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SPECTRUM

Newsletter of

DEPARTMENT OF PHYSICS

DR. KRISHNENDU
MUKHERJEE

HOD
DEPARTMENT OF PHYSICS

HOD **SPEAKS**

The idea for publishing the newsletter stems partly from the urge to enhance the visibility of our department in the academic domain existing outside the institute and rests from the responsibility for portraying the achievements of our students in academics, especially in research.

Our department has been running a two-year M.Sc. course in physics since 2000 apart from teaching physics to undergraduate and postgraduate students in science and engineering. The department is preparing to float the 5-year BS-MS course under the new education policy, 2020 preferably from the session 2025-26. Also, we have been conducting our PhD programs in areas such as condensed matter physics, photonics, nuclear physics, plasma physics, high energy physics, and cosmology.

We have been trying to nurture new minds in an ambience that is conducive to teaching and research. It is a matter of satisfaction as a teacher that 8 - 10% of students of MSc are selected to PhD programs in the premier higher educational institutes of the country almost every year. Indeed, It is a matter of pride to cherish the achievements of our students in doctoral and post-doctoral research.

Our newsletter spectrum is the depiction of our achievements earned, whatever small it may be, over the last six months. There were indeed promises that remain unkept, there were seemingly great ideas that were turned useless and there were untiring efforts that were turned fruitless but the amount of knowledge which have been gathered during this six-month journey is worthy to share in the first edition of Spectrum. It is my heartfelt gratitude to my respected colleagues and my beloved students for their unending efforts and endeavours to make the newsletter presentable one.

Regards,
Krishnendu Mukherjee

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EVENTS

A One-Day Seminar was held on November 30, 2024, organized by the Department of Physics, IIEST, Shibpur, **to celebrate Sir Jagadish Chandra Bose's 166th birthday**. School students of PM Shree Kendriya Vidyalaya participated in the program. Dr. Sourav Pramanik convened the seminar, which was coordinated by Dr. Krishnendu Mukherjee. Invited speaker Dr. Pradeep Kumar Mohanty of IISER, Kolkata, delivered a popular talk. After the interactive sessions with Dr. Mohanty, students visited our Physics Demonstration Laboratory.

A pre-placement outreach program titled "**Career Opportunities in the Department of Atomic Energy through Bhabha Atomic Research Centre Training Schools**" was hosted by the Department of Physics at IIEST, Shibpur, in collaboration with the Variable Energy Cyclotron Centre (VECC), Kolkata, on January 25, 2024.

CONFERENCE **ATTENDED**/ TALKS **DELIVERD**

Dr. Abhijit Majumdar presented an Invited talk at international conference on COFHA, at IIT Jodhpur, 22.12.2024

Prof. Mousumi Basu attended "37th International Conference on VLSI Design and 2024 23rd International Conference on Embedded Systems (VLSID), 2024", held during 6-10 January, 2024 in Kolkata and contributed two papers.

Dr. Abhijit Bisoi attended two-days thematic Workshop entitled "Cutting-edge Research in Nuclear Physics: Symmetry, Structure and Applications", held during 17–18th January 2024 at the Department of Physics, Presidency University, Kolkata.

Dr. Abhijit Bisoi delivered a plenary talk entitled "Structural evolution and K mixing in 49V" at the two-days Thematic Workshop entitled "Cutting-edge Research in Nuclear Physics: Symmetry, Structure and Applications" held on 17-18th January 2024 at the Department of Physics, Presidency University, Kolkata.

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CONTINUED...

AWARDS
RECEIVED

Dr. Abhijit Majumdar earned Special Recognition Award on 1st human trial by cold plasma in India in COFHA conference, 2024

INVITED TALK
ORGANISED BY THE DEPARTMENT

Dr. Deshdeep Sahdev, Professor, Dept of Physics, IIT Kanpur (Former) delivered an invited talk on "Some fun aspects of condensed matter physics" on 8th January, 2024.

Dr Debabrata Deb, Dept. of Theoretical Phys, IMSc, delivered an invited talk on "An Overview of the Indian Contribution to the Pulsar Timing Array Experiment" on 20th March, 2024.

