



## SATYENDRA NATH BOSE NATIONAL CENTRE FOR BASIC SCIENCES



Volume 14, Issue 2 (2024)

### Editorial:

We are very pleased to publish the second issue of Newsletter 2024. We appreciate the work of the Newsletter support staff and members. We thank all contributors for their timely and informative articles, which greatly enriched the newsletter. This issue covers academic and non-academic events in the first half of 2024, from January to June. We hope readers will enjoy it.



Professor Satyendra Nath Bose

## News and Events (Academic)

### Open Day



On the occasion of the 130<sup>th</sup> birth day of Prof. Satyendra Nath Bose, the Centre organized an 'Open Day' programme on 1<sup>st</sup> January 2024 to give exposure of the cutting-edge scientific research work conducted by the scientists and research scholars of the SNBNCBS. The participants varying from school students to post graduate science students, budding research scholars and teachers enthusiastically participated in the event.

Director Prof. Tanusri Saha Dasgupta gave an overview of the diverse areas of research being carried out at the Centre. Dr. Saquib Shamim gave an idea on the central laboratory facilities of the Centre. The visitors visited the Bose archive, and they were given the glimpses of Bose's life and work through pictures, letters, published papers, and artifacts.

The visitors were taken to the laboratories. At the Nano lab, there was demonstration of how nanostructures are made using pulse laser deposition method, at the Scanning Electron Microscope lab, how electron beams are used to 'paint' super magnified images of tiny objects, and at the X-Ray crystallography lab, they observed how X-Ray diffraction method is used for understanding arrangements of atoms in a crystal.

The last item in the day's itinerary was a sky watch through the 8-inch telescope with a roll-off roof. The four celestial items on the menu were the moon, Jupiter and its four moons, Mars and Saturn. Most of the young visitors sighted craters of the Moon and the planets of Jupiter for the first time in their life.







**International Conference on Photonics, Quantum Information, and Quantum Communication (ICPQIQC - 2024)**

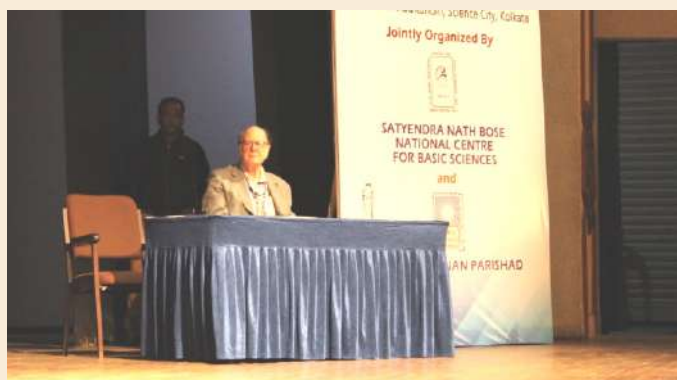


The five-day ‘International Conference on Photonics, Quantum Information and Quantum Communication (ICPQIQC-2024)’ was held during January 29 to February 02, 2024 at the Bishwa Bangla Convention Centre in Kolkata, to commemorate the centenary of the Bose-Einstein statistics. The S. N. Bose National Centre for Basic Sciences brought together the best minds engaged in frontline research in quantum information theory, quantum communication, quantum cryptography, quantum sensing, photonics and other emerging areas in quantum mechanics. Speakers were invited from the UK, the USA, Germany, Australia, Japan, Spain, Hong Kong and India, to make the five-day conference a buzzing hub

for mutual inspiration and exchange of new ideas. In the inaugural session, Professor Ajay Sood, Principal Scientific Adviser to the Government of India, mentioned that we were passing through the second revolution in quantum mechanics and that the gap between fundamental science and technology is closing. Prof. Abhay Karandikar, Secretary, Department of Science and Technology (DST), said that four mission hubs would be set up across the country under the National Quantum Mission (NQM) and the Mission will open the quantum science and technology domain for international collaboration. The conference had 5 plenary sessions, 18 invited talks, 10 contributory talks and almost 100 of posters, that brought out theoretical aspects as well as possibilities of practical applications, heralding a ‘new quantum era’.



**Public Outreach Programme celebrating BoseStat@100**



An outreach program was held followed by the ICPQIQC 2024 on 3rd February, 2024 at the Mini Theatre of Science City, Kolkata.

The program began with the welcome address of Prof. B N Jagatap, IIT Bombay, and it was then followed by the talk of Prof. Palash Baran Pal, Calcutta University, on “Planck’s Formula, Bose’s Derivation, Einstein’s Generalization”.

