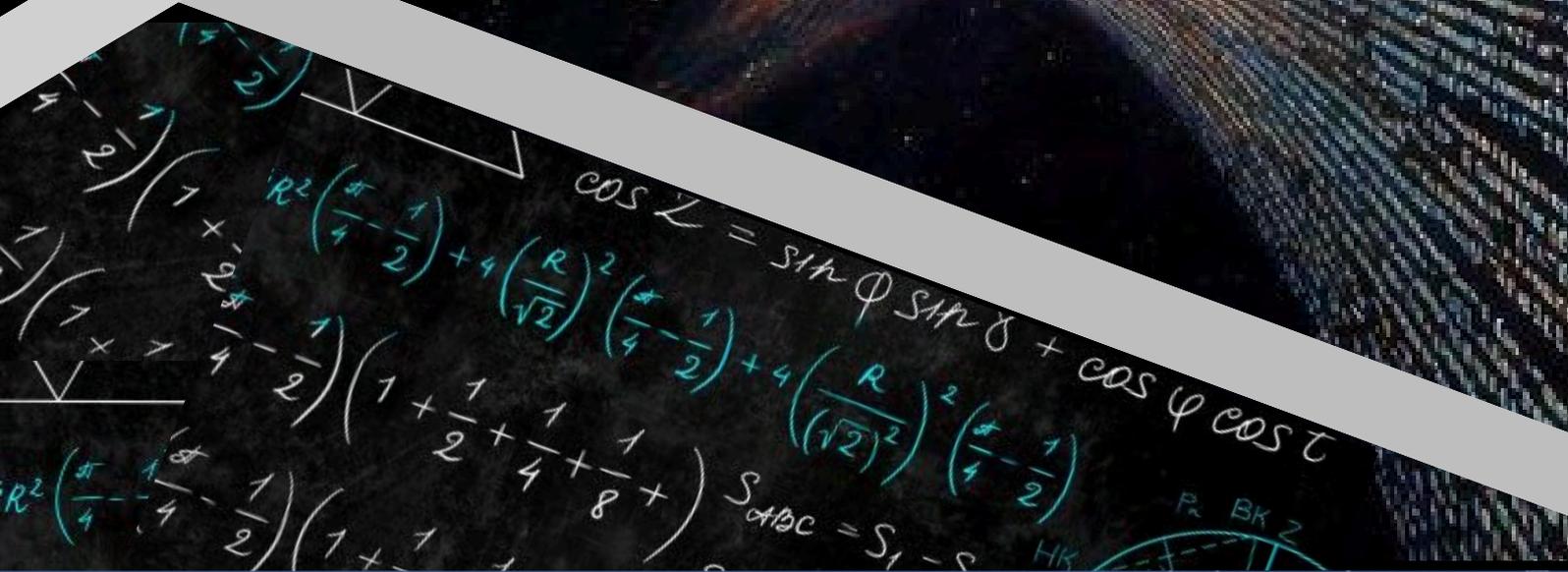




Department of

Physics

Newsletter



ISSUE - 4



VISION

The department visualises itself to be a centre of excellence of Physical Sciences.

MISSION

The department endeavors to achieve its set goals through introduction of innovative and intellectually challenging courses.

The department vows to undertake to strengthen its presence in technological programs offered by the institute to benefit the society



The Department of Physics, SVNIT Surat, is one of India's leading departments in terms of research, and holds a coveted position in the world. The faculty and students have successfully completed numerous scientific and research projects sponsored by National Scientific Agencies. The Department of Physics has multifaceted roles to play in the institute. It is catering to the needs of the country by creating a scientist and engineer pool by conducting innovative five-year integrated M.Sc., four-year B.Tech, and Ph.D. programmes. The department has supervised several students towards their Ph.D. degrees. It offers Ph.D. programs in the areas of Condensed Matter Physics, Material Science, Theoretical Physics, Astrophysics, Nuclear Physics, High Energy Physics, Particle Physics, Plasma Physics, Nanotechnology and Nano-Bio Physics. The Department has well-equipped laboratories attached to different divisions for conducting teaching and research activities.

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Message from Head of Department



Greetings from the Department of Physics!

With the onset of the new academic year, the exuberance of a new beginning amongst faculty and students at the Department of Physics is higher than ever. I also welcome the new students who have joined the Department Of Physics, as well as returning students eager to catch up with each other and explore new challenges and opportunities, and established faculty invigorated after summer months focused on research. Each academic year brings change, but the sense of revitalization we experience every time is a fundamental constant we look forward to and depend upon.

I feel exhilarated as I look back at the milestones that the Department has been able to achieve in the past academic year, and this newsletter is an opportunity to reflect on our accomplishments and look forward to the upcoming year.

With this newsletter, we look back on the achievements of faculty and students that have added to the pride of our Department. Building on a wave of outstanding new faculty arrivals, our faculty continue to win prestigious awards and fellowships and propel the research prominence of the department.

Prof. Debesh R. Roy
Head, DoP

Message from Faculty Advisors



Dr. Yogesh Sonawane

I applaud the entire team for bringing out the fourth issue of our annual newsletter. This issue covers the events conducted by the Department and Physics Club, and various workshops and seminars conducted by the Department of Physics. The newsletter celebrates our student's accomplishments while also highlighting the faculty's research publications and initiatives. This is intended to guide the student community so that they can easily approach the concerned faculty members.

I acknowledge the efforts put forward by the students. I hope this issue will be helpful to all the students and faculty members to stay updated with and get insights into the departmental activities. We happily encourage and welcome feedback from students and faculty members.



Dr. Shail Pandey

It gives me immense pleasure to present the latest edition of our departmental newsletter. This publication reflects the vibrant academic culture, intellectual curiosity, and collaborative spirit that define our department within this esteemed Institute of National Importance.

The newsletter highlights the diverse activities carried out throughout the year, including academic events, workshops, seminars, research contributions, outreach initiatives, and the achievements of our students and faculty members. I sincerely appreciate the dedication and creativity of the student team whose efforts made this publication possible, along with the valuable support of faculty members and contributors.

I hope this newsletter serves as a source of inspiration and connection for all readers and continues to strengthen our academic community. My best wishes to the entire team for their excellent work.

Head of the Department



Prof. Debesh R. Roy
Professor, Ph. D.

Professors



Prof. Kamlesh N. Pathak
Professor, Ph. D.

Research Area: Upper Atmospheric Science, Earthquake Prediction, and GPS Technology



Prof. Ajay Kumar Rai
Professor, Ph. D.

Research Area: High Energy Physics, and Hadron Spectroscopy



Prof. Debesh R. Roy
Professor, Ph. D.

Research Area: Density Functional Theory, Atomic Clusters & Nanostructures, Physics of the Materials, and Nano-Biophysics

Research Lab : Roy and Mat & Biophys Groups (MBPG) [Webpage](#)



Prof. Vipul Kheraj
Professor, Ph. D

Research Area: Thin Films and Materials Science, and Semiconductor Optoelectronic Devices

Research Lab : Optoelectronic Materials and Devices (OMD) Group [Webpage](#)

Associate Professors



Dr. Dimple V. Shah
Associate Professor, Ph. D.

Research Area: Semiconductor, Crystal growth, Thin Films, and Photovoltaic Materials

Research Lab : Magne-tick/ Op-tick Material Science Research Group (MOMSR) [Webpage](#)



Lt. (Dr.) Y. A. Sonvane
Associate Professor, Ph. D.

Research Area: Computational Nanoscience, Density functional Theory, 2D Materials, Nanomaterials & Nanofluids, and Biological Materials

[Webpage](#)

Assistant Professors



Dr. Lalit Kumar Saini
Assistant Professor, Ph. D.

Research Area: Theoretical Condensed Matter, Physics Strongly Correlated Electronic Materials, and Topological quantum nano Materials

[Webpage](#)



Dr. Himanshu Pandey
Assistant Professor, Ph. D.

Research Area: Band Structural Calculation, Thin films and their Hetrostructures, Heusler alloys and their exploration, and Thermoelectric Materials

Research lab : Condensed Matter & Low-dimensional Systems laboratory

[Webpage](#)



Dr. Shail Pandey
Assistant Professor, Ph. D.

Research Area : Microwave-generated plasma, Plasma diagnostics, Atmospheric pressure plasma physics, and Plasma applications

Research Lab : Plasma Physics Research Laboratory (PPRL) [Webpage](#)



Dr. Sharad Kumar Yadav
Assistant Professor, Ph. D.

Research Area: Magnetohydrodynamics (MHD) Plasma Turbulence, and Soft condensed matter physics



Dr. Dipika Patel
Assistant Professor, Ph. D.

Research Area: Nuclear reaction study at near the Coulomb barrier energies, Study of Break-up and Transfer effects on the fusion fission and scattering mechanisms using weakly bound nuclei, Continuum Discretized Coupled Channels (CDCC) and Coupled Reaction Channels (CRC) Calculations

[Webpage](#)



Dr Vikash Kumar Ojha
Assistant Professor, Ph. D.

Research Area: Theoretical High Energy Physics, Quantum Chromodynamics, and Proton Spin Puzzle

[Webpage](#)



Dr Mithun Karmakar
Assistant Professor, Ph. D.

Research Area: Plasma Wave Breaking, Plasma Based Particle Accelerator, Whistler Waves, Particle in Cell (PIC) simulation

Ph.D. Scholars List



Name: Sunita Yadav
Supervisor: Dr. Dimple V. Shah
Category: FIR
Admission no.: D19PH004
Research area: Condensed matter physics (Magnetic materials)



Name: Jay Jasani
Supervisor: Dr. Yogesh A. Sonvane
Category: PEC
Admission no.: D20PH001
Research area: Computational material science, DFT, 2D nanomaterials



Name: Priyanka Thorat
Supervisor: Dr. Yogesh A. Sonvane
Category: PEC
Admission no.: D20PH004
Research area: Computational material science, DFT, 2D Janus materials and heterostructures



Name: Riddhi Prajapati
Supervisor: Prof. K. N. Pathak
Category: FRS
Admission no.: D20PH006
Research area: Madden Julian oscillations (Atmospheric science/meteorology)



Name: Zainit Dhameliya
Supervisor: Dr. Debesh R. Roy
Category: PEC
Admission no.: D20PH010
Research area: TMDCs, Drug - nanoparticle interaction, Bimetallic nanoparticle



Name: Anju
Supervisor: Dr. Lalit K. Saini
Category: FIR
Admission no.: D20PH012
Research area: Applications of Porphyrin

Ph.D. Scholars List



Name: Bhautik Gevariya
Supervisor: Dr. Vipul A. Kheraj
Category: PEC
Admission no.: D20PH014
Research area: Optoelectronic devices optimization using algorithm.



Name: Soumya Sundar Parui
Supervisor: Dr. Vipul A. Kheraj
Category: FIR
Admission no.: D20PH015
Research area: Perovskite Solar Cell, Thin Films, Optoelectronic Devices, Laser Assisted Material synthesis



Name: Pooja Jakhad
Supervisor: Prof. A. K. Rai
Category: FRS
Admission no.: DS20PH001
Research area: Spectroscopy of heavy-light baryons



Name: Maulesh Vala
Supervisor: Dr. Yogesh A. Sonvane
Category: PEC
Admission no.: DS20PH003
Research area: Theoretical material science, supercapacitor, energy storage materials



Name: Ayushi Nema
Supervisor: Prof. K. N. Pathak
Category: FIR
Admission no.: DS20PH002
Research area: Space weather, Magnetosphere-ionosphere coupling, geomagnetic storms



Name: Rahul kumar P. Jadav
Supervisor: Dr. Yogesh A. Sonvane
Category: FIR
Admission no.: DS20PH004
Research area: 2D MXene batteries, 2D MBene as supercapacitor, 2D Janus as hydrogen storage

Ph.D. Scholars List



Name: Santilata Sahoo
Supervisor: Dr. Dimple V. Shah
Category: FIR
Admission no.: DS20PH007
Research area: Expt. Condensed Matter Physics



Name: Sarthak Trivedi
Supervisor: Dr. Debesh R. Roy
Category: FPS
Admission no.: D21PH003
Research area: Molecular docking, Molecular dynamics, Free energy landscapes (Drug-biomolecule interaction)



Name: Dipali Vadher
Supervisor: Prof. K. N. Pathak
Category: FIR
Admission no.: D21PH004
Research area: Solar Physics, magnetic field, Switchbacks



Name: Sujit Jana
Supervisor: Dr. Vikash Kumar Ojha
Category: FIR
Admission no.: D21PH010
Research area: Hadron structure (GTMDs)



Name: Janvi Gajjar
Supervisor: Dr. Debesh R. Roy
Category: FIR
Admission no.: D21PH011
Research area: DFT-NEGF Formalism for Electron Transport in Molecular Devices



Name: Pratik Patel
Supervisor: Dr. Sharad K. Yadav
Category: FIR
Admission no.: D21PH012
Research area: Magneto-hydrodynamic Turbulence

Ph.D. Scholars List



Name: Sadhana Matth
Supervisor: Dr. Himanshu Pandey
Category: FIR
Admission no.: D21PH013
Research area: Density Functional Theory



Name: Trilokchand Kumavat
Supervisor: Dr. Yogesh A. Sonvane
Category: FIR
Admission no.: D21PH014
Research area: Multifunctional materials, Interface engineering, energy storage device



Name: Parth Patel
Supervisor: Prof. K. N. Pathak
Category: FSF
Admission no.: D21PH015
Research area: Aerosol optical properties, Black carbon, Aerosol radiative forcing



Name: Aparnakumari Patel
Supervisor: Dr. Yogesh A. Sonvane
Category: FPS
Admission no.: D21PH016
Research area: Energy Materials, Solar Cell, DFT



Name: Malhar Bhatt
Supervisor: Dr. Yogesh A. Sonvane
Category: FSF
Admission no.: DS21PH001
Research area: Anod-Ion Battery, DFT



Name: Vipul B. Rohit
Supervisor: Dr. Sharad K. Yadav
Category: FIR
Admission no.: D22PH002
Research area: Complex Plasma

Ph.D. Scholars List



Name: Naresh Prajapati
Supervisor: Dr. Himanshu Pandey
Category: FIR
Admission no.: D22PH003
Research area: Nanomaterials



Name: Rajsinh Rana
Supervisor: Dr. Shail Pandey
Category: FIR
Admission no.: D22PH004
Research area: Microwave Plasma Simulations



Name: Chetan Lodha
Supervisor: Prof. A. K. Rai
Category: FSF
Admission no.: D22PH005
Research area: Spectroscopy and decay properties of exotic particles



Name: Ashvin Dalsukhbhai Kanzariya
Supervisor: Dr. Lalit K. Saini
Category: FIR
Admission no.: D22PH006
Research area: DFT, HER and Hydrogen storage



Name: Chirag Bhuptani
Supervisor: Dr. Dipika Patel
Category: FIR
Admission no.: D22PH007
Research area: Experimental Nuclear Physics, Nuclear break-up reactions, reaction dynamics



Name: Shubhankur Suvansh
Supervisor: Dr. Shail Pandey
Category: FIR
Admission no.: D22PH008
Research area: ECR Plasma Thruster

Ph.D. Scholars List



Name: Vandan Patel
Supervisor: Prof. A. K. Rai
Category: FRS
Admission no.: D22PH009
Research area: High Energy Physics, Spectroscopy of Hadron Physics



Name: Krishna
Supervisor: Dr. Lalit K. Saini
Category: FIR
Admission no.: D22PH010
Research area: Atomic & Molecular Clusters (Non Covalent Interaction)



Name: Vishwa Desai
Supervisor/Co-supervisor: Dr. Debesh R. Roy, Dr. Dimple V. Shah
Category: FRS
Admission no.: D22PH011
Research area: Green synthesis of nanocomposites



Name: Govind Singh Yadav
Supervisor: Dr. Mithun Karmakar
Category: FIR
Admission no.: DS22PH001
Research area: Plasma-based particle accelerator



Name: Niket Raval
Supervisor: Dr. Vipul A. Kheraj
Category: FPS
Admission no.: DS22PH002
Research area: Synthesis of Antimony-based perovskite using slot-die coating technique, solar-cell device fabrication.



Name: Mariya Ughradar
Supervisor: Dr. Vikash Kumar Ojha
Category: FSF
Admission no.: DS22PH003
Research area: Quantum information entropies

Ph.D. Scholars List



Name: Priyank Bhardwaj
Supervisor/Co-supervisor: Dr. Lalit K. Saini, Dr. Mithun Karmakar
Category: FIR
Admission no.: DS22PH005
Research area: Non-linear plasma, Laser driven particle Accelerator



Name: Chirag Rathi
Supervisor: Dr. Debesh R. Roy
Category: FIR
Admission no.: D23PH001
Research area: DFT, 2D-Materials



Name: Adityakumar Patel
Supervisor: Dr. Debesh R. Roy
Category: ERS
Admission no.: D23PH002
Research area: Study of 2D material for gas sensing and energy storage applications



Name: Jay V. Vora
Supervisor/Co-supervisor: Dr. Shail Pandey, Dr. Kirti Inamdar
Category: FIR
Admission no.: D23PH004
Research area: Microwave Plasma, Plasma Antenna



Name: Hetvi Jadav
Supervisor: Dr. Himanshu Pandey
Category: FSF
Admission no.: D23PH006
Research area: DFT



Name: Hardik Rathod
Supervisor: Prof. A. K. Rai
Category: FRS
Admission no.: D23PH007
Research area: Elementary Particle Physics

Ph.D. Scholars List



Name: Prasann Kshatriya
Supervisor: Dr. Yogesh A. Sonavane
Category: FSF
Admission no.: D23PH008
Research area: Solar Cells, Twistronics, 2D Nanomaterial



Name: Mukesh Kumar Thakan
Supervisor: Dr. Vipul A. Kheraj
Category: FIR
Admission no.: D23PH009
Research area: Perovskite Solar Cell device Fabrication



Name: Pawan Kumar
Supervisor: Dr. Yogesh A. Sonavane
Category: FIR
Admission no.: D23PH010
Research area: Energy and storage devices



Name: Neha Sharma
Supervisor: Dr. Vipul A. Kheraj
Category: FSF
Admission no.: DS23PH002
Research area: Perovskite Solar Cell, Devices optimization using the algorithm.



Name: Pinal Gandhi
Supervisor: Dr. Vipul A. Kheraj
Category: PEC
Admission no.: DS23PH003
Research area: Devices optimization using algorithm



Name: Nisha Khotele
Supervisor: Dr. Debesh R. Roy
Category: FRS
Admission no.: DS23PH004
Research area: Material Science, Experimental Condensed matter physics

Ph.D. Scholars List



Name: Yadav Dipesh Kishorbhai
Supervisor: Prof. Ajay Kumar Rai
Category: ERS
Admission no.: D24PH002
Research area: HIGH ENERGY PHYSICS



Name: Kukadiya Vivek Pravinbhai
Supervisor: Prof. Dr. Vipul Kheraj
Category: FIR
Admission no.: D24PH005
Research area: Diamond, Lonsdaleite, Diaphite



Name: Parth Zadafiya
Supervisor: Dr. Yogesh Sonvane
Category: ERS
Admission no.: D24PH007
Research area: Thin Films Perovskite solar cell Density Functional Theory



Name: Karan Patel
Supervisor: Dr. Himanshu Pandey
Category: FIR
Admission no.: D24PH010
Research area: First-principles (DFT) investigations of photocatalytic and electrocatalytic 2D materials for efficient water splitting, emphasizing the hydrogen



Name: Divya Solanki
Supervisor: Dr. Dimple V Shah
Category: FSF
Admission no.: D24PH011
Research area: Semiconductor material



Name: Parimal Tandel
Supervisor: Prof. Debesh R. Roy
Category: FIR
Admission no.: D24PH012
Research area: Cluster Assembled Materials (CAMs)

Ph.D. Scholars List



Name: Shilpa Sharma
Supervisor: Prof. K. N. Pathak
Category: FIR
Admission no.: D24PH013
Research area: Gravitational wave astronomy



Name: Sonam Meena
Supervisor: Dr. Vipul Kheraj
Category: FIR
Admission no.: D24PH014
Research area: Perovskite based Immunoassays



Name: HETAVI DHIMMAR
Supervisor: Dr. Dimple V Shah
Category: FIR
Admission no.: DS24PH001
Research area: Condensed matter physics
(optoelectronic materials)



Name: Prajapati Vraj Kumar Gopalbhai
Supervisor: Prof. Ajay Kumar Rai
Category: FIR
Admission no.: DS24PH002
Research area: Particle Physics, Hadron spectroscopy



Name: Mites Kumar Solanki
Supervisor: Dr Dimple Shah
Category: PEC
Admission no: DS24PH004
Research area:- DFT



Name: Baxi Deepam Chiragkumar
Supervisor: Dr Dimple V Shah
Category: FIR
Admission no.: D25PH001
Research area: Nanoparticle and 2D materials

Ph.D. Scholars List



Name: Rahul Kumar Ishvarbhai Parmar
Supervisor: Dr Mithun Karmakar
Category: FIR
Admission no.: D25PH002
Research area: Plasma Physics



Name: Patel Tejaswini Narendrabhai
Supervisor: Dr. Vipul Kheraj , Dr. Kirti Inamdar
Category: ERS/FPS
Admission no.: D25PH003
Research area: Electromagnetic Shielding



Name: Kirti Sharma
Supervisor: Dr. Vikash Kumar Ojha
Category: FIR
Admission no.: D25PH004
Research area: Nonlinear Dynamics



Name: Bharat Masar
Supervisor: Dr. Dimple V Shah
Category: FIR
Admission no.: D25PH006
Research area: Battery, Energy Storage, and Material Physics



Name: Makvana Riyakumari Kamleshbhai
Supervisor: Dr. Yogesh A Sonvane
Category: FIR
Admission no.: D25PH008
Research area: Battery, DFT



Name: Patel Abhikumar Pareshkumar
Supervisor: Dr. Dipika Patel
Category: ERS
Admission no.: D25PH009
Research area: Nuclear Reaction Dynamics
(Theoretical & Experimental)

Ph.D. Scholars List



Name: Shailesh Rajendra Motirale.
Supervisor: Dr. Yogesh A Sonvane.
Category: ERS
Admission no.: D25PH010
Research area: Battery, DFT



Name: Mohammad Musani
Supervisor: Dr. Shail Pandey
Category: FIR
Admission no.: D25PH011
Research area: Plasma physics



Name: Parmar Manakkumar Gaurangkumar
Supervisor: Prof. Ajay Kumar Rai
Category: FIR
Admission no.: D25PH012
Research area: High energy physics



Name: Brijesh Jayantibhai Pathak
Supervisor: Dr. Dimple V. Shah
Category: ERS
Admission no: D25PH013
Research areas: Integrated Flexible Energy System

Non-Teaching staff



Parul K. Bhagwagar
Assistant SG- II



Shyamlal
Technical assistant



Nishita D. Patel
Laboratory Assistant



Gaurav H. Surati
Laboratory Assistant



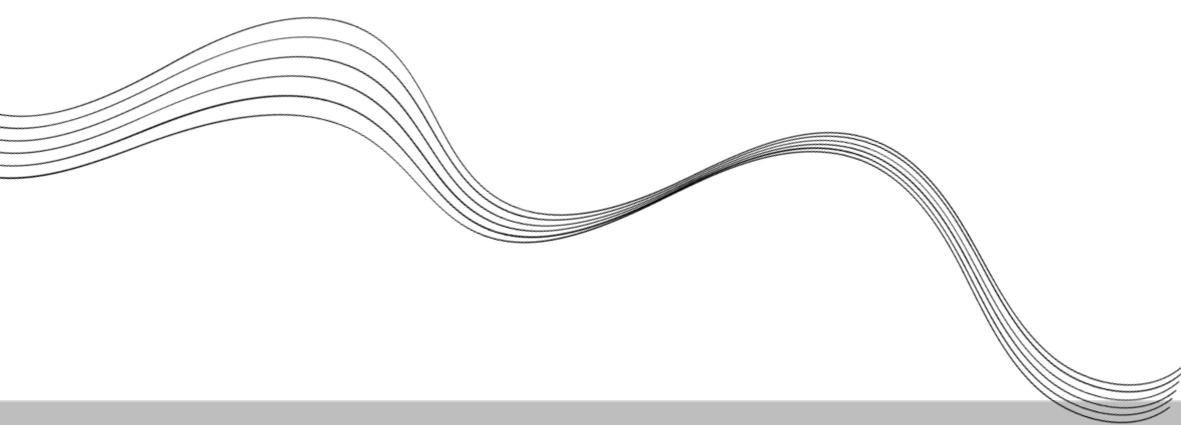
Kamlesh D. Solanki
Peon



Rajesh T. Solanki
Peon



Dilpesh N. Patel
Peon



1	Priyank Bhardwaj, Mithun Karmakar, and L. K. Saini, Laser driven wake wave in pair-ion electron plasma with inclusion of ion dynamics, <i>Physica Scripta</i> 99, 085608, 2024.
2	Govind Singh Yadav, and Mithun Karmakar, Effect of temperature on the wave breaking amplitude of nonlinear relativistic strong plasma waves, <i>Contributions to Plasma Physics</i> , 65, e202400075, 2024.
3	Aparnakumari M. Patel, Sandip R. Kumavat, Yogesh Sonvane, Exploring inorganic mixed-halide perovskites $\text{CsSn}(\text{I}_{1-n}\text{Br}_n)_3$ and $\text{CsSn}(\text{Br}_{1-n}\text{Cl}_n)_3$ for high power efficiency, <i>Materials Chemistry and Physics</i> , 341, 130913, 2025.
4	Rahul Kumar P. Jadav, Jaykumar Jasani, Yogesh Sonvane, Deobrat Singh, and Rajeev Ahuja, Temperature-driven thermoelectric transition in orthorhombic-ZrS ₂ monolayer via first-principles analysis, <i>International Journal of Modern Physics B</i> , 2540065, 2025.
5	Trilokchand L. Kumavat, Radha N. Somaiya, Kirill A. Nekrasov, and Yogesh Sonvane, Understanding the role of nitrogen vacancies on the electronic and magnetic properties of 2D SiN nanosheets, <i>International Journal of Modern Physics B</i> , 2550179, 2025.
6	Anumeet Kaur, Arkaprava Das, Trilokchand L. Kumavat, Wei-Hsiang Huang, Surbhi Gupta, Joseph Vimal Vas, Chi-Liang Chen, Asokan Kandasami, Deobrat Singh, and Yogesh Sonvane, Enhancement of ferroelectric polarization in Sm-doped BaFe _{0.2} Ti _{0.8} O ₃ ceramics, <i>Journal of Physics: Condensed Matter</i> , 37, 185602, 2025.
7	Malhar Bhatt, Hyeona Park, Shivam Kansara, Yogesh Sonvane, and Jang-Yeon Hwang, Investigation of Metal Tellurides As Cathode Materials for High-Energy Lithium–Tellurium Batteries, <i>ACS Applied Materials & Interfaces</i> , 17, 3, 4884–489 (2025)
8	Deobrat Singh, Nabil Khossossi, Raquel Lizarraga, and Yogesh Sonvane, Theoretical prediction of a high-performance two-dimensional type-II MoSi ₂ N ₄ /As vdW heterostructure for photovoltaic solar cells, <i>Renewable Energy</i> , 237, 121802 (2024)
9	Deobrat Singh, Nisha Singh, and Yogesh Sonvane, Electrocatalytic mechanism for overall water splitting to produce sustainable hydrogen by 2D Janus MoSH monolayer, <i>npj 2D Materials and Applications (Nature Publication)</i> , 8, 79 (2024)
10	Rahul Kumar P. Jadav, Deobrat Singh, Rajeev Ahuja, and Yogesh Sonvane, Harnessing MBene termination for superior anode interfaces in Li/Ca-ion batteries, <i>Journal of Energy Storage</i> , 101, 113995 (2024)
11	Trilokchand L. Kumavat, Radha N. Somaiya, Deobrat Singh, and Yogesh Sonvane, 2D SiP Nanosheets as Efficient and Multi-Time Reversible Nanosensor for Nitrogen-Containing Gases, <i>ACS Applied Nano Materials</i> , 7, 19118 (2024)
12	Rahul Kumar P. Jadav, Deobrat Singh, Rajeev Ahuja, and Yogesh Sonvane, Fluorine-Terminated M

International Journal Publications

13	Priyankaben N. Thorat, Aparnakumari M. Patel, Rahul Kumar P. Jadav, Radha N Somaiya, and Yogesh Sonvane, An Extensive analysis of the Janus Si ₂ XY (X, Y = P, As, Sb, Bi): Optical and Biaxial Strain-Dependent Electronic Properties, <i>Solid State Communication</i> , 350, 115599 (2024)
14	Trilokchand L. Kumavat, Radha N Somaiya, and Yogesh Sonvane, Strain modulated optical properties of MoSi ₂ P ₄ Monolayer – Insights from DFT, <i>IOP Physica Scripta</i> , 99, 065930 (2024)
15	A Pathak, Y N Doshi, D V Shah, H N Desai, P B Patel, and S Sahoo, Optimizing the performance of (Sb _{0.2} Sn _{0.8}) _{0.5} (S _{0.9} Se _{0.1}) _{0.5} crystal-based self-powered photodetectors, <i>Journal of Crystal Growth</i> 627, 127494, (2024)
16	S Sahoo, V Jain, D V Shah, R Das, and A Pathak, Effect of Mo doping in vanadium pentoxide (V ₂ O ₅) for dye degradation, <i>Journal of Crystal Growth</i> 627, 127491, (2024)
17	P Sharma, S Thakor, S J Yadav, I A Shaikh, D V Shah, V A Rana, and M Solanki, Hybrid nanofillers loaded epoxy resin; Synthesis, characterizations, and dielectric spectroscopy, <i>Journal of Crystal Growth</i> 628, 127551, (2024)
18	T R Jariwala, P P Desai, C K Tandel, N N Prajapati, Y N Doshi, A V Raval, and D V Shah, Comprehensive investigation of (Ge _{0.03} In _{0.97})(Se _{0.95} S _{0.05}) crystals for multi-functional sensing and photo-catalytic applications, <i>Optical Materials</i> 149, 115071, (2024)
19	A D Watpade, S Thakor, P Sharma, D V Shah, C R Vaja, and P Jain, Synthesis, characterization, and dielectric spectroscopy of TiO ₂ and ZnO nanoparticle-reinforced epoxy composites, <i>Journal of Materials Science: Materials in Electronics</i> 35 (7), 466, (2024)
20	O. Trivedi, A. Bidlan, P. Moniz, Fractional holographic dark energy. <i>Phys. Lett. B</i> , 858:139074, 2024.
21	Y Doshi, A Raval, A Pathak, D V Shah, V Jain, J Tailor, H Desai, and P Patel, Quaternary In _{0.15} Sn _{0.85} (Se _{0.95} S _{0.05}) ₂ crystal: Synthesis, characterization, and its multiple applications, <i>Materials Science in Semiconductor Processing</i> 173, 108110, (2024)
22	C K Tandel, P P Desai, T R Jariwala, N N Prajapati, Y N Doshi, A V Raval, and D V Shah, Synthesis and characterization of PVA capped SnSe for IR sensor and piezo-resistive sensor applications, <i>Journal of Materials Science: Materials in Electronics</i> 35 (12), 849, (2024)
23	P Sharma, D V Shah, S Thakor, A D Watpade, V A Rana, and C R Vaja, Compositional influence of synthesized magnetic nanoparticles on epoxy composites: dielectric, magnetic, and optical characteristics, <i>Journal of Macromolecular Science, Part B</i> 63 (5), 279-313, (2024)
24	A D Watpade, S Thakor, P Jain, P P Mohapatra, C R Vaja, A Joshi, and D V Shah, Comparative analysis of machine learning models for predicting dielectric properties in MoS ₂ nanofiller-reinforced epoxy composites, <i>Ain Shams Engineering Journal</i> 15 (6), 102754, (2024)

International Journal Publications

25	P Sharma, S J Yadav, D V Shah, Synthesis, Characterizations, and Applications of Fe ₃ O ₄ and CoDoped Fe ₃ O ₄ Nanomaterials, Brazilian Journal of Physics 54 (3), 88, (2024)
26	A Pathak, Y N Doshi, D V Shah, H N Desai, P B Patel, S Sahoo, and A V Raval, Advancing photodetection capabilities via Pb-induced modifications in SnSe crystals, Journal of Materials Science: Materials in Electronics 35 (18), 1197, (2024)
27	S J Yadav, S Thakor, A V Raval, P Sharma, D V Shah, and V A Rana, Synthesis, characterization, and unveiling dielectric spectroscopy insights of Fe ₃ Se ₄ and Fe ₇ Se ₈ nanoparticles, Journal of Materials Science: Materials in Electronics 35 (19), 1323, (2024)
28	U Joshi, S D Lala, P Deb, J Pathak, K Chauhan, A Joshi, S Thakor, and D V Shah, The Impact of Synthesis Techniques on Polyetheretherketone/Hydroxyapatite Hybrid Carbonaceous Nanocomposites for Orthopaedic Applications, Journal of Macromolecular Science, Part B, 1-22, (2024)
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8	Anupama Ojha and Shail Pandey, Numerical Insights into the Application of Diverging Magnetic Field in a Waveguide based Microwave Plasma Source for Enhanced Ar ⁺ Flux, The 2nd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics 2025 (IPPD-2025), IIT Delhi; May 18-20, 2025.
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8	Shubhankur Suvansh and Shail Pandey, Multiphysics Simulation of Xenon and Iodine Electron Cyclotron Resonance Discharge for Plasma Propulsion, 4th Conference on Plasma Simulation (CPS-2024), Indian Institute of Geomagnetism, Navi Mumbai, 11-13 November 2024.
9	Shubhankur Suvansh and Shail Pandey, Numerical Modelling of Electron Cyclotron Resonance Iodine Plasma for Electric Propulsion Application; 39th National Symposium on Plasma Science and Technology (PLASMA 2024) at Pandit Deendayal Energy University (PDEU), 17th - 20th December, 2024.
10	Anupama Ojha and Shail Pandey, Numerical Analysis of Three-Dimensional Modelling of Surface Wave Sustained Microwave Plasma Source (Poster), 10th Plasma Science Society of India - Plasma Scholars Colloquium (PSSI PSC-2024), IIT Delhi; July 04-06, 2024.
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13	Priyank Bhardwaj, Mithun Karmakar, and L. K. Saini, Emergence of electron-scale dissipative electrostatic solitons amidst multi-species plasmas: A theoretical insight, 10th Plasma Scholars Colloquium (PSC 2024), IIT Delhi, 4-6 July, 2024.
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16	Ashvin Kanzariya, Shardul Vadalkar, L. K. Saini, and Prafulla K jha, Cyclo[2n]Carbons through the Lens of Density Functional Theory: Role of Rh-decoration in Hydrogen Evolution Reaction, 68th DAE Solid State Physics Symposium Organized by Bhabha Atomic Research Centre, Mumbai, India, December 18-22, 2024.

1. **Dr. Mithun Karmakar** delivered a lecture titled "**Wave Breaking amplitude of high frequency plasma waves in proton beam driven plasma**" at PPS 2025 International Conference, Berlin, Germany, on 18/06/2025.
2. **Dr. Dimple Shah** delivered a lecture on "**Sputtering Process for Thin Film Deposition**" on 18/01/2025.
3. **Dr. Himanshu Pandey** delivered a lecture titled "**Material Characterization Techniques: A brief introduction**" at the Summer School on Semiconductor Technology, organized by DoECE, SVNIT Surat, on 12/07/2024.
4. **Dr. Himanshu Pandey** delivered another lecture titled "**Exploring the Evolution of a Key Energy Technology**" at the MSME-sponsored Advanced Entrepreneurship and Skill Development Program (A-ESDP) organized by DoECE, SVNIT Surat, on 18/02/2025.
5. **Dr. Debesh R. Roy** delivered a lecture titled "**2D Carbide Sensors for Environmentally Toxic Gasses under DFT and NEGF Approaches**" at AMCT-2025, SVNIT Surat, on 16/03/2025.
6. **Dr. Shail Pandey** delivered a lecture on "**Surface microwave plasma technology for sustainable energy**" during a lecture series on Advances in Physical and Nano Sciences at the Indian Institute of Teacher Education, Gandhinagar, on 09/01/2025.
7. **Dr. Yogesh Sonvane** delivered a lecture titled "**Interface engineering of 3D/2D Lead-Free Halide Perovskites Materials for Solar Cells**" at AMCT-2025, SVNIT Surat, on 16/03/2025.
8. **Dr. Yogesh Sonvane** delivered a lecture titled "**Hydrogen-Treated Janus Anode: A Promising Strategy for Next-Generation Li/Na/Ca ion Batteries**" at a National Workshop on Shaping the Future with Nanotechnology: Energy Storage and CO₂ Utilization at St. Xavier College, Ahmedabad, during 29-30 March 2025.
9. **Dr. Yogesh Sonvane** delivered a lecture titled "**Challenges and Future Perspectives in Photocatalysis Materials**" at the National Conference on Advances in Basic Science and Technology (NCABST-25) held at GDC Memorial College, Bahal (Bhiwani), Haryana, India, during 10-11 April 2025.

Conferences and Workshops organized

1. **Dr. Yogesh Sonvane, Dr. D. R. Roy, Dr. K. N. Pathak, Dr. Dimple Shah, Dr. L. K. Saini, and Dr. S. K. Yadav** organized the International Conference on **Function Materials and Applied Physics (FMAP-2024)**. The programme was SERB sponsored and was conducted during 18-19 October, 2024.

2. **Dr. Yogesh Sonvane, Dr. D. R. Roy, and Dr. Dimple Shah** organized the National Conference cum Workshop on **Advanced Materials Characterization Techniques (AMCT-2025)**. The programme was SERB sponsored and held on 16 March, 2025.

3. **Dr. Dimple Shah and Dr. Yogesh Sonvane** organized a Two-day workshop on **Cow-based organic farming and heritage of Indian tradition**. The programme was sponsored by SVNIT and conducted on 21-22 March, 2025.

4. **Dr. Dimple Shah and Dr. Yogesh Sonvane** organized a **Five-day STTP on Theoretical and Practical Training on Solar Power Plant Installation**. This programme was sponsored by SVNIT and conducted during 10-14 February, 2025.

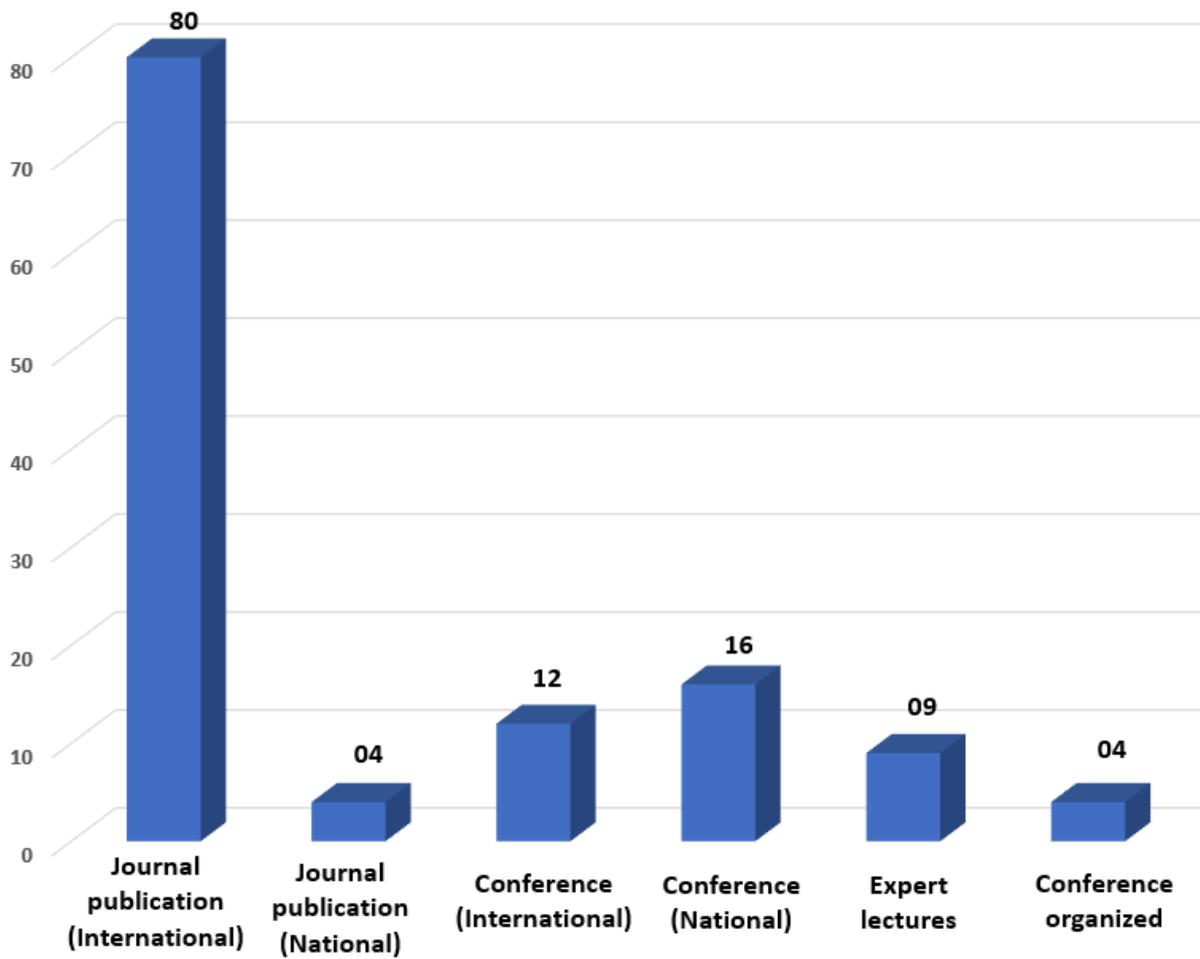
Faculty Achievement (Others)

1. **Dr. Debesh R. Roy** has featured in the '**World's top 2% scientists**' list published by Stanford University, USA & Elsevier in the '2023 citation impact' category, September 2024.
2. **Dr. Yogesh Sonavne, Dr. Debesh R. Roy, and Dr. Dimple Shah** appointed as **Guest Editors** of the **International Journal of Modern Physics B (SCI indexed) Journal**.
3. **Dr. Yogesh Sonavne, Dr. Debesh R. Roy, and Dr. Dimple Shah** appointed as **guest editors** of **IOP Conference Proceedings Journal of Physics—Conference Series (SCI indexed)**.
4. **Dr. Yogesh Sonvane and Dr. Dimple Shah** got the **Best Performing PI Award of FY 2023-24** of **Unnat Bharat Abhiyan**, Ministry of Education, Government of India, on 24 February 2025
5. **Dr. Dimple Shah** got a **UGC-DAE CSR** project entitled "**Exploring 2D Layered Crystals and Nanocrystals for Applications in Optoelectronics, Photocatalysis, and Van der Waals Heterojunctions**".
6. **Dr. Vipul Kheraj** won **1st Prize** in Research & Innovation Conclave 2025, organized by SVNIT Surat.

Dr. Sharad Kumar Yadav, a faculty from Physics Department, SVNIT Surat, has visited **National Institute for Fusion Science (NIFS) Japan** as a visiting Researcher for a short period of time roughly for 40 days during June-July, 2025. During his stay in Japan, he has delivered three invited talks at different places, that include, **National Institute of Technology (NIT) Japan; NIFS, Toki City, Japan and Research Institute for Mathematical Science (RIMS), Kyoto University, Japan.**

Furthermore, he has developed a collaboration with the scientist at NIFS, Japan to work on the topic "**Numerical modeling and simulations of the Hall Magnetohydrodynamics (HMHD) relevant to the Solar Wind plasma turbulence**". From this collaboration he has published a couple of papers that appear in Physics of Fluids (IF 4.30)]

Summary of Faculty Achievements



International Internships and Summer Schools

1. **Niket Raval (DS22PH002)** has received a travel grant from RESOLV cluster of excellence to attend Summer School on Solvation Science 2025 (June 10-13, 2025), **organized by Ruhr University of Bochum, Germany.**
2. **Ayushi Nema (DS20PH002)** is a recipient of the SCOSTEP Visiting Scholar (SVS) programme 2024; **Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Nagoya, Japan.**
3. **Tamanna Pathan (I20PH059)** got selected to attend the Neutrino Summer School 2025, organized by **Niels Bohr International Academy, Copenhagen, Denmark.**
4. **Jainam Oza (I20PH009)** completou a month-long IA Summer Program July 2024 remotely promoted by **Instituto de Astrofísica e Ciências do Espaço, Portugal.**
5. **Aastha Tripathi (I21PH014)** carried out a Summer Internship (IAMS-IIP Fellowship) at **Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan.**
6. **Ayush Bidlan (I21PH018)** has completed a month-long winter internship remotely in affiliation with **Università degli Studi di Salerno, Italy.**
7. **Spandan Biswal (I21PH039)** received Charpak Summer Training Scholarship 2025 to carry out research at the **Centre de Recherche Astrophysique de Lyon (CRAL), France.**
8. **Mohammad Sameer (I22PH018)** has secured a Summer Research Internship at **Institute of Science and Technology, Austria.**

National Internships and Summer Schools

1. **Chiranjeev Pradhan (I20PH045)** was selected for the KSO Summer School 2025 by the Kodaikanal Solar Observatory, **Indian Institute of Astrophysics, Tamil Nadu**.
2. **Nishant Joshi** interned in AI field for **Srikari Impetus Solutions Pvt. Ltd.**
3. **Prudhvi Teja A (I20PH061)** was selected for the National-Level School on "Analysis and Statistical Modelling of Space Science Data" organised by the **Manipal Centre for Natural Sciences (MCNS)**.
4. **Rushikesh Lokhande (I21PH022)** has completed his AICTE internship by **Microsoft, SAP, & Edunet Foundation** on Artificial intelligence, during the time period of Dec 2024- Jan 2025.
5. **Ayush Bidlan (I21PH018)** was awarded with Summer Research Fellowship Program (SRPF) by the Indian Academy of Sciences for a two-month internship at the **School of Physical Sciences, NISER, Bhubaneswar**.
6. **Sidharth S (I22PH024)** has secured a Summer Research Internship at **IIT Jodhpur** (SURAJ Programme).
7. **Satyam Singh (I22PH014)** has secured a Summer Research Internship at **IIT Madras** for the project 'Developing a miniaturized Ferromagnetic Resonance Set-up' under the guidance of Prof. V. Subramanian.
8. **Vaidya Dhairya Ajay (I22PH005)** has secured a Summer Research Internship at **IIT Mandi** under the guidance of Dr. Arti Kashyap and Dr. Abhishek Sharma.
9. **Aditya Kumar (I22PH030)**, in his ongoing internship at **Metamonix**, has contributed to developing a cloud-based system akin to Google Cloud, enabling users to provision virtual machines that directly interface with virtualizers for enhanced accessibility and efficiency in cloud infrastructure.
10. **Abhishek Kumar (I23PH008)** secured a research internship at **Indian Institute of Technology Jodhpur (IITJ)** under SURAJ-25 programme.
11. **Shouvik Ghosh (I23PH028)** completed his Summer Research Internship at **Indian Institute of Technology, Kanpur (IIT Kanpur)**.

National Projects :

1. **Harsh Verma (I20PH038)** secured a research project at **Tata Institute of Fundamental Research (TIFR), Mumbai**.
2. **Shreya Dave (I23PH003)** got selected for a research project under the NIUS programme at **Tata Institute of Fundamental Research (TIFR)**.
3. **Pendem Shiva Sourabha (I24PH034)** got selected for the National Initiative on Undergraduate Science (NIUS) Physics at **HBCSE TIFR** for carrying out a 2-week long project in May 2025.
4. **G M Sanjit Krishna (I24PH006)** got selected for the National Initiative on Undergraduate Science (NIUS) Physics at **HBCSE TIFR** for carrying out a 2-week long project in May 2025.
5. **Rishita Sudhir Kinra (U24EP020)** got selected for the National Initiative on Undergraduate Science (NIUS) Physics at **HBCSE TIFR** for carrying out a 2-week long project in May 2025.

International Projects:

1. **Harsh Verma (I20PH038)** secured a six months research project at the Institute of **High Energy of Physics (HEPHY), Austria**.
2. **Harsh Verma (I20PH038)** got selected under Indo-UK (Oxford) collaboration project at **National Centre for Radio Astrophysics (NCRA-TIFR), Pune**.

M.Sc. Dissertations (International institute/university)

Batch I20 Series

1. Gnanesh Chandra M (I20PH028) - Albert Ludwig University of Freiburg, Germany
2. Vinit Pandya (I20PH032) - Max Planck Institute of Plasma Physics, Garching, Germany
3. Abhijeet Avhale (I20PH035) - University of Greifswald, Germany

Batch I21 Series

1. Aastha Tripathi (I21PH014) - Okinawa Institute of Science and Technology (OIST), Japan
2. Ayush Bidlan (I21PH018) - Universidade da Beira Interior, Portugal
3. Sneha Shah (I21PH019) - University of Otago, New Zealand
4. Spandan Biswal (I21PH039) - Centre de Recherche Astrophysique de Lyon (CRAL), France

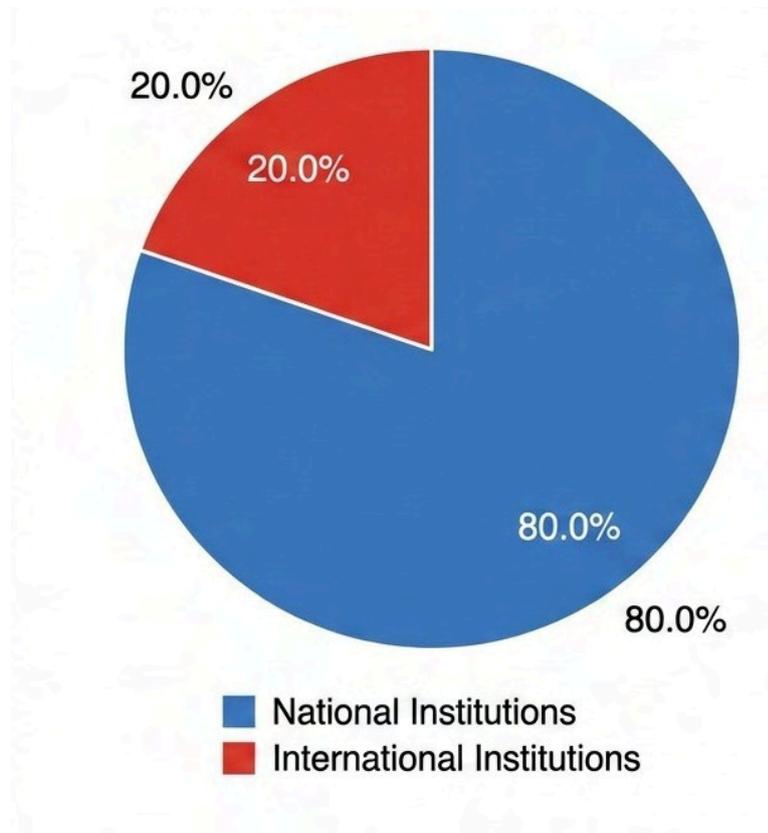
M.Sc. Dissertations (National institute/university)

1. Kishant Bhushan (I20PH010) - IIT Tirupati
2. Prathamesh Sanjay (I21PH002) - IIA Bangalore
3. Rk Rohit (I21PH004) - IISER Tirupati
4. Harsh Malaviya (I21PH013) - CSIR-NPL, New Delhi
5. Kunigiri Shashikanth (I21PH016) - Pandit Deendayal Energy University, Gandhinagar
6. Pranav Iyer (I21PH017) - Chennai Mathematical Institute
7. Abhyuday Verma (I21PH021) - IGCAR, Kalpakkam
8. Vivek Pal (I21PH025) - ARIES, Nainital
9. Shruti Chaurasia (I21PH028) - IIA Bangalore
10. Rit Modi (I21PH029) - IISER Berhampur
11. Jayanth Chamallamudi (I21PH032) - CSIR-NPL, New Delhi
12. Yashodhan Iyer (I21PH034) - BARC, Mumbai
13. Saurabh Suman (I21PH038) - IIT Hyderabad
14. Shreya Chauhan (I21PH047) - Indian Institute of Geomagnetism, Mumbai

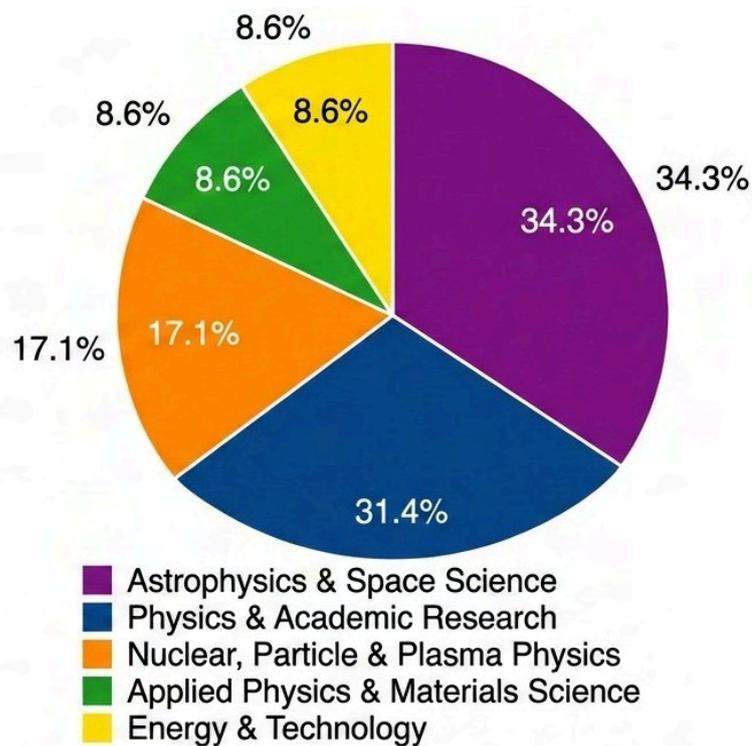
M.Sc. Dissertations (National institute/university) contd...

15. Bindalkumar Patel (I21PH052) - CSIR NIIST, Trivandrum
16. Sahil Shah - iCreate, Ahmedabad
17. Senior Batch (I20 Series)
18. Abhay Karia (I20PH002) - IUCAA, Pune
19. Disha R Hegde (I20PH007) - IUCAA, Pune
20. Atri Mondal (I20PH012) - IIT Delhi
21. Riya Shah (I20PH016) - Physical Research Laboratory (PRL), Ahmedabad
22. Swasti Rathod (I20PH022) - IIT Hyderabad
23. Sarvesh Modi (I20PH023) - IIT Delhi
24. Rishit Tiwari (I20PH030) - Mount Abu IR Observatory (PRL)
25. Akshat Asthana (I20PH033) - TIFR, Mumbai
26. Surya Prakash G (I20PH039) - RRCAT, Indore
27. Chiranjeet Pradhan (I20PH045) - ARIES, Nainital
28. Prudhvi Teja A (I20PH061) - Vikram Sarabhai Space Centre (ISRO), Thiruvananthapuram
29. Navya Saraswat (I20PH063) - TIFR, Mumbai
30. Tamanna Pathan (I20PH059) - Physical Research Laboratory (PRL), Ahmedabad.
31. Harsh Verma (I20PH038) - Physical Research Laboratory (PRL), Ahmedabad.

MSC DISSERTATION: INTERNATIONAL VS. NATIONAL DISSERTATIONS



DISSERTATION BY FIELD OF STUDY



CSIR-NET Qualified

- Harsh Malaviya (I21PH013) has secured AIR-82 (JRF) rank in CSIR-NET-July,24 exam.

Placement

- Priyanka Prajapati - RAAM Group - PPO in sales.
- Sameer Kuksal - Unacademy - Physics Faculty
- Rushikesh Lokhande - Eleven Robotics - Embedded Software Developer

GATE Qualified

- Kasi Viswasnath (I20PH046) has cleared the GATE examination.
- Harsh Verma (I20PH038) has cleared the GATE examination.
- Sodari saiminu (I20PH062) has cleared the GATE examination.

Workshops

- Tamanna Pathan (I20PH059) was selected to attend the HSF-Scientific India Computing Workshop held at IISc, Bangalore.

Award

- Abhay Karia (I20PH002) received the Future Research Talent Award - 2024 at the Australian National University while working at the Mt. Stromlo Observatory, Canberra, Australia.

Other Achievements (off-Campus)

1. Aditya Kumar (I22PH030), Premsukh Batesar (I22PH034), and Shivam Randive, along with Abhishek Kumar (I23PH008), Shreya Dave (I23PH003), Neeva Patel (I23PH013), Krisha Dedhia (I23PH043), and Aayushee Patel (I23PH022), as part of Team Rocketry of the Physics Club, secured the **3rd position in the Sky Break Competition**, a mini rocket designing, building, and launching event, held at IIT Mandi's **annual technical fest Xpecto 2025**.

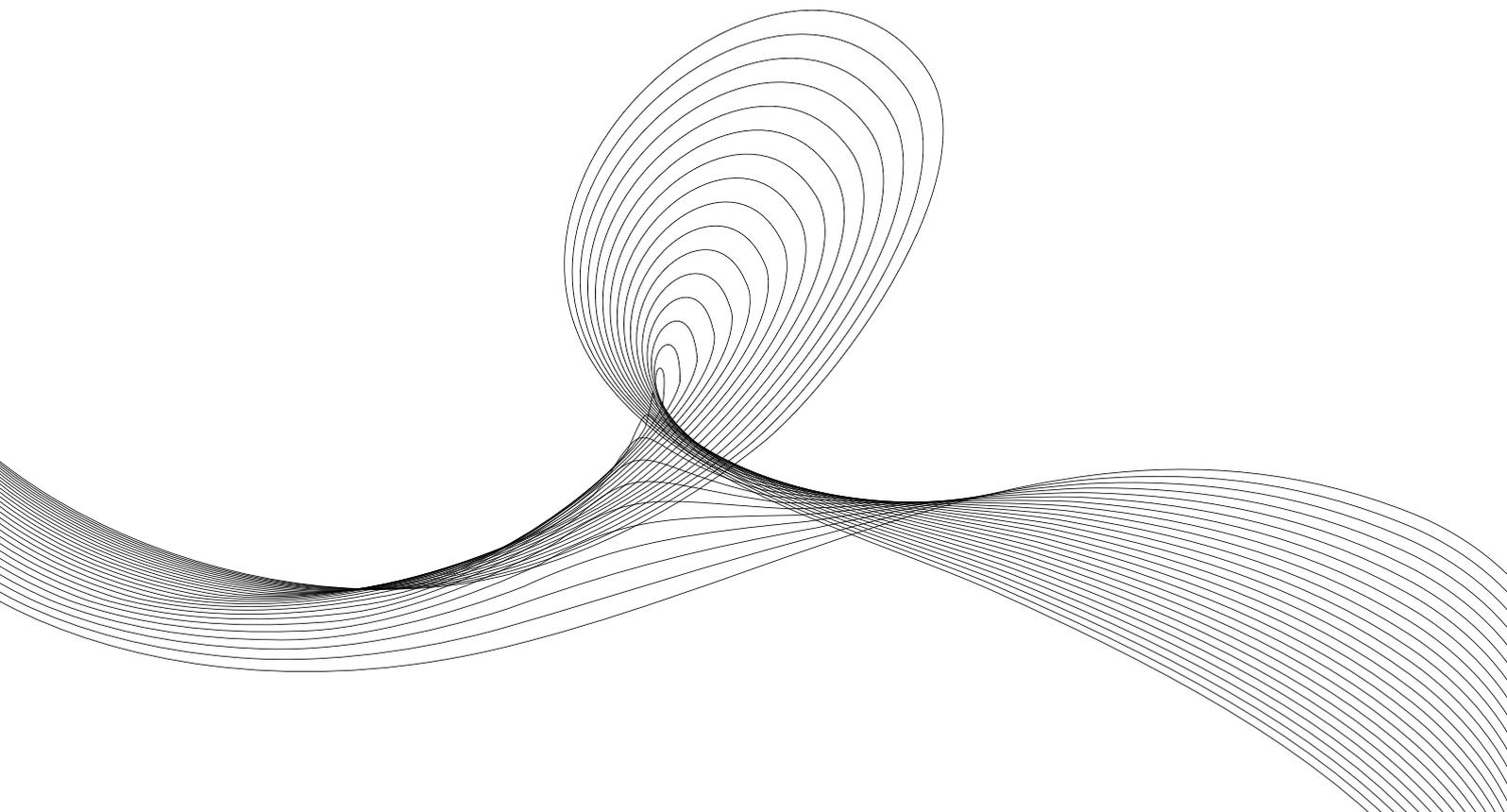
Other Achievements (off-Campus) contd...

2. Aditya Kumar (I22PH030) was selected as the **Google Cloud Facilitator** for SVNIT and achieved Tier 1 recognition from Google Cloud at the **Google Cloud Study Jams 2024**.
3. Lakshya Kukreja (I23PH053) secured an overall **AIR-2** in the **Safe Design in Autonomous Drone Development Challenge 2025**.
4. Team Aakashvani consisting of B Vineeth, M.S.S.S Dattatreya, Shubham Patnaik, Siddharth Rathod, Pradyumna Nimbkar, Krisha Dedhia from 3rd year Physics won **3rd prize** in **CANSAT competition** held at **IIST, Thiruvananthapuram 2025**.
5. G M Sanjit Krishna (I24PH006) selected for the **Physics Training and Talent Search (PTTS)** program in Bangalore (June 2025).

Other Achievements (in-Campus)

1. Hetvi Bharatkumar Jadav (D23PH006) has secured **2nd position** in **Poster Presentation** at the **Research and Innovation Conclave 2025** organized by RIAC, SVNIT Surat.
2. Sneh Shah (I21PH019) has secured **3rd place** in **Poster Presentation** at the **Research and Innovation Conclave 2025** organized by RIAC, SVNIT Surat.
3. Vaibhav Agarwal (U24EP009) has received **1st prize** in Ekphrastic Poetry Competition, **SPEAKATHON 2k25** conducted by Department of Humanities and Social Sciences, SVNIT under CCE (Center for Continuing Education) in Feb 2025
4. Rishita Kinra (U24EP022) has received **1st prize** in Extempore Competition, **SPEAKATHON 2k25** conducted by Department of Humanities and Social Sciences, SVNIT under CCE (Center for Continuing Education) in Feb 2025
5. Rishita Kinra (U24EP022) has received **1st prize** in Digital Poster Making Competition on the theme 'Importance of Standards for Viksit Bharat' conducted by **Bureau of Indian Standards, in collaboration with Mindbend** SVNIT in April, 2025

6. Rishita Kinra (U24EP022) has received **2nd prize** in 'Flowing in x-y' during **National Mathematics Week** conducted by the Department of Mathematics (SVNIT), in Dec 2024



Events Conducted by Physics Club

1. National Space Day



Date: 23rd August, 2024

Venue: DOCSE, Seminar Hall

Number of participants: 98

Core team: Aditya Kumar, Sameer, Satyam Singh, Shashank Verma, Dhairya Vaidya, Drastant, Himanshu Dunani, Sidharth S



To mark the success of Chandrayaan-3 and India's first landing near the moon's south pole, the Physics Club hosted the first-ever National Space Day at SVNIT. The event featured two expert talks: Charitarth Vyas, who traced the history of Indian astronomy from ancient Vedic knowledge to influential scholars, and Sunny Kabrawala from Star Labs who spoke on India's expanding space industry, its challenges, and its private-sector growth. The event bridged the ancient roots and modern ambitions of Indian space science.



Highlights:

The Physics Club of SVNIT celebrated India's first-ever National Space Day on August 23, 2024, to commemorate the historic Chandrayaan-3 landing an achievement that made India

the fourth country to reach the moon and the first to land near its southern polar region. The event featured two insightful talks:

The first session, "Past to Present: Journey of Indian Astronomy", was delivered by SVNIT alumnus Charitharth Vyas (Batch of 2007). He traced the evolution of Indian astronomy from its Vedic roots to classical contributions by legends like Aryabhata, Brahmagupta, and Varahamihira. Highlighting India's

early mastery in observations and calculations, Vyas emphasized how this knowledge was preserved and passed down through oral traditions, manuscripts, and observatories.

The second talk, "India's Blooming Space Industry", was conducted by Sunny Kabrawala, founder of Star Labs. He provided an engaging overview of modern space exploration, linking it to early aviation and highlighting India's growing role in space missions. From the challenges of launch conditions and space debris to the opportunities in private sector innovation, the session showcased how space technology continues to break barriers and create new frontiers for exploration and development.

2. Introduction to Model Rocketry

Date: 17 Feb, 2025

Venue: Seminar Hall 402, Dept of CSE

Number of participants: Around 75 engineering students



Core team: Aditya Kumar, Sameer, Satyam Singh, Prem Sukh Batesar, Shivam Randive, Himanshu Dunani

This engaging workshop introduced students to the fundamentals of model rocketry. Conducted by Star Labs founder and CEO Sunny Kabrawala, the session included a comprehensive presentation on rocket mechanics, avionics demonstrations, and interactive Q&A. Attendees explored concepts like science and mechanics, software systems, and component design, along with a historical timeline of space exploration.

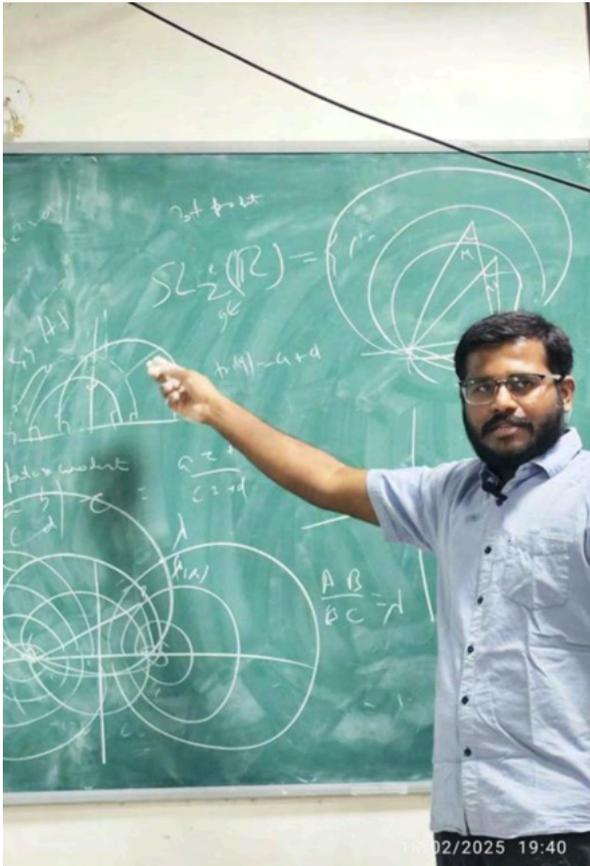




Event Highlights:

- A detailed presentation on the science and mechanics of model rocketry.
- A live demonstration of avionics, an essential component of rocketry used for syncing data transmission.
- An interactive Q&A session.
- Participation from around 75 engineering students.
- Insights into the intricacies of rocketry, from propulsion to the details of the nose cap.
- Glimpses of software employed to execute rocketry-related tasks.
- A historical overview of the space industry from its beginnings to the current scenario.

3. Science Sabha



Date: 18 Feb, 2025 to 21st Feb, 2025
Venue: Room No. 007, Dept. of Physics

Number of participants:

Talk 1: 25

Talk 2: 20

Talk 3: 40

Talk 4: 20

Core team: Aditya Kumar, Sameer, Satyam Singh, Prem Sukh Batesar, Shivam Randive, Himanshu Dunani

The "Science Sabha" was a four-day event organized by the Physics Club to introduce participants to the frontiers of Physics. The event featured expert talks by senior students exploring topics ranging from number theory and dynamo theory to space-time structure and topological materials. It promoted scientific knowledge and interdisciplinary learning.



3. Science Sabha



"Science Sabha" was a well-received initiative that aligns with the institute's vision of promoting scientific knowledge and interdisciplinary learning. Attendees gained theoretical and applied physics insights, fostering curiosity and discussions beyond the classroom.

The talks were delivered by senior students from the departments of Physics, Chemistry, and Mathematics. Topics included Number Theory and Physics (Adarsh Singh), Dynamo Theory (Sneh Shah), Space-Time Curvature (Ayush Bidlan), and Topological Materials (Harshit Verma). With focused participation and interactive discussions, the event successfully promoted scientific curiosity and fostered interdisciplinary learning among attendees.

4. *Talk on Design and the incorporation of various detectors at CERN*



Date: 17th April 2025

Venue: Seminar Hall of Electrical Department of Engineering

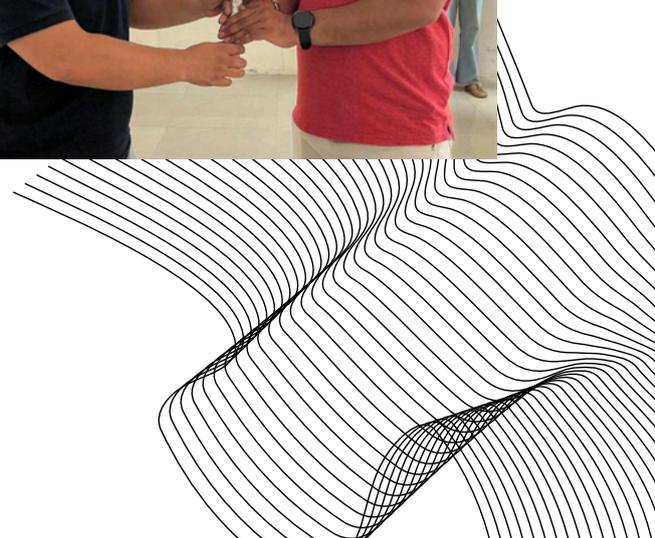
Number of participants: 80

Speaker: Dr. Vivek Patel, currently affiliated to Bergische Universitat Wuppertal, Germany

This expert session introduced participants to the field of particle physics with a focus on CERN's detector technology. Dr. Vivek Patel explained Cherenkov radiation and how it is used to detect high-speed charged particles, which is analogous to sonic booms. The session included live visuals from CERN laboratories and mathematical derivations relevant to high-energy physics. In the second half, Dr. Patel guided students on internships and research opportunities abroad, offering insights into cultural adaptation and personal growth. The workshop successfully blended technical and physics content with valuable career advice.

Session 1: Design and Incorporation of Various Detectors at CERN

- The session began with a warm welcome to Dr. Vivek Patel.
- He introduced the audience to the field of particle physics and its significance in understanding fundamental particles and their interactions.



- Explained the phenomenon of Cherenkov radiation, comparing it to a sonic boom, and described how its distinct blue glow helps detect high-speed charged particles.
- Showed real laboratory visuals and shared mathematical derivations used in particle prediction and analysis at CERN.
- Provided insights into the cutting-edge technology used in high-energy physics experiments.



Session 2: Guidance on Internships and Opportunities Abroad

- Offered practical advice on applying for national and international internships, identifying common application mistakes.
- Shared personal experiences and discussed the importance of preparing for cultural differences, work ethics, and maintaining mental well-being while living abroad.
- Emphasized adaptability and awareness as key to successfully navigating global academic and research environments.



The session was both informative and inspiring, blending advanced scientific knowledge with real-world career guidance and left a lasting impression on all attendees.

5.100 Years of Quantum: The Past , Present and the Future.

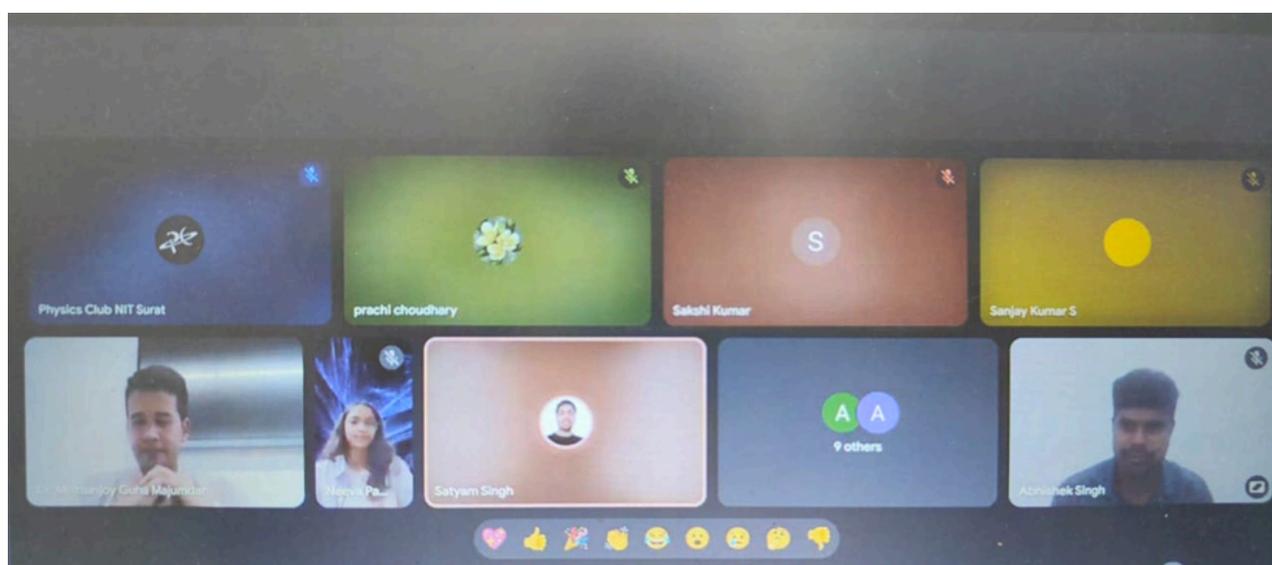
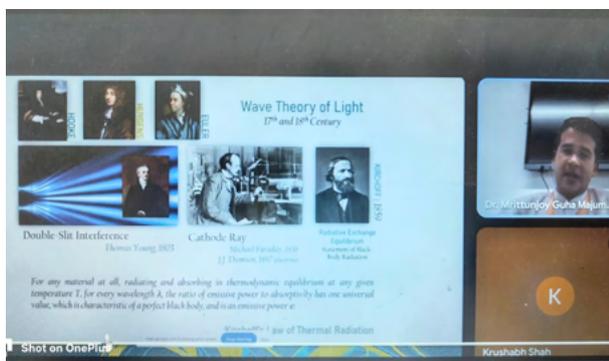
Speaker- Dr.Mrittunjay Guha Majumdar.

Speaker Details-Currently an Assistant Professor at Amrita Vishwa Vidyapeetham.

Date- 13th June 2025

Venue- Online meet (Google meet).

Number of participants benefited- 60.



The lecture on “100 Years of Quantum: The Past, Present and the Future” explored the evolution of quantum mechanics from early developments such as wave theory, black-body radiation, and photon quantization to modern concepts like quantum entanglement and emerging areas such as quantum machine learning. Emphasizing the importance of maintaining a balance between fundamental research and technological applications, the discussion also highlighted philosophical aspects of quantum theory and India’s growing role in the field through initiatives like the National Quantum Mission, while stressing the need for stronger experimental progress.

Participation by Physics Club



Date - 30th March, 2025, 4:00 PM

Venue - IIT Mandi

Core Rocketry Team: Aditya Kumar, Krisha Dedhia, Shreya Dave, Neeva Patel, Abhishek Kumar, Aayushee Patel, Premasukh Batesar, Shivam Randive and Lokesh Kumar

The Rocketry Team of the Physics Club, SVNIT, secured 3rd place in the Sky Break competition at IIT Mandi's tech fest, Xpecto 2025, on March 30. Teams were judged on rocket design, altitude, and flight time.

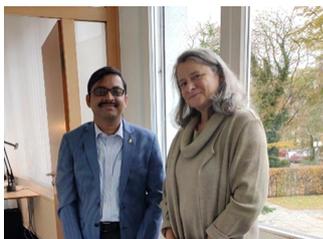
The Rocketry Team built and launched a solid fuel rocket under engineering constraints set by IIT Mandi, competing against top institutes from across India. Their design earned them the title of "Strong structural integrity and well-controlled flight," reflecting its performance, stability, and precision.

The result highlights focused engineering, effective teamwork, and month-long preparation. It also showcases the technical talent at SVNIT and the support of faculty mentors. This national-level achievement brings well-earned recognition to the institute.

Hanse-Wissenschaftskolleg (HWK) – An Indelible Memory

Debesh R. Roy (Professor)

Hanse-Wissenschaftskolleg (HWK) at Delmenhorst, Germany – an excellent government center for advanced research in the interdisciplinary areas of Science & Technology, Brain & Mind, Earth, Society and Arts & Literature! I was very fortunate to have an opportunity to visit this prestigious institute as a Fellow Scientist during November 2019 to September 2020 in the Science & Technology section. The HWK is one of the 24 German government institutes for advanced study which are located in different states, a similar concept to our NIT system. Scientists, academicians, artists, doctors and writers across the globe applies for this fellowship (of 3 to 10 months) with a joint research proposal with an academician or scientist in the nearby universities (north-western Germany), or independently, against an annual call in July each year. Upon approval, the fellows spend their sanctioned duration in its own fully furnished residence and carry out their joint research with the cooperation colleague(s) in the nearby universities like Universität Bremen, Constructor University, Universität Oldenburg etc. As you may remember my stay was mostly covered by Covid-19 era (Jan, 2020 onwards), but the utmost care by the HWK authority never let us feel that we are isolated and helpless, and work also hardly affected at all. It was my family visit and family visits are very welcomed by HWK. My wife Dr. Sutapa Mondal Roy worked as a Guest Scientist in Universität Bremen, and my 5 years son was enrolled in a kindergarten (nursery) school by the HWK authority. It is very interesting to note that in Germany, not only for kids, but the entire education (until Ph.D.) is free of tuition fees in general.



After Fellow-Rector (HWK) meeting



Prof. Frauenheim – collaborator



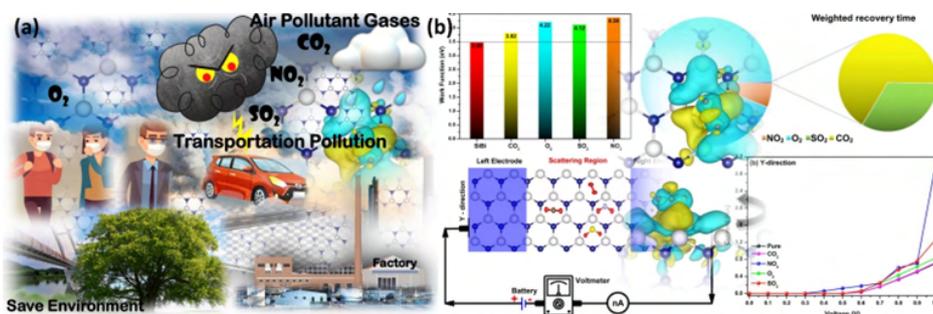
Covid-19 day's at HWK

Faculty Research Stories

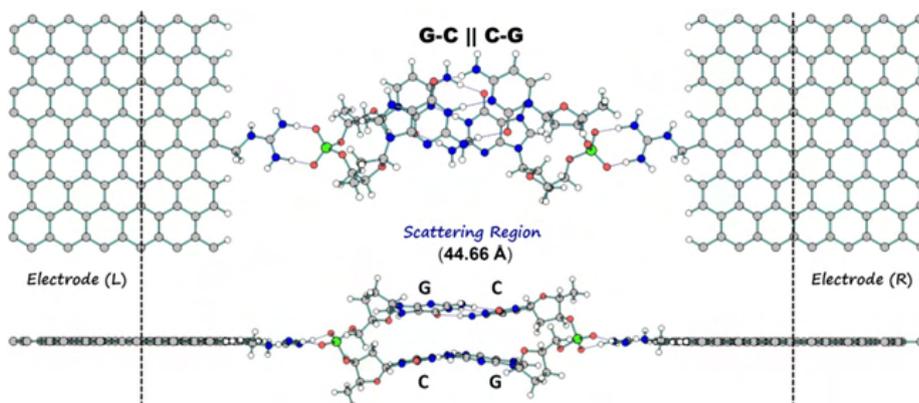
Let us talk about the social and cultural side of the institute. The fellows spend a quality time with their colleagues and staffs of the institute for research, social and cultural interactions and possible collaborations. Every Wednesday evening there is a scheduled 'Fellow Lecture' followed by dinner with the test of the speaker's country. I remember, my talk was just after two weeks of my joining, and it was an absolute Indian dish, which were appreciated by all the colleagues. Incidentally, during my tenure, I was the only Indian which probably provided me more opportunity to exchange Indian culture with colleagues of other nations. Also, there was a scheduled breakfast for fellows and their family on the last Thursday every month, and that was absolutely of German taste. The HWK authority also facilitates a scheduled monthly visit for fellows and their family to a nearby art & craft center, museum, science & technology center/laboratory, etc. followed by a dinner. I remember our visit to Prof. Dr. Kerstin Schill's robotics laboratory in the Universität Bremen. Prof. Schill was the Rector (Director) of HWK and a Professor of Computer Science, and also the vice-president of DGF, Germany. Her group work on developing self-driving car.

The residential life at HWK was fantastic with their staffs and fellows from diverse international origins, which facilitated multi-cultural interactions. Friday evening was the 'Movie Day' hosted by any fellow of their country/language with supporting discussion in English for other fellows. I remember interactions at various occasions with Prof. Andreas Teske, UNC, a marine life researcher, Dr. Cajetan Neubauer, a chemist from Caltech, Dr. Nikolas Makris, a doctor from Harvard University, Dr. Chrissy Kolaya, an English professor from University of Florida, Dr. Harmen Gudde, a researcher of Earth science from the UK, and others, which certainly enriched my experience in multifold ways to support a better way to my institute.

Fine, that was about life at HWK, let's talk about the business for which I was there! As a fellow, I used to frequently visit my cooperation collaborator Prof. Dr. Thomas Frauenheim's lab for the sanctioned project related discussions and work. Prof. Frauenheim is one of most popular name in the field of Computational Materials Science (his h-index is 111 and citations 57,000+). There was also a personal office given at HWK for the other days. Dr. Christof Köhler and Dr. Junjie He were other researchers I worked together. Later on, I have established a collaboration with Prof. Dr. Ulrich Kleinkathöfer, Constructor University in relation to the HWK project. We had worked on '2D electronics' for toxic gas sensor development, and also 'Transverse transport' in DNA electronics. In spite of Covid-19 challenges during my visit, the utmost supportive environment and work culture of HWK and collaborators made me most productive in my career with 13 reputed SCI publications as an outcome of the project. Therefore, personally or professionally the visit was memorable and indelible!



A representative ToC of 2D electronics for environmentally toxic gas sensing.



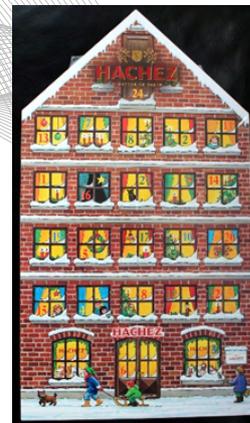
A model 'transverse transport' device for parallel G-C || G-C (DNA base pair) with graphene leads.

Faculty Research Stories

Christmas is the most celebrated festival in Europe, and I remember a kind gesture by the HWK, a gift 'Adventskalender', which is a German tradition to shorten the countdown until the Christmas. This 'sweet countdown' calendar starts from December 1 by opening the #1 little sweet door and continues to last day, i.e. Christmas Eve (#24), and then the Christmas holidays starts in Germany. The unforgettable moment in my entire visit was the opportunity for a group picture with all intellectual minds (fellows in residence) with the HWK Rector, in the New Year Reception on February 28, 2020.



Fellows and Rector - New Year's Reception Party 2020



Adventskalender

HWK offers short/long term (3-10 months) residential fellowship to different categories: Regular Fellowship, Junior Fellowship, Twin Fellowship, Post-doctoral fellowship, Artist in Residence and Writer in Residence, through its annual call in July every year. The fellowship can be divided into multi-stays upto three years as per the mutual convenience of Fellow and HWK. As a former visitor of HWK encourage all potential colleagues and students in Science & Technology to opt for this possible opportunity, and enrich & enjoy!

References:

1. Hanse-Wissenschaftskolleg (HWK): <https://hanse-ias.de/en/>
2. Fellow page : <https://hanse-ias.de/en/fellowships/fellow/14507>

Harsh Verma - (I20PH038)

Hey there! Harsh Verma this side. Today, I'm a **Satellite Operations Engineer at Pixxel**. But this story isn't really about that. It's about finding light when life keeps switching it off. My story is like the three body problem, complex, full of ifs and buts. From being an M.Sc. guy to an Aerospace engineer, looks impossible, right? Well, nothing is impossible... stay with me with my story.

Since childhood, I kept staring at the sky for hours at night, watching Cosmos by Neil deGrasse Tyson on Discovery channel, my mind drifted into galaxies and dream worlds. Little did I know, I was searching for my own place in this universe <3

I was an average boy in school academics but sports champion for 10 straight years. Then JEE took away my outdoor games. I joined SVNIT with one aim, to find a way into aerospace. There was nobody to guide me. Not one person. After a lot of struggle, I found a startup in Surat called STAR. Two internships there taught me the basics of Avionics and Radio. Knowledge is never wasted, it just waits for the right moment.

That moment came at the Space Applications Centre, ISRO. I worked under a scientist who contributed to Mangalyaan, developing India's first neuromorphic sensor algorithm. ISRO on my resume changed everything. Finally, I had taken my first step into space.

Then came 4th year, where I made the riskiest decision of my life. I got internships at PRL, TIFR, and even a CERN collaboration project in HEPHY (Austria). I REJECTED THEM ALL. Everyone thought I was crazy. But I wanted a full time role at Pixxel or Rocket Lab. **Rocket Lab** took me to the final round but didn't select me due to policy issues. Imagine that feeling, you're qualified, but still not chosen. Now, only one option remained: Pixxel. Eight rounds of interviews. When that offer letter finally came, my whole life flashed before my eyes. The CTC was beyond anything SVNIT placements could offer. Unlimited leaves, colleagues from NASA, ESA, ISRO, a dream life, right?

But dreams don't tell you what happens behind the scenes.

My mom passed away. My friend circle broke apart. A relationship didn't work out. Started two startups in college, took exit from both. There were nights I felt completely alone. Maybe it was all part of God's plan. I did it all alone, and that loneliness taught me more than any success ever could.

Some are the chosen ones. Believe me or not, the universe makes way if you have confidence in yourself. Not because you're special, but because you refused to give up when everything fell apart. Give your best so that no one can match your level. Make your parents proud. And keep looking at the stars, sometimes, they look.



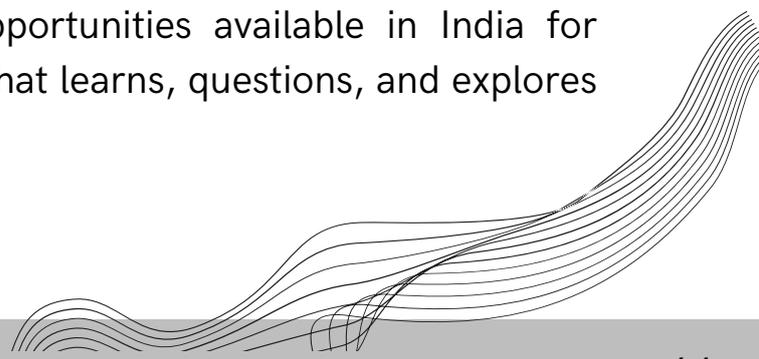
Patterns, Particles and Possibilities

G M Sanjit Krishna (I24PH006)

From a very young age, I have always questioned why and how. Why things behave the way they do, and how nature maintains its perfect balance. These endless curiosities naturally led me to choose Physics as my path in August 2024, here at SVNIT, driven by a deeper desire to understand what lies beyond the universe, the pattern, and the symmetry that governs it all. My journey began by diving into the literature side of physics, where I, along with my friend Shiva, co-authored an article in December 2024.

The experience opened our eyes to global perspectives in science and gave us the motivation to explore further. With the right guidance, I was selected for the Physics Training and Talent Search (PTTS) program in Bangalore (June 2025). There, I interacted with passionate students from across India, performed experiments, and completed mini-projects. Explored various domains and fascinating fields like Spintronics and Quantum Biology, which were completely new to me. This exposure taught me the true value of interdisciplinary learning. Inspired by the idea of quantum modes, or q-modes, I began developing a novel concept, which evolved into my first research paper in July-August 2025.

This exploration helped me reflect on my own future in physics and research. The journey reached a milestone when I received the opportunity to present my paper at the National Undergraduate Physics Conference, IISER Tirupati (December 2025) — an achievement that once existed only in my dreams. Continuing this momentum, I am preparing to participate in 'Mimamsa', a national-level physics competition organized by IISER Pune (January 2026), constantly seeking opportunities both as a team and as an individual. Looking ahead, I aspire to discover and share more such opportunities available in India for students like us to build a community that learns, questions, and explores the universe together.



My Journey of Curiosity to Experimentation

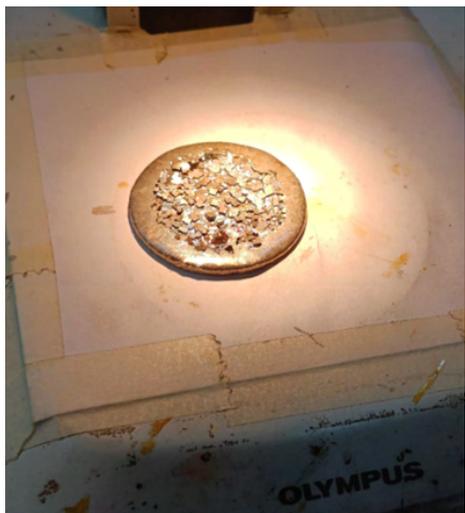
Rishita Sudhir Kinra (U24EP022)

My journey in physics began when I entered SVNIT for pursuing my B.Tech in Engineering Physics, fueled by an unending curiosity to understand how a lot of things in the universe work. That curiosity soon turned into a wonderful experience when I was selected among 71 students nationwide for the prestigious **NIUS Physics Program at Homi Bhabha Center for Science Education, Tata Institute of Fundamental Research, Mumbai** (May 2025).

Those 15 days (16 June - 2 July, 2025) at HBCSE were truly transformative and magical. Attending sessions by great scientists from scientists doing projects at CERN to Padma Bhushan Award Winners ranging from topics like Sokobans (which I probably would have never heard of unless this camp) to Quantum Cryptography and Gravitational Astronomy and a lot more opened doors into the vastness of physics - from the nanoscale to the cosmic scale. But what inspired me most were the hands-on experimental labs where we designed, explored, and reasoned our way through real world physical problems.

Experimental Physics gradually became my all time favourite. Unlike the routine college labs, we didn't just follow instructions - we brainstormed experimental procedures, predicted and calculated outcomes, failed, rethought, and finally discovered the answers ourselves. The most fun part was solving the electronic and optical black boxes like puzzles, visiting TIFR's Cold Atoms Lab (literally cold, with bare feet!), admiring the golden shimmer of bismuth crystals in the Crystal Growth Lab, and exploring the lustrous materials in the Optoelectronic Semiconductor Lab. Every moment sparked wonder, reflection, and a love for experimental problem-solving.

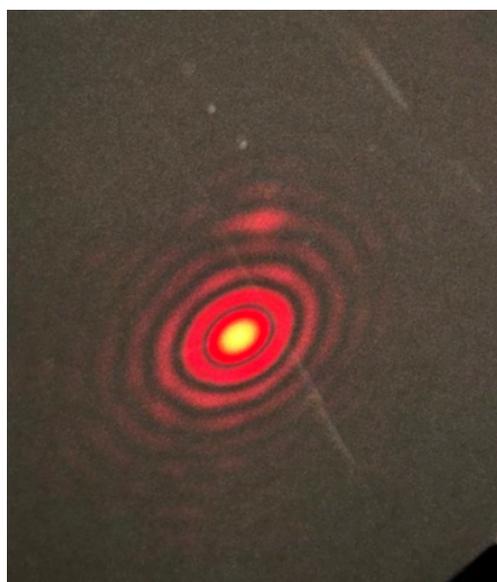
Recently, I've begun a research project under Dr. Arnab Bhattacharya, an amazing scientist and the Director of HBCSE, on "Exploring Optoelectronic Semiconductor Materials". As I step into this new phase, I aspire to discover and create something deeply innovative and applicative with semiconductors, continuing the spirit of curiosity, discovery and innovation that the program sparked within me.



Bismuth Crystal



GaN Semiconductor



Concentric Diffraction Through a Hole

Choosing Learning Over Labels ***A Journey from a Small Village to Nano-Worlds***

Saurabh Suman (I21PH038)

My journey did not begin in a competitive culture. It began in a small village, shaped by my father who had already seen the struggles that life can bring. Having experienced hardships himself, he was determined that I would not walk blindly into the same obstacles. Instead of pushing me toward shortcuts or social expectations, he paved my path toward learning. He introduced me not just to education, but to the meaning of education. Inside our home, he built a small laboratory for me. It was not sophisticated. There were no expensive instruments or advanced equipment. But that small space changed the way I thought. In that little lab, I did not just study science, I experienced it. I observed, questioned, connected ideas, and most importantly, learned how to think independently. My father never pushed me toward marks. Instead, he encouraged curiