National Symposium on
Recent Trends in Physics - 2026

Organized by

Department of Physics

School of Natural Sciences

Central University of Jharkhand, Ranchi

DATE: February 3 - 4, 2026

ABOUT CENTRAL UNIVERSITY OF JHARKHAND, RANCHI

The Central University of Jharkhand (CUJ) was established under the Central University Act, 2009, with a clear vision to pioneer contemporary educational initiatives and advance research in cutting-edge technologies. Offering a diverse range of academic programs, including 5-year integrated (UG/PG), postgraduate, and Ph.D. courses across multiple schools and departments, CUJ remains at the forefront of educational innovation. The university embraces curricular flexibility and promotes strong interdisciplinary and collaborative research, enabling its faculty members to earn national and international recognition through prestigious fellowships, funded research projects, and academic accolades. CUJ faculty actively contribute to governmental, public, and private sectors through teaching, research, and consultancy, thereby enriching both academia and industry. Reflecting its commitment to excellence, CUJ has been accredited with an NAAC A+ grade and has consistently ranked among India's top 300 institutions by NIRF, MHRD, Government of India. Further affirming its global academic standing, Times Higher Education recognized CUJ among the top 1000 universities worldwide in 2020. Located in Ranchi's emerging smart city, CUJ's new campus extends over 510 acres at Cheri-Manatu, Kanke, providing a serene and expansive environment ideal for learning and research. The original campus, set within a tranquil 45-acre green landscape at the CTI Campus in Brambe on the outskirts of Ranchi, seamlessly blends academic infrastructure with residential facilities amid natural surroundings. For more information on CUJ, Ranchi, including admissions and academic programs, please visit the university's official website.

ABOUT SCHOOL OF NATURAL SCIENCES

The School of Natural Sciences (SNS) stands as a cornerstone of CUJ, housing the Departments of Physics, Chemistry, Mathematics, Statistics, and Life Sciences. Our school is committed to imparting a robust understanding of natural sciences, catering to graduate, postgraduate, and PhD students through the latest advancements in science and technology. At SNS, we employ project-based learning (PBL) methodologies to cultivate critical thinking among our students. We encourage them to question, explore, and conduct research across diverse scientific disciplines. Our goal is to nurture skilled professionals and visionary leaders who can contribute significantly to the nation's progress and development. We prioritize excellence in education and research, aiming to instill ethical values and professional standards in our students. By enhancing their logical reasoning and problem-solving abilities, we prepare them to tackle the evolving challenges of today and the future. For more information about the School of Natural Sciences, please visit our website.

ABOUT THE DEPARTMENT OF PHYSICS

The Department of Physics (DoP) at CUJ offers comprehensive B.Sc. and M.Sc. programs specializing in cutting-edge technologies. These programs cater not only to physics majors but also provide a diverse array of courses for undergraduate and postgraduate students from across the University's schools. Our department is dedicated to building strong foundational knowledge in basic and engineering sciences. We offer Ph.D. programs in research areas such as Experimental Condensed Matter Physics, Atomic and Molecular Physics, High Energy Physics, Experimental Nuclear Physics, and Applied Optics/Photonics. Through initiatives like the DST-FIST program, we are expanding our infrastructure to develop state-of-the-art laboratories for both experimental and theoretical research. Laboratory sessions complement classroom learning, providing hands-on experience and exposing students to the latest technological advancements. Starting from the undergraduate level, students have opportunities to engage in research projects with faculty members, fostering essential analytical and problem-solving skills necessary to address current and future technological challenges. ://cuj.ac.in/DoP.php. The department is actively involved in research spanning diverse fields including Condensed Matter Physics, Nano-Composite Materials, Multiferroics, Transparent Conducting Materials for Optoelectronic Applications, Graphene Materials, Photonics/Nanophotonics, Lasers, Photovoltaics, Sensors, and Quantum Transport in nano-systems. For more details about the Department of Physics and its programs, please visit our website.

ABOUT NATIONAL SYMPOSIUM ON RECENT TRENDS IN PHYSICS - 2026

The Topics of Seminar are broadly classified into seven areas.

I. Quantum Computing and Quantum Technologies

- Harnessing qubits to achieve computation beyond classical limits.
- Applications in cryptography, optimization, simulation and secure communication.
- Quantum algorithms such as Shor's and Grover's transforming computation paradigms.
- Quantum sensors enabling unprecedented precision in timekeeping and measurement.
- Research on scalable qubit architectures: superconducting, photonics, trapped ions, and spin-based systems.

II. Artificial Intelligence & Machine Learning Applications in Physics

- Data-driven modeling for complex systems such as plasma, astrophysics and condensed matter.
- ML-enhanced simulations accelerating computational physics.
- AI-based pattern recognition in particle detectors and observatories.
- Neural networks for solving differential equations and quantum many-body problems.
- Automation of laboratories using intelligent experimental control systems.

III. Advanced Materials and Smart Functional Materials

- Development of materials with tunable electrical, magnetic, and optical properties.
- Smart materials responding to heat, stress, fields, or chemical stimuli.
- Nanomaterials and metamaterials with engineered structure-dependent functionalities.
- Superconductors, topological insulators, and 2D materials for next-gen technologies.

IV. Physics for Addressing the Global Energy Crisis

- Innovations in solar, wind, and fusion-based renewable energy technologies.
- Energy harvesting through quantum devices, thermoelectrics and advanced materials.
- High-efficiency battery and supercapacitor research driven by condensed-matter physics.
- Smart grids, power optimization, and minimal-loss transmission.
- Modeling climate-energy interactions for sustainable energy planning.

V. Space Physics, Astrophysics & Planetary Science

- Study of cosmic rays, solar wind, magnetospheres, and interplanetary plasma.
- Advances in telescope technology, astrophysical detectors, and space missions.
- Exploration of black holes, gravitational waves, dark matter, and cosmology.
- Planetary magnetism, atmospheres, and exoplanet characterization.
- Earth–space interactions and their impact on communication, climate and satellites.

VI. Physics in Everyday Life: Bridging Science and Society

- Physics behind household technologies: microwave ovens, smartphones, LEDs and GPS.
- Role of electromagnetic waves in communication and internet technologies.
- Mechanics, thermodynamics, and acoustics in daily appliances and transportation.
- Medical imaging, sensors, and wearables improving human life.
- Awareness of physics in safety, energy use, and environmental sustainability.

VII. Physics for Skill Development and Societal Impact

- Hands-on physics training enhancing problem-solving and analytical skills.
- Development of technical skills: instrumentation, coding, electronics and data analysis.
- Outreach programs making physics accessible to schools and rural communities.
- Industry-academia collaboration fostering innovation and employment.
- Scientific literacy contributing to national development and informed decision-making.

Important Dates:

Abstract Submission Start: January 5, 2026
Extended Date of Abstract Submission: February 2, 2026
Acceptance Notification: February 2, 2026
Registration Start: Early bird: January 5, 2026
Registration Deadline: February 2, 2026

National Advisory Committee (Tentative)

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Payment Link for Registration:
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Abstract Submission: Authors are requested to submit their abstract in the provided template only through the online portal of abstract submission available on the website:
Abstract Submission Link

Registration Fee:
₹ 500.00 for UG & PG Students
₹ 700.00 for Research Scholars
₹ 1000.00 for Faculty & Industry Personnel

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