

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**
- A **4-year BS degree** with at least **75% aggregate marks** (70% for reserved categories) in **Physical Sciences, Mathematical Sciences, or allied disciplines, 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-1/3)

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

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

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

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

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

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

Available Positions (Page-2/2)

Prof. Goutam Dev Mukherjee (Condensed Matter Physics Experiment)

Available Positions: Self 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

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

Prof. Rumi De (Biological phys, Nonlinear dynamics, Statistical Phys, Soft cond. matter phys)

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
- Visit the department website for more information at <https://physics.iiserkol.ac.in/> or <https://www.iiserkol.ac.in>