The film ‘Dear Master’, an hour-long documentary on the relationship between Bose and Einstein, was screened.

After that, Prof. Partha Ghose, a student of S. N. Bose, told ‘The Story of Bose, Photon Spin and Indistinguishability’, explained how Bose arrived at the



idea of indistinguishability of the light quanta from his statistical calculations. Finally, Prof. Charles Bennet, one of the founding fathers of quantum information theory and presently associated with IBM Research, took the centre-stage to deliver the talk ‘Occam’s Razor, Boltzman’s Brain, and Wigner’s Friend’.

The program ended with an excellent interactive session with enthusiastic participants.

### National Science Day

National Science Day 2024 has been observed in the Centre on 28th February 2024. Total 105 science enthusiastic students from four different colleges - Guru Nanak Institute of Technology, Sodepur; Ramkrishna Mission Vivekananda Centenary College, Rahara; St. Paul’s Cathedral Mission College, Kolkata; and Ramkrishna Mission Vivekananda Educational and Research Institute, Belur, have participated in the programme. The theme of the Science Day is “Indigenous Technologies for Viksit Bharat”. The programme started at 11 AM with Inaugural Address by Prof. Amitabha Lahiri, Dean (Academic Program). Prof. Anjan Barman, Dean (Faculty), also addressed the audience. Prof. Rajib Kumar Mitra conveyed the message given by Prof. Tanusri Saha Dasgupta, Director, SNBNCBS. Dr. Manik Banik and Dr. Saquib Shamim faculty members of the Centre delivered popular talks to the audience. Participants visited S N Bose Archive and different laboratories in the campus. They also participated in an Inter-college Quiz Contest arranged by the Centre.



### International Women’s Day

S. N. Bose National Centre for Basic Sciences celebrated ‘International Women’s Day’ on 8th March, 2024 at Silver Jubilee Hall. The objective of the programme was to discuss the problems of women scientists related to gender issues, which they experienced during their academic journeys, and also to find out the remedies. The programme started with the welcome address by the Director, Prof. Tanusri Saha-Dasgupta. There were two panel discussions. The first discussion was on the topic “Journey towards being extraordinary women” with panelists Prof. Sakuntala Chatterjee, Dr. Urna Basu, and Dr. Parijat Dey. The moderator of the discussion was Prof. Tanusri Saha Dasgupta. While talking about their experiences, most of the panelists mentioned that they are lucky enough to have family support. They also admitted the fact that they knew many such incidences where scholars could not achieve their goals due to lack of family support or gender bias present in the society. The second Panel discussion was on “Initiatives taken for reaching the milestones”. The panelists were Dr. Sumaiya Parveen, Dr. Asmita Kumari, Dr. Paramita Banerjee, Dr. Jayeta Banerjee, Dr. Gargee Bhattacharyya, and Dr. Tanushree Das. Dr. Manik Banik was the moderator of the session. The panelists pointed out that if spouse transfers to another place, female partner is forced to leave the job first. Even today, women are evaluated on the basis of their looks, skin colour etc. The mindset of the people should be changed and women should be evaluated by their work and achievements. Most of the panelists considered their mother as their role model in life. The programme was an eye-opener and enlightening to a large number of male and female participants having spontaneous interaction with the panelists.





## National Technology Day

The National Technology Day was celebrated on 11<sup>th</sup> May 2024 through a virtual meeting. After a brief prelude on the importance of the day by the director Prof. Tanusri Saha-Dasgupta, a technical talk was delivered by Dr. Shubhasis Haldar, who spoke on a very recently developed technology: covalent magnetic tweezer and its application in complex biological systems. Subsequently, Dr. Pradip Pachfule delivered the second technical lecture in which he talked on fuel cells, which are the new avenue towards future energy solutions. The lectures were very informative and interactive and were virtually attended by faculty members, students and staffs of the Centre.



## Bose Fest

The inaugural session of Bose Fest 2024 started with lighting up the lamp at Silver Jubilee Hall, SNBNCBS, on 22nd February 2024, and then a Welcome Address by the Director, Prof. Tanusri Saha-Dasgupta, Prof. Amitabha Lahiri, Dean (Academic Programme) and Prof. Rajib Kumar Mitra. The Research Scholars, Faculty Members, and Staff of the Centre celebrated the three days 'Bose Fest' with lots of scientific talks, research poster presentations, Photo Fest and finally, a cultural program.



## Educational Visits

M.Sc. students from the Berhampur University, Odisha visited the Centre on 03.04.2024 as part of their academic visit. The students visited different laboratory facilities and they were demonstrated cutting edge research facilities like Optical Lab, Transmission Electron Microscope (TEM), Pulsed Laser Deposition (PLD), X-ray Diffractometer (XRD), Physical Property Measurement System (PPMS).







