Contact Information:**

- You can write to us for clarifications/doubts regarding the advertisement at [dps.phd.application@iiserkol.ac.in](mailto:dps.phd.application@iiserkol.ac.in)
- Visit the department website for more information at <https://physics.iiserkol.ac.in/> or <https://www.iiserkol.ac.in>