SPONSORED
RESEARCH PROJECTS

Investigation on the Performance characteristics of Single Mode Semiconductor core optical fibers and waveguides in view of nonlinear pulse dynamics., DST-SERB, June 2023- June 2026, ~ 32Lakhs, PI: Mousumi Basu

WB DST project is completed on June, 2024, Title: Synthesis and Characterization of piezoelectric & photoactive nanocomposite and their application in root canal treatment. PI: Dr. Abhijit Majumdar. Duration: 2019-2024

STRUCTURAL EVOLUTION AND COLLECTIVITY IN ^{49}V AND ^{50}Mn. PI: ABHIJIT BISOI/ DST-SERB/ 19.03.2024 TO 18.03.2027

Chemiresistive-magnetic hybrid gas sensor for NH3 gas detection, PI : Manish Pal Chowdhury, UGC-DAE CSR, 30.03.22-29.03.25

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RESEARCH PUBLICATIONS

JOURNAL **PUBLICATIONS**

1 Study of aqueous polyacrylamide solutions with concentrations, S.Mahata and M. H. Mondal , Applied Physics A 130, 721 (2024). DOI: https://doi.org/10.1007/s00339-024-07890-0

2. Optimization of homogeneity/heterogeneity of the polymer solutions, S.Mahata and M. H. Mondal , Polym. Bull. 81, 16043–16056 (2024). DOI:https://doi.org/10.1007/s00289-024-05456-x

3. Study of polymer chain morphologies at and around criticalconcentrations, S. Mahata and M. H. Mondal , J Polym Res 31, 344(2024). DOI: https://doi.org/10.1007/s10965-024-04194-y

4. Comprehensive analysis of color-tunable luminescence of Sm3+/Eu3+ ions co-incorporated tellurite glasses for optical device applications, S. Ghosh and S. Jana, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 305, 123440 (2024) (Elsevier). DOI:https://doi.org/10.1016/j.saa.2023.123440

5. Temperature dependent luminescence exploration in CIELab of Dy3+/Sm3+ ions co-imbued in phospho-tellurite glasses for eco-friendly light generation, J. Biswas, S. Jana and S. Ghosh, Journal of Non-Crystalline Solids 630, 122890 (2024) (Elsevier). DOI:https://doi.org/10.1016/j.jnoncrysol.2024.122890

6.Surface excitation of Rydberg dressed quantum droplet of Bose-Einstein condensates,A. Banerjee, D. Majumder, Annals of Phys. 470, 169810 (2024). DOI:https://doi.org/10.1016/j.aop.2024.169810

7. Collective Excitation of Quantum Droplet with Different Ranges of the Interaction of Poschl-Teller Potential, A. Banerjee and D. Majumder, Physics Scripta, 99, 085402 (2024). DOI:https://iopscience.iop.org/article/10.1088/1402-4896/ad5c19

8.Collective Excitations of Bose–Einstein Condensate in a Rydberg Atom, A.Banerjee and D. Majumder, Low Temp. Phys. 215, 64 (2024). DOI: https://link.springer.com/article/10.1007/s10909-024-03063-8

9.Study of polarization for even denominator fractional quantum Hall states in SU(4) Graphene, M. Indra and D. Majumder, Physica Scripta, 99,03915 (2024). DOI: https://iopscience.iop.org/article/10.1088/1402-4896/ad224f

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RESEARCH PUBLICATIONS

10. Proficient Reshaping towards Triangular Optical Pulses by Strategic Use of Physical and Virtual Gains in a Suitably Engineered Silicon Core Fiber, A. Mishra, B. K. Ghosh, D. Ghosh and M. Basu, Silicon(Springer Nature), 16, 2729–2741, (2024). DOI: https://doi.org/10.1007/s12633-024-02851-x

11. Coherent Broadband Spectrum Generation in Rectangular Silicon Core Buried Waveguide Operated at Telecommunication Wavelength, S.Adhikary, D. Ghosh and M. Basu, Silicon (Springer Nature), 16,4673–4682, (2024). DOI: https://doi.org/10.1007/s12633-024-03020-w

12. Highly coherent mid-infrared wideband supercontinuum generation by a silica cladded silicon nitride core buried waveguide, S. Adhikary, D.Ghosh and M. Basu, J. Opt. (IOP), 26 ,105501, (2024), DOI: https://doi.org/10.1088/2040-8986/ad751a

13. Non-uniform Al2O3 back reflector for performance enhancement of thin rear passivated silicon solar cells, P. Banerjee, S. Mukhopadhyay and S.M. Hossain, Physica Scripta 100(1), 015518, (2024). DOI: https://doi.org/10.1088/1402-4896/ad9871

14. Dependence of Electrical Response on Etching Time of Calmodulin-Surface Functionalized Porous Silicon Based Bi-Parametric Calcium Detector, K. Sen , J. Das , S. M. Hossain , D. Basu , B. Roy , IEEE Sensor Journal 24(22), 36997 - 37004, (2024). DOI: https://doi.org/10.1109/JSEN.2024.3461839

15. Impact of blue-shifted effective joint density of electronic states on the photoluminescence of nanostructured silicon, S. Basu et al., Journal of Luminescence, 273, 120658 , (2024). DOI: https://doi.org/10.1016/j.jlumin.2024.120658

16. Metal–semiconductor junction in silicon nanostructures: role of interface traps, S. Chakrabarty , S. Santra and S. M. Hossain , Applied Physics A, 130 , 303 (2024) . DOI: https://doi.org/10.1007/s00339-024-07451-5

17. Ion motion can cause nonlinear electron acoustic waves in plasmas to phase-mix: A theoretical study, S. Pramanik, A. Biswas and C. Maity, Phys. Plasmas 31, 092110 (2024). DOI:https://doi.org/10.1063/5.0224231

18. On the evolution of ion cyclotron waves in magnetized pair ion-electron plasmas, S. Pramanik, Physica Scripta, DOI:https://doi.org/10.1088/1402-4896/ada325

19. Selective Hydro- and Deuterodechlorination of Trichloroacetamides under Controlled Electrochemical Conditions To Prepare Mono-, Di-, and Deuterochloroacetamides, M. Bandopadhyay et al., Advanced Synthesis and Catalysis, 366, 2696-2704 (2024). DOI: https://doi.org/10.1002/adsc.202400372

20. Superior ammonia sensing properties of PET-supported polyaniline/reduced graphene oxide/zinc ferrite ternary nanocomposite thin film at room temperature, S. Kundu, R. Majumder, M. P. Chowdhury, Journal of Applied Polymer Science, 141, e54755 (2024). DOI: https://doi.org/10.1002/app.54755

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RESEARCH PUBLICATIONS

21. Synthesis and characterisation of carbon nanotubes and zinc oxide composites: sub-millisecond UV response, R. Majumder, S. Kundu, S. Mukherjee, A. Banerjee, R. Gayen and M. P. Chowdhury, Journal of Materials Science,58, 17019–17033, (2024) . DOI: https://doi.org/10.1007/s10853-023-09058-2

22. Spectroscopic study of 50-V, A. Bera et al., Phys. Rev. C 109, 054328 (2024), DOI: https://doi.org/10.1103/PhysRevC.109.054328

23. Spectroscopic study of 40-K, R Rahaman et al., Phys. Rev. C 109,024318 (2024), DOI: https://doi.org/10.1103/PhysRevC.109.024318

24. Lifetime measurement of the Ex = 2485.3 keV level of 25-Al populated through 24Mg(p, γ) 25-Al resonance reaction, A. Gupta a, S. Sharma, S. Das, A. Adhikari, A. Mondal, M. R. Chowdhury, C. D. Bagdia, L. Tribedi, V. Nanal, A. Bisoi, M. S. Sarkar and S. Sarkar, Nucl. Phys. A 1042 , 122806 (2024). DOI: https://doi.org/10.1016/j.nuclphysa.2023.122806

CONFERENCE **PAPERS**

1. Broadband spectrum generation in Silicon nanocrystal-based dual-slot waveguide, S. Adhikary, R. Das, M. Basu, 37th International Conference on VLSI Design-2024.

2. Exploring the Impact of Temperature Variation on Supercontinuum Generation in a Rectangular Silicon Core Buried Waveguide, M. Basu and S. Adhikary, Natural Sciences and Engineering For Sustainable Development NSESD-2024, 67-68 (2024).

3. Generation of Asymmetric Triangular Pulse by A Dispersion and Nonlinearity Engineered Silicon Core Optical Fiber, A. Mishra, B. K. Ghosh, D. Ghosh, M. Basu, 37th International Conference on VLSI Design, January 2024.

4. Effect of Temperature on Generation of Triangular Pulse Through Pulse Reshaping in Silicon Core Single Mode Optical Fibre. Paper ID: PSD_24, A. Mishra, P. Saha, B. K. Ghosh and M. Basu.NSESD-2024.

5. A complex impedance spectroscopy study on PVDF/PANI/CoFe2O4 composites, M. Swarnakar, P. S. Mandal, R. Gayen and M. P. Chowdhury December 18, 2024.

6. Shape coexistence picture in 152Sm: Observation of..., S. Basak et al., Proceedings of the DAE Symp. on Nucl. Phys. 68, 65 (2024)

7. Spectroscopic study of unnatural parity states in 43Ca, R. Rahman et al., Proceedings of the DAE Symp. on Nucl. Phys. 68, 151 (2024)

8. Spectroscopic study of 49Ti, S Kumar et al., Proceedings of the DAE Symp. on Nucl. Phys. 68, 153 (2024).

9. Spectroscopic study of 52Cr, A. Bera et al. , Proceedings of the DAE Symp. on Nucl. Phys. 68, 155(2024)

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RESEARCH ACHIEVEMENTS

The possibility of application of quantum droplets of a mixture of Bose-Einstein condensates in quantum computation is explored aiming to calculate the collective excitation of bulk and the surface of the system in the presence of Rydberg atoms and other impurities. Studies on fractional quantum Hall effect, especially in graphene are also performed. text

Four different research works of our group (LDSSPL) on the optoelectronic, electrical transport and sensing properties of nanostructured silicon from our group have been published in international journals. One new experimental setup has been established to study the high frequency electrical response of nanostructured silicon. A furnace has been setup for the synthesis of thermal oxidation of silicon. Another CVD furnace has been setup for synthesis of Graphene.

In this year, rare earth co-doped tellurite and phospho-tellurite glass systems have been developed for more efficient solid state lighting device applications. In addition, characteristics of luminescence emission due to variation of temperature have been investigated.

We have published around thirty research papers in international journals in various fields of physical sciences. Six PhD students have obtained their degrees.

Considerable progress has been made in the fields of plasma surface interaction, thin film deposition and plasma bio-medical application. Theoretical studies on the nonlinear acoustic modes in plasma revealed some interesting features coming from the effects of multi-species dynamics.

By innovatively engineering the dispersion and nonlinearity, the researchers developed highly doped silicon-core fibers to efficiently convert Gaussian pulses into stable triangular pulses over shorter lengths.

Rectangular-shaped silicon-core buried waveguides of different dimensions are designed and optimized to achieve a coherent, flat ~600 nm supercontinuum at 1550 nm over short lengths, marking a first in the telecommunication band.

A 400 nm × 400 nm square-core silicon nitride buried waveguide is designed to achieve a highly coherent, 2.76-octave supercontinuum spanning 810–5441 nm in the mid-infrared region using an operating wavelength of 1550 nm.

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RESEARCH EXCELLENCE

RESEARCH COLLABORATIONS

1. IIT Kharagpur,
2. University of Calcutta
3. Jadavpur University
4. Institute for Plasma Research
5. Saha Institute of Nuclear Physics

PATENTS

A patent entitled "**Atmospheric Pressure Plasma Jet for Bio-medical Application**" with patent number 497593 (application no: 3727/MUM/2015) has been granted to **Dr. Abhijit Majumdar** on 11th January 2024 by The Patent Office, Govt. of India

A patent entitled "**Three laser beams detection arrangement for measurement of gravitational acceleration**" with patent number 530179 (application no: 202021041842) has been granted to **Dr. Abhijit Majumdar** on 26th March 2024 by The Patent Office, Govt. of India

PhD Completion

Joydeb Biswas, "Optical characteristics of Samarium (Sm3+) doped, Dysprosium (Dy3+) doped and Sm3+/Tb3+ co-activated phospho-tellurite glasses for solid state lighting device applications". Supervisor: Dr. Samar Jana

Arindam Banerjee, "Study of non-thermal plasma jet and ZnO-chitosan nano-composite in dentistry and its potential application". Supervisor: Dr. Abhijit Majumdar

Anik Adhikari, "Shape evolution in Ho and Dy isotopes around A≃ 150-160". Supervisors: Prof. Sukhendu Sekhar Sarkar, Dr. Abhijit Bisoi

Thesis Submitted

Shayari Basu, "Photoluminescence from nanostructured silicon: role of confined Bloch states and interfacial defects." Supervisor: Dr. Syed Minhaz Hossain

Sourav Ghosh, "Luminescence study of Sm3+ doped and Sm3+/Eu3+ co-doped tellurite and boro-tellurite glasses for optoelectronics applications." Supervisor: Dr. Samar Jana

Thesis co-supervised

Pritam Banerjee ("Optoelectronic performance enhancement of Solar photovoltaics: Simulation and Validation") and **Atrayee Hazra** ("Investigation on the role of interface on optical absorption of Au@Ag core @shell nanoparticles") have submitted their thesis under the cosupervision of Dr. Syed Minhaz Hossain.

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ACADEMIC ARENA

Physics is increasingly intersecting with other disciplines like biology, chemistry, computer science, and engineering, opening interdisciplinary areas. Our course structure is designed keeping in mind the interdisciplinary aspects. In the year 2024, we have revised **three elective courses:**

Fundamentals of material: Structure and characterization,

Optoelectronics materials and devices,

Laser and Fiber Optics.

We are planning to introduce the **BS-MS course** in the near future following the new education policy. It is under development.

Physics is a universal language of science. Department of Physics, IIEST offers **postgraduate (MSc)** as well as **doctoral research (PhD)** in modern science. Pursuing a Master of Science (MSc) in Physics can be an excellent choice for undergraduate students who are passionate about exploring the fundamental laws of nature. MSc in Physics provides an opportunity to explore specialized topics such as quantum mechanics, semiconductor physics, nuclear and astrophysics, nonlinear optics, advanced condensed matter physics, field theory and particle physics, plasma physics, etc. more deeply. This advanced study builds on undergraduate knowledge and offers a detailed understanding.

The coursework for PhD students is designed to make them skillfully acquainted with modern fields of research and research methodology. PhD students find opportunities to collaborate internationally or study abroad. Students often have access to career opportunities in the fields of research and technology.

Our course structure focuses on proper skill development for those who aspire to contribute to research or teaching. Importance is given to develop analytical and problem-solving skills: **Analytical Thinking-** Solving complex problems using mathematical and computational methods, **Programming and Computational Skills-** Many MSc programs incorporate coding and data analysis, which are highly transferable to other fields, **Experimental Techniques-** Laboratory-based projects develop expertise in sophisticated instruments and experimental methods.

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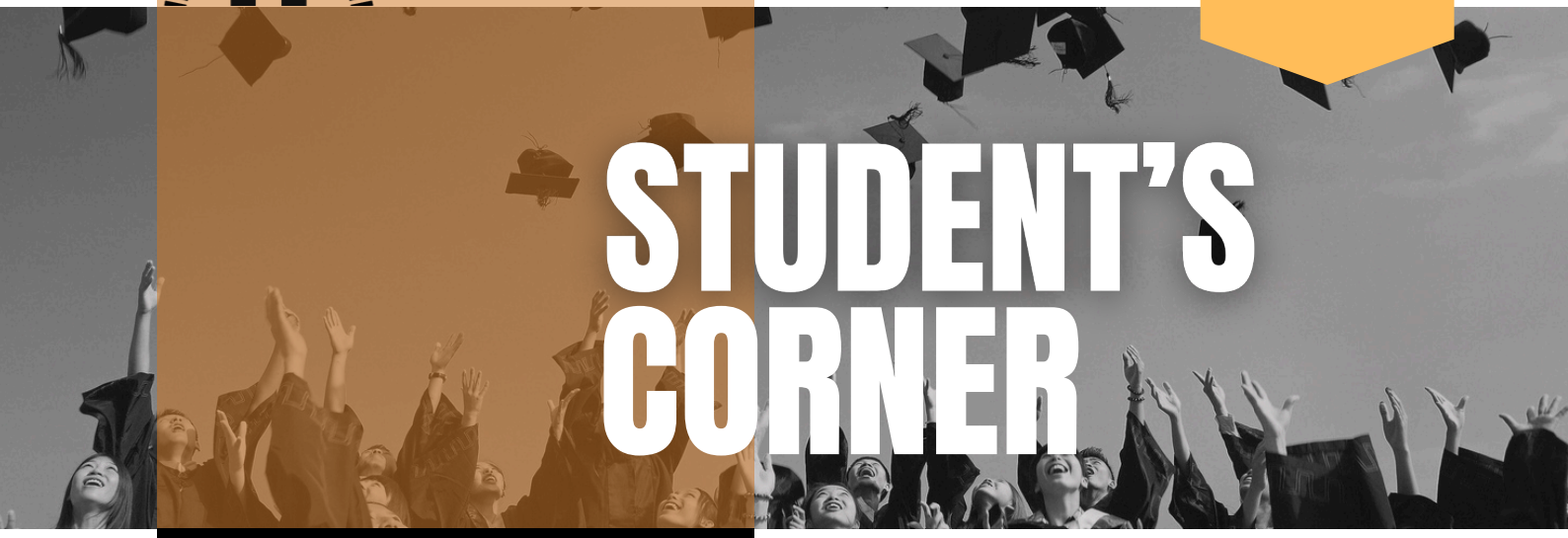

STUDENT'S CORNER

EVENTS

Each year, we celebrate '**ALAPAN**' and **Teacher's Day** with gratitude and joy, along with it we organize **Departmental tour** (A memorable trip to the **Sundarbans Delta** in 2024) which brought students closer to nature and fostered camaraderie, and a **Departmental tournament** (cricket and badminton) in which we display our athletic talent.

EXPERIENCE & CAMPUS LIFE

Our department provides an enriching experience, with **research exposure** and hands-on lab sessions starting in the second semester, ensuring a strong practical foundation. A wide range of electives allows students to explore diverse academic interests. The **green campus** offers a peaceful environment, while active participation in various clubs adds vibrancy to campus life, blending learning with creativity and community.

Competitive EXAMS

JEST: Shivam Kumar Upadhyay, Adarsha Mandal, Sanju.
CSIR NET: Neeraj, Ajay Kumar.
GATE: Somnath Majumder, Adarsha Mandal, Dhiman Kumar Chakraborty, Tanvi Shamnath Bandkar, Sahil kumar, Popat Jeel Hitendrabhai, Shibshankar, Subham Banerjee, Jyoti Mandal, Suprita Paul, Neeraj.

INTERNSHIPS & WORKSHOPS

Jyotishmita Bhagawati: NIT Rourkela, Workshop on Quantum Computing, Circuits, Algorithms, and Machine Learning.
MD Majid Hussain: IISER Berhampur, Bookworm Club Workshop.
Sonal Roy: One week online national workshop conducted by IAPT RC 13 & RC 02 "Alice in quantum land".
Dev Kumar Manjhi: The Agnirva Space Internship Program, ISRO

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STUDENT'S CORNER

NON-ACADEMIC ACHIEVEMENTS

Ajay Kumar represented the institute in the All-India Inter-NIT Cricket Tournament 2024.
Pallabi Saha, Aprameyan Veeraraghavan, and Rahul Barman: Active participants in the Euphony Club, represented in Rebeca events.
Sampriti Kumar: Won 1st prize in a painting competition with her tempera art.

CAREER PROGRESSIONS

Binoy Krishna Ghosh, Postdoctoral Researcher, joined as Assistant Professor of WBPSC.
Medha Rakshit, Ph.D. Scholar, joined as Postdoctoral Researcher at IIT Bombay.
Nirmallya Das, Ph.D. Scholar , joined as Postdoctoral Researcher at James R. Macdonald Laboratory, USA.
Yajna Sapkota, Ph.D. Scholar, joined as Assistant Professor at Dudhnoi College, Assam.
Arkabrata Gupta, Ph. D. Scholar, joined as Assistant Professor at UEM, Kolkata.
Joydeb Biswas, Ph.D Scholar, joined as Assistant Professor at AIEM-JIS College, Hooghly, West Bengal.
Vivek Mishra, M.Sc. student , joined as BARC Trainee (Scientific Assistant).
Neeraj, M.Sc. student, joined as Ph.D. Scholar in IISc Bangalore.
Tanvi Shamnath Bandkar, M.Sc. student, joined as Ph.D. Scholar in IIT Jodhpur.
Jyoti Mandal, M.Sc. student, joined as Ph.D. Scholar in IIT Roorkee.
Suprita Paul, M.Sc. student, joined as Ph.D. Scholar in IIT Dhanbad.
Popat Jeel Hitendrabhai, M.Sc. student joined as Ph.D. Scholar in IIT Indore.

SEMINARS & CONFERENCES

Pallabi Saha, Oral presentation, International Conference NSESD2024, Asansol.
Nikki Kumari & Dikshit Majhi, Research work, showcased in DAE symposium on nuclear physics at IIT, Roorkee.
Sanju Alaria attended CoE International Conference on Molecular Materials and Functions, IIT Madras
M.Sc Students
"Blazars and Restless AGN (COBRA)"
"School on Quantum Field Theory (QFT)" attended by 8 students.

STUDENT'S CORNER

CONFERENCE **PRESENTATIONS**

Poster presentation by **Somen Adhikary**, International Conference on VLSI Design (VLSID-2024), Kolkata.
Oral presentation by **Atrayee Mishra**, International Conference on VLSI Design (VLSID-2024), Kolkata.
Oral presentation by **Somen Adhikary**, International Conference NSESD2024, Asansol.
Research work of **Atrayee Mishra** presented at International Conference NSESD2024, Asansol.
Poster presentation by **Avra Banerjee**, International conference on Bose-Einstein Condensation-2024 (SNBNCS), Kolkata.
Poster presentation by **Avra Banerjee**, National Conference on Condensed matter, material science and Statistical Physics, Kolkata.
Poster presentation by **Rozina Rahaman**, DAE symposium on nuclear physics at IIT, Roorkee.
Poster presentation by **Arkadip Bera**, DAE symposium on nuclear physics at IIT, Roorkee.
Poster and oral presentation by **Habibur Rahman**, DAE symposium on nuclear physics at IIT, Roorkee.
Poster presentation by **Sahil Kumar**, (Project fellow), DAE symposium on nuclear physics at IIT, Roorkee.
Oral presentation by **Mainak Swarnakar**, 5th International Conference on Processing and Characterization of Materials, NIT Rourkela.
Oral presentation by **Partha Sarathi Mandal**, 5th International Conference on Processing and Characterization of Materials, NIT Rourkela.
Poster presentation by **Ajay Kumar**, International conferences on condensed matter physics (AC2MP-2024) at IIT, Patna.

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ALUMINI CORNER

Dr. ARGHYA MUKHERJEE

alumnus of the Physics Department, completed his **M.Sc. in 2012**. He began his academic journey as a **Ph.D. scholar** at the **Institute of Plasma Research (IPR), Ahmedabad,** where he laid the groundwork for his research career. After earning his doctorate, he joined **IISER Kolkata** as a **postdoctoral researcher**, spending two years further honing his expertise in physics. Arghya then ventured into international research, first at the Extreme Light Infrastructure (ELI) ERI in the Czech Republic and subsequently at the GSI Helmholtz Centre for Heavy Ion Research in Germany. In 2024, he returned to India to assume the role of **Assistant Professor** in the Physics Department at **Amity University, Mohali**. Arghya provided a brief overview of his research, stating, *"I am a computational plasma physicist. I maintain active research on high-intensity laser-plasma interaction by performing Particle-in-Cell (PIC) simulations. My primary field of research is nonlinear wav particle interaction, particle acceleration and space plasma physics."*.

ALUMINI NETWORK

A robust alumni network serves as one of the many fundamental pillars of a successful academic department, contributing to its strength and long-term impact. The department fosters this connection not only through organized **alumni meets** but also through ongoing engagement by faculty and staff via social networking platforms and other means. Our commitment to maintaining **strong connections with our alumni** has brought to light multiple inspiring success stories in 2024, **showcasing their outstanding achievements and contributions across diverse fields**. In 2024, three of our distinguished alumni were appointed as assistant professors of physics, while another received the prestigious Postdoctoral Award.

The achievements of our alumni reflect the **unwavering dedication** of the department to fostering excellence in education and research. As they continue to excel in their respective fields, their commitment to giving back to the department ensure
that future generations of students are empowered to reach even greater heights. Together, they embody the enduring legacy of our vibrant academic community.

ALUMINI CORNER

Dr. SUBRATA **JANA**

An alumnus from the **Class of 2012**, Subrata carved a remarkable academic path, starting his **Ph.D**. at **NISER, Bhubaneswar**, followed by **postdoctoral research** at **Ohio State University and the Weizmann Institute of Science, Israel.** In 2023, he joined Nicolaus Copernicus University, Toruń, Poland, as an Assistant Professor of Physics, specializing in theoretical developments of (Time-Dependent) Density Functional Theory (TD-DFT), beyond DFT methods, localized Wannier functions, model Hamiltonians, and tight-binding calculations. Reflecting on his journey, Subrata shared, *"The education I received from the department not only provided me with academic knowledge but also instilled a sense of purpose, leadership, and resilience that continues to guide me in my professional and personal life. As I move forward, I remain committed to supporting department in any way I can, whether through mentoring current students, sharing my story with prospective students, or contributing to the continued growth and success of the institution."*

Dr. DEBADITYA **BISWAS**

Another remarkable success story of 2024, from the 2012 batch is that of Debaditya Biswas, who is a **postdoctoral research associate** at **Virginia Tech, USA**, and actively engaged at the Thomas Jefferson National Accelerator Facility (Jefferson Lab) as an experimental particle and nuclear physicist. After completing his M.Sc., he pursued a **Ph.D**. at **Hampton University** in the USA. Following his doctoral studies, he assumed his current role. In 2024, Debaditya received the prestigious Jefferson Science Associates (JSA) Postdoctoral Award (https://www.jlab.org/news/releases/postdoc-takes multipronged-approach-muon-detection) for his innovative proposal to develop a Muon Detector for Jefferson Lab's Hall C. This detector will enable the groundbreaking Double Deeply Virtual Compton Scattering (DDVCS) experiment, a reaction that has never been measured before. The JSA award, which includes a $10,000 research grant, will support this pioneering project at Jefferson Lab. Debaditya's achievements underscore the impact and excellence of the department's alumni on global scientific research. Debaditya recalls the importance of IIEST days in his life and career : " The inspiring faculties of IIEST (then BESU) played a pivotal role in shaping my research career. I hope to give back by supporting and guiding new students of IIEST in their academic endeavors".

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From the
EDITORIAL DESK

At present, our department comprises thirteen faculty members:

- **Dr. Krishnendu Mukherjee (HoD)**
- **Prof. Mousumi Basu**
- **Dr. Sampad Mukherjee**
- **Dr. Samar Jana**
- **Dr. Syed Minhaz Hossain**
- **Dr. Amit Kundu**
- **Dr. Dwipesh Majumder**
- **Dr. Mojammel Haque Mondal**
- **Dr. Abhijit Bisoi**
- **Dr. Abhijit Majumdar**
- **Dr. Manish Pal Chowdhury**
- **Dr. Sourav Pramanik**
- **Dr. Sangeeta Das** (Temporary Faculty)

Additionally, we have three teaching assistants:

- **Dr. Bibhas Chandra Mitra**
- **Mr. Amal K. Mondal**
- **Mr. Sintu Das**

Supporting our administrative operations are **Mr. Asim Chakraborty** (Junior Assistant) **and Amiya Kr. Pau**l (Office Staff).

Our department embarked on its journey in 2000 with the introduction of the **M.Sc. program**, emphasizing both teaching and research. Over the years, we have expanded by welcoming esteemed faculty members with expertise in **modern physics** and **advanced technologies**. Our mission is to achieve academic excellence by leading research in fundamental areas of physics. We strive to cultivate a vibrant research environment that encourages innovation and the exploration of fundamental scientific challenges. Committed to delivering a **transformative education in physical sciences**, we aim to equip our students with the knowledge, skills, and ethical values necessary to contribute meaningfully to society. We foster an engaging learning atmosphere that nurtures intellectual curiosity, sharpens critical thinking, and instills a deep passion for understanding the basic principles and applications of physics.

We extend our gratitude to **Prof. Dipali Banerjee** and **Dr. Debasis Ray**, who are superannuated in 2024, for their invaluable contributions to the department.

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