The undergraduate (B.Sc.) students from the College of Basic Science & Humanities, Bhubaneswar (affiliated with Odisha University of Agriculture & Technology (OUAT)) visited the Centre as part of their academic visit. The students visited different laboratory facilities and they

were demonstrated cutting edge research facilities like Optical Lab, Transmission Electron Microscope (TEM), Pulsed Laser Deposition (PLD), X-ray Diffractometer (XRD), Physical Property Measurement System (PPMS). They also visited the Archive to experience the biographical sketch and work of S N Bose.



### Memorandum of Understanding (MoU) with IIMCIP

A Memorandum of Understanding (MoU) has been signed between the IIM Calcutta Innovation Park (IIMCIP) and the S. N. Bose National Centre for Basic Sciences (SNBNCBS) on 3rd June 2024, with the purpose of collaboration towards implementation of joint activities for supporting innovators and entrepreneurs. The MoU is to facilitate transformations in innovations from research laboratories to sustainable business ventures.



### Foundation Day

On occasion of celebration of 38<sup>th</sup> Foundation Day, in the afternoon session of the day, a captivating scientific talk and a heart warming musical program were organized. About 150 number of strong audience, consisting of professors, research scholars, students and administrative staff, had gathered at the Silver Jubilee Hall of the Centre in this event. Prof. B.N. Jagatap, Chairman of the Governing Body of the Centre reminded all present that the United Nations has declared 2025 as the year of

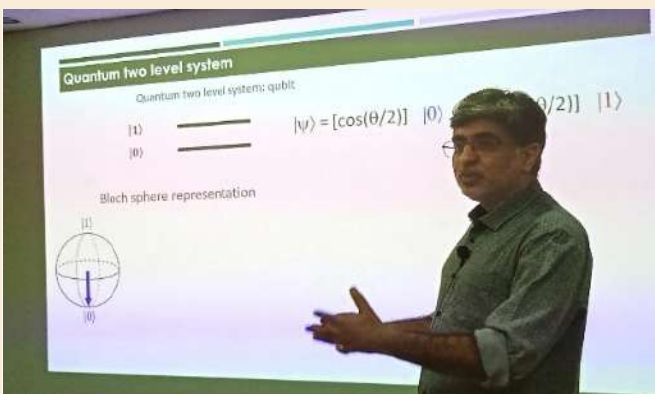


Quantum Technology and he hoped that S.N. Bose Centre would play a lead role in taking India's Quantum Mission forward.

Continuing on this spirit, Dr. Rajamani Vijayraghavan, head of the QuMac (Quantum Measurement and Control) Lab at TIFR, Mumbai gave his hour long captivating talk on How to built Quantum Computers by outlining in very simple terms the basic difference between classical computers and quantum computers. In the domain of quantum hardware, experiments are being carried out with trapped ions, electrons in a magnetic field, 'cold atoms' and topological qubits. He elaborated that the QuMac Lab at TIFR was working with superconducting qubits. Nano step by nano step, they are progressing towards developing a fully functional quantum computer in line with National Quantum Mission of India.

On this occasion, the prizes were distributed viz., Best Teacher Award, First Rank Holder of IPHD programme, Best Library Users' Recognition Award, Best Administrative Staff Recognition Award and the prizes to the winners of essay competition of Swachchata Pakhwada-2024. Following this, Debayan Majumdar from Santiniketan began his rendition of Raag Bhim Palashi on the esraj, carrying forward the musical legacy of Prof. Satyendra Nath Bose. The grand finale of the evening was a program on scientific ideas in Tagore's songs Rabindra Gaan-e-Bigyan Chetana (Scientific thoughts in music of Tagore)" by Shohochori group.

The program was intellectually stimulating and aesthetically appealing, leaving the audience with rich fodder to ruminate on.





## Summer Research Programme

A total of 35 students from different institutions / universities across the country have done their summer internship during the period. The interns include funding from the Centre as well as from INSPIRE and INSA-NASI-IAS.

## Colloquium / Named Lectures

### Bose Colloquium

1. Prof. Dipankar Banerjee, Director, Aryabhata Research Institute of Observational Sciences (ARIES), Nainital delivered a lecture on the topic 'Aditya L1 Mission' on 09.01.2024.
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2. Dr. Vincent Cros, CNRS Senior Researcher and deputy Director, Laboratoire Albert Fert, CNRS Thales, Université Paris – Saclay, delivered a lecture on the topic 'Spintronics with magnetic skyrmions' on 28.03.2024.
  3. Prof. Tata Narasinga Rao, Director, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), Hyderabad, delivered a lecture on the topic 'Translational Materials Research: Crossing the Valley of Death' on 02.05.2024.
  4. Prof. Partha Pratim Chakrabarti, Former Director, Indian Institute of Technology Kharagpur, delivered a lecture on the topic 'Artificial Intelligence and Machine Learning - Ushering a New Era in Science and Technology' on 31.05.2024.
  5. Prof. Subhrangshu Sanyal, CEO - IIM Calcutta Innovation Park, delivered a lecture on the topic 'Technology Commercialization' on 03.06.24.
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### Institute Colloquium

Prof. P. B. Sunil Kumar, Chair Professor, Department of Physics & Centre for Soft and Biological Matter, IIT Madras, delivered a lecture on the topic 'Collective Motion Of Self-Propelled Ring Polymers On Circularly Patterned Substrates' on 11.01.2024.

## Other Seminars

1. A Departmental Seminar (PCS) was held on 03.01.2024. Prof. Sanjib Sabhapandit, Professor, Theoretical Physics, Raman Research Institute, delivered a lecture on "Novel Features Of Direction Reversing Active Brownian Particle".
2. A Departmental Seminar (AHEP) was held on 04.01.2024. Dr. Rajorshi Bhattacharya, Ph. D at Physics with Astrophysics Concentration, University of New Mexico, delivered a lecture on "Evolved Stars: Distance Estimates Using Infrared Data And Machine Learning".
3. A Departmental Seminar (CBS) was held on 05.01.2024. Dr. Debashish Adhikari, Associate Professor, Chemical Sciences, IISER Mohali, delivered a lecture on "Exploring Super-Reducing Behavior Of Simple Organic Molecules And Their Application In Photocatalysis".
4. A Departmental Seminar (CMMP) was held on 08.01.2024 by the American Chemical Society on the topics (i). An Introduction To ACS (ii) Tips on Scholarly Publishing.
5. A Departmental Seminar (CMMP) was held on 08.01.2024. Prof. Deshdeep Sahdev, Former Member, Technology Development Board, Govt. of India; Member, Expert Advisory Group, DST; Former Professor, Dept. of Physics, IIT, Kanpur; Director, Quazar Technologies, New Delhi, delivered a lecture on "Cutting-Edge Physics at The Interface of Academia & Industry in India".
6. A Departmental Seminar (CMMP) was held on 10.01.2024. Dr. Shubhadeep Biswas, Post Doc at SLAC National Accelerator Laboratory, Stanford University, CA, USA, delivered a lecture on "Attosecond Vision And Control of Electron Dynamics In Quantum System".
7. A Departmental Seminar (AHEP) was held on 11.01.2024. Dr. Upamanyu Moitra, Postdoctoral Fellow, High Energy, Cosmology and Astroparticle Physics Section, The Abdus Salam International Centre for Theoretical Physics, Strada Costiera, Trieste, Italy, delivered a lecture on "Entanglement Entropy In String Compactifications".
8. A Departmental Seminar (AHEP) was held on 12.01.2024. Dr. Nirmalya Kajuri, Assistant Professor, IIT Mandi, delivered a lecture on "Bulk Reconstruction and Symmetries".



9. A Departmental Seminar (PCS) was held on 15.01.2024. Dr. Pranay Mandal, Post Doc at Max-Planck Institute of Molecular Cell Biology and Genetics, , delivered a lecture on “Dynamics of Helix at Nanoscale: From Active Matter To DNA Protection”.
10. A Departmental Seminar (AHEP) was held on 6.01.2024 Dr. SkMinhajur Rahaman, Post-Doctoral Fellow, University of Israel, delivered a lecture on “Role of Internal Shocks in Astrophysics”.
11. A Departmental Seminar (CMMP) was held on 16.01.2024 Dr. Suryoday Prodhan, Post-Doctoral Research Associate, Prof. Alessandro Troisi’s group, Department of Chemistry, University of Liverpool, delivered a lecture on “Effective Model And Efficient Algorithm: A Tale of Two Tools For Plastic Semiconductor Discovery”.
12. A Departmental Seminar (PCS) was held on 17.01.2024. Dr. Nishchhal Verma, Postdoc, Columbia University, delivered a lecture on “Chiral Textures in Magnetic Materials And Moire Heterostructures”.
13. A Departmental Seminar (AHEP) was held on 06.02.2024. Dr. Souradeep Sasmal, Research Associate, Department of Physics, Indian Institute of Technology Hyderabad, delivered a lecture on “Unbounded Sharing of Nonlocality Using Projective Measurements”.
14. A Departmental Seminar (CBS) was held on 07.02.2024. Dr. Saumik Sen, Researcher at Condensed Matter Theory Group, Laboratory for Theoretical and Computational Physics, Division of Scientific Computing, Theory and Data, Paul Scherrer Institute, Villigen PSI, Switzerland, delivered a lecture on “Understanding the retinal isomerization reaction using hybrid QM/MM simulations”.
15. A Departmental Seminar (CMMP) was held on 12.02.2024. Dr. Dhani Nafday, Post Doctoral Fellow, Department of Applied Physics, KTH Royal Institute of Technology, Stockholm, Sweden, delivered a lecture on “Stacking of Charge Density Waves in 2H NbSe<sub>2</sub> Bilayers”.
16. A Departmental Seminar (CBS) was held on 13.02.2024. Dr. Soumya De, Associate Professor, Department of Bioscience and Biotechnology, IIT Kharagpur, delivered a lecture on “Intrinsically disordered proteins: Functionality of chaos”.
17. A Departmental Seminar (CMMP) was held on 16.02.2024. Dr. Kartik Samanta, Postdoctoral Research Associate, Department of Physics and Astronomy & Nebraska Center for Materials and Nanoscience, University of Nebraska, USA, delivered a lecture on “Magnetic tunnel junctions with spin-split collinear antiferromagnets”.
18. A Departmental Seminar (AHEP) was held on 20.02.2024. Dr. Subhajit Mazumdar, Postdoctoral Scholar, Okinawa Institute of Science and Technology Graduate University, Japan, delivered a lecture on “Kite and Triangle diagrams through Symmetries of Feynman Integrals”.
19. A Departmental Seminar (CBS) was held on 27.02.2024. Dr. Alexander Hautke, Postdoctoral Researcher, Ebbinghaus lab, Ruhr-Universität Bochum and Research Center, Germany, delivered a lecture on “Conformation, Localization and Condensation of CAG Repeat RNAs in vitro and inside living cells”.
20. A Departmental Seminar (AHEP) was held on 21.03.2024. Dr. Aritra Ghosh, Prime Minister's Research Fellow, School of Basic Sciences, Indian Institute of Technology Bhubaneswar, delivered a lecture on “Contact Geometry and Thermodynamics”.
21. A Departmental Seminar (CMMP) was held on 03.04.2024. Dr. Avijit Saha, Postdoctoral Research Fellow. Technische Universität Dresden, delivered a lecture on “Pb- and Cd-free Quantum Dots: Synthesis, Properties and Applications in Optoelectronic Devices”.
22. A Departmental Seminar (AHEP) was held on 16.04.2024. Dr. Sachin Grover, PhD Scholar, Harish-Chandra Research Institute, Allahabad, delivered a lecture on “Duality defects of D<sub>n</sub> type Niemeier Lattice CFTs”.
23. A Departmental Seminar (CMMP) was held on 17.04.2024. Dr. Rajdeep Sensarma, Associate Professor, Department of Theoretical Physics, Tata Institute of Fundamental Research Centre, delivered a lecture on “Electronic Correlations in Moire Flat Bands”.
24. A Departmental Seminar (AHEP) was held on 22.04.2024. Dr. Subham Dutta Chowdhury, Post-Doctoral Researcher, University of Chicago, delivered a lecture on “Non-relativistic conformal field theories and (Un)nuclear physics”.



25. A Departmental Seminar (AHEP) was held on 23.04.2024. Dr. Madhavan Varadarajan, Professor, Theoretical Physics, Raman Research Institute, Bengaluru, delivered a lecture on “Spherical collapse and black hole evaporation”.
26. A Departmental Seminar (AHEP) was held on 09.05.2024. Dr. Shiladitya Mal, Associate Professor, Centre for Quantum Science and Technology, Chennai Institute of Technology, delivered a lecture on “Quantum correlation in time and applications to quantum science and technology”.
27. A Departmental Seminar (CBS) was held on 14.05.2024. Prof. Ranjit Biswas, Senior Professor, SNBNCBS, delivered a lecture on “Bond that Pays Dividends and Assign Identity”.
28. A Departmental Seminar (CBS) was held on 21.05.2024. Dr. Debayan Chakraborty, Reader F, The Institute of Mathematical Sciences, Chennai, delivered a lecture on “Understanding amyloid aggregation from the perspective of the monomer conformational ensemble”.
29. A Departmental Seminar (CMMP) was held on 22.05.2024. Dr. Sudipta Bera, Senior Post-Doctoral Fellow, Molecular Chemistry and Materials Science, Weizmann Institute of Science, Israel, delivered a lecture on “Protein as a Strange Conducting Medium with a Unique Electron Transport Capability”.
30. A Departmental Seminar (AHEP) was held on 29.05.2024. Dr. Julius Julius, Postdoc, HRI Allahabad, delivered a lecture on “CFT-data of N=4 Super-Yang-Mills”.
31. A Departmental Seminar (AHEP) was held on 30.05.2024. Dr. Santabrata Das, Professor, Indian Institute of Technology Guwahati, delivered a lecture on “Unveiling the accretion scenario of black hole ultra luminous X-ray sources (BH-ULXs)”.
32. A Departmental Seminar (PCS) was held on 04.06.2024. Dr. Ashif Akram, Postdoctoral Fellow, Department of Physics, Kansas State University, Manhattan, delivered a lecture on “A minimalist model for bio-molecular condensates”.
33. A Departmental Seminar (CMMP) was held on 05.06.2024. Dr. Subhamita Sengupta, Visiting Fellow, Tata Institute of Fundamental Research, Mumbai, Former Research Fellow, S. N. Bose National Centre for Basic Sciences, Kolkata, delivered a lecture on “Pinning Down A Liquid”.
34. A Departmental Seminar (AHEP) was held on 20.06.2024. Dr. Shreya Banerjee, Assistant Professor, Department of Physics, IIT (ISM) Dhanbad, delivered a lecture on “Primordial black holes and induced gravitational waves in non-singular matter bouncing cosmology”.
35. A Departmental Seminar (PCS) was held on 21.06.2024. Dr. Jih-Huang Li, Assistant Professor, National Taiwan University (NTU), Taiwan, delivered a lecture on “PushASEP model on a periodic ring”.
36. A Departmental Seminar (CMMP) was held on 26.06.2024. Prof. Pritam Mukhopadhyay, Professor, School of Physical Sciences, Jawaharlal Nehru University, delivered a lecture on “Our Journey in JNU: Stabilization of Organic Radicals to Molecular and Supramolecular Materials”.

## Conferences / Workshops

1. A conference on Two-days Discussion Meeting: Stochastic and Nonlinear Dynamics in Chemistry and Biology (SNDCB-2024) was held during 4 - 5 Jan, 2024. Convenor: Prof. Gautam Gangopadhyay, SNBNCBS; Co-Convenor: Prof. Pulak Kumar Ghosh, Presidency University.



2. A conference on Star Formation Studies in India was held during 8 - 11 Jan, 2024. Convenor: Dr. Tapas Baug, SNBNCBS; Co-Convenors: Dr. Ramkrishna Das and Prof. Soumen Mondal, SNBNCBS.
3. An International Conference on Photonics, Quantum Information, and Quantum Communication was held during 29 Jan, - 02 Feb, 2024. Convenors: Dr. Manik Banik, SNBNCBS; Co-Convenor: Dr. Sunandan Gangopadhyay, SNBNCBS. [Detailed report on page 2]
4. A conference on Time-dependent phenomena in soft and active matter (TPSAM2024) was held during 8 - 9 Mar, 2024. Convenors: Prof. Punyabrata Pradhan and Prof. Jaydeb Chakrabarti, SNBNCBS.

## Ph.D. Awarded/Submitted

### Ph.D. degree awarded

1. **Avisek Maity.** Synthesis, Characterization, Physical Property Studies & Applications of Perovskite Halide. Supervisor: Barnali Ghosh (Saha)
2. **Surya Narayan Panda.** Ultrafast Spin Dynamics in Magnetic Thin Films and Heterostructures. Supervisor: Anjan Barman
3. **Saheli Samanta.** Large Magneto-functional responses in transition metal-based alloys: Protocol dependence across martensitic phase transition. Supervisor: Kalyan Mandal
4. **Parushottam Majhi.** Growth, Structure and Physical Properties of Strained NdNiO<sub>3</sub> Films. Supervisors: Barnali Ghosh (Saha) & Arup K Raychaudhuri
5. **Shantonu Mukherjee.** Some Applications of Quantum Field Theoretic Dualities to Superconducting Systems. Supervisor: Amitabha Lahiri
6. **Abhik Ghosh Moulick.** Microscopic insights to relaxation phenomena in proteins. Supervisor: Jaydeb Chakrabarti
7. **Rahul Karmakar.** Manipulation of Soft Matter System in Nonequilibrium Conditions. Supervisor: Jaydeb Chakrabarti
8. **Swarnali Hait.** Investigation of Magnetoelectric Properties in Transition Metal Oxides and Their Applications. Supervisor: Kalyan Mandal
9. Biswajit Pabi. Influence of molecular orientation on the electronic transport of a metal-molecular-metal junction. Supervisor: Atindra Nath Pal
10. **Shubhrasish Mukherjee.** Investigation of Hybrid Opto-electronic Devices Based on Graphene-Transition Metal Dichalcogenides Heterostructures. Supervisors: Samit Kumar Ray & Atindra Nath Pal
11. **Sudipta Chatterjee.** Investigation on transport and magneto-transport properties of 3d transition metal based compounds. Supervisors: Kalyan Mandal & Barnali Ghosh (Saha)
12. **Shobhan Dev Mandal.** Bacterial chemotaxis in a noisy environment. Supervisor: Sakuntala Chatterjee
13. **Anwasha Chakraborty.** Some Physical and Mathematical Aspects of Non-commutative Geometry. Supervisor: Biswajit Chakraborty
14. **Sumana Pyne.** Spectroscopic Studies on Some Biologically Important Systems. Supervisor: Rajib Kumar Mitra
15. **Ankur Srivastav.** Application of the Gauge/Gravity Duality in Physical Systems. Supervisor: Sunandan Gangopadhyay
16. **Shiladitya Karmakar.** Computation Based Understanding and Prediction of Technologically Important Indigenous Materials. Supervisor: Tanusri Saha Dasgupta
17. **Anish Das.** Investigation of geodesics and shadows of black hole spacetimes. Supervisor: Sunandan Gangopadhyay
18. **Susmita Changdar.** Structural, Physical, and Electronic Properties Studies of Topological Materials. Supervisor: Thirupathiah Setti.

### Ph.D. thesis submitted

1. **Arundhati Adhikari.** Quasistatic and Ultrafast Magnetization Dynamics in Ferromagnetic Nanostructures. Supervisor: Anjan Barman
2. **Sk Saniur Rahaman.** Quantum Phases in Quasi-One Dimensional Frustrated Spin Systems. Supervisor: Manoranjan Kumar
3. **Suravi Pal.** Structure and dynamics of modulated colloids: Theoretical studies. Supervisor: Jaydeb Chakrabarti
4. **Ardhendu Pal.** Coherent And Incoherent Optical Source Based Cavity Enhanced Absorption Spectroscopy For Trace Molecule Sensing. Supervisor: Manik Pradhan
5. **Achintya Low.** Structural, Physical, Electronic Properties Studies on Kagome Lattice Systems. Supervisor: Thirupathiah Setti
6. **Premashis Kumar.** Nonequilibrium Thermodynamic Signatures of Some Complex Dynamical System. Supervisor: Gautam Gangopadhyay
7. **Shubhadip Moulick.** Study Of Low Frequency Noise And Electronic Transport in 2D Van-der Waals Material And Their Functional Devices. Supervisor: Atindra Nath Pal
8. **Jyotirmoy Sau.** Magnetic and Transport Properties in Correlated Topological Materials: A first-principles study. Supervisor: Manoranjan Kumar
9. **Sayan Routh.** Synthesis, Transport, Structural, And Electronic Properties Studies Of Topological



Systems. Supervisors: Prosenjit Singha Deo & Thirupathaiah Setti

10. **Dhrubajyoti Maji.** Investigation of Interaction and Dynamics in Complex Liquids: Theory and Computer Simulations. Supervisor: Ranjit Biswas
11. **Prasun Boyal.** Role of Structure in Magnetic and Topological Transitions. Supervisor: Priya Mahadevan
12. **Jayanta Mondal.** Experimental Dielectric Spectroscopic Investigation of Room Temperature Biodegradable Eutectic Solvents and Related Chemical Systems. Supervisor: Ranjit Biswas
13. **Tanmoy Chakraborty.** Studies Of Fluctuations And Transport In Active Matter Systems. Supervisor: Punyabrata Pradhan
14. **Kanchan Meena.** Scattering phase-shift of electrons & its applications in mesoscopic systems. Supervisor: Prosenjit Singha Deo
15. **Nivedita Pan.** Photophysical Studies On Hybrid Nanomaterials For Manifold Applications. Supervisor: Samir Kumar Pal
16. **Pratap Kumar Pal.** Investigation of GHz and THz Frequency Dynamics of Thin Films and Micro- and Nanostructures. Supervisor: Anjan Barman

## Hindi Workshop organised

On 28<sup>th</sup> March, 2024 a Hindi Workshop was held at Fermion Hall of the Centre at 3.30 p.m. In this workshop Dr. Nitesh Kumar, Assistant Professor of the Centre delivered a lecture in Hindi related to science & technology. The faculty, administrative staff and officers of the Centre participated in the programme and interacted with him.

## Kishlay-the Crèche re-opened

Kishlay - the Creche for the children and staff of the Centre was re-opened with effect from 3<sup>rd</sup> April, 2024. At present 3 kids are enrolled in the Creche.

## Swachchata Pakhwada observed



As per directives received from the AI Division of Department of Science & Technology, New Delhi, the Centre observed “Swachchata Pakhwada” from 1<sup>st</sup> May to 15<sup>th</sup> May, 2024. On 1<sup>st</sup> May, 2024 the Swachchata Pakhwada was inaugurated and mass “Swachchata Pledge” was taken by the employees and students. On this day, mass cleaning of the Centre premises, pavement areas and outside pavement areas, awareness campaign for proper disposal of wastes and no use of plastics were held. Posters titled “Zero Plastic, Green Campus” were pasted in all Notice Boards. Trilingual banners titled “Swachchata Pakhwada, 01-15 May, 2024” were displayed at Main Gate and other prominent places of the Centre for wider publicity. On 02.05.2024, weeding out of old records were done. On 03.05.2024 cleanliness drive at administrative offices and in the rear portion of the premises were carried out. On 6<sup>th</sup> May, 2024 an essay writing competition on “Biological Waste and its Disposal” was carried out. On 7<sup>th</sup> and 8<sup>th</sup> May, 2024 cleanliness drive at Canteen, Laboratories and Computer Centre was carried out. On 9<sup>th</sup> May, 2024 an invited lecture on “Sensitization on effective implementation of e-waste Management” was organized. Shri Swarup Brahma, Vice President, WEBEL and Shri Anindya

## News and Events (Administrative)

### The Centre celebrated the 75<sup>th</sup> Republic Day

The Centre celebrated the 75<sup>th</sup> Republic Day at its premises on 26<sup>th</sup> January, 2024. Prof. Tanusri Saha Dasgupta, Director of the Centre hoisted the National Flag at 10.00 a.m. and addressed the faculty, staff and students of the Centre. The security personnel deployed at Centre exhibited the march-past.



Banerjee from WEBEL, Govt. of West Bengal delivered the lectures. On 10<sup>th</sup> May, 2024 an in-house lecture for the advanced celebration of Technology Day has been arranged, the speaker was Dr. Pradip S. Pachfule, Assistant Professor of the Centre. On 13<sup>th</sup> May, 2024 deep cleaning of overhead water tanks was taken place. On 14<sup>th</sup> May, 2024 awareness campaign by the community helpers of the Centre for keeping the Centre clean was organized. On 15<sup>th</sup> May, 2024, Swachhata Pakhwada valedictory session and distribution of Swachhata Samman Award to the cleaning/horticulture staff was organized at the Silver Jubilee Hall of the Centre.



### Rabindra Jayanti Celebrated

The Performing Arts Group of Muktagan organized Rabindra Jayanti Celebration in commemoration of birth anniversary of the renowned poet Rabindranath Tagore at the Centre. The programme held on 08.05.2024 from 4.00 p.m. onwards at Silver Jubilee Hall of the Centre.

### International Day of Yoga (IDY-2024)

The Centre observed the International Day of Yoga (IDY-2024) on 21.06.2024. An interactive yoga session was organized in the Dining Hall of the Basundhara Building of the Centre. The theme for this year was “Yoga for Self and Society”. Around 75 employees and students including the Director and Registrar of the Centre actively participated and performed various yoga postures. Mr. Pradyut Das, Principal and Yoga consultant, Prachin Yog & Physiotherapy Research Institute, Kolkata conducted the programme. The event was organized as per the directive of the Ministry of Ayush, Govt. of India and directions from Department of Science & Technology.



### Workshop on Hindi Language

On 27<sup>th</sup> June, 2024, a Hindi Workshop was held at Fermion Hall of the Centre. Shri Nirmal Dubey, Deputy Director (Implementation), Department of Official Language, Office of the Regional Implementation Office (East), Kolkata delivered lecture on the topic “Role of Official Language (Hindi) in Official Works”. The training programme was attended by the administrative and academic staff and officers of the Centre.



#### Editorial Board:

Saumen Adhikari, Jaydeb Chakrabarti, Sanjoy Choudhury, Ramkrishna Das, Gurudas Ghosh, Manoranjan Kumar, Rajib Kumar Mitra, Punyabrata Pradhan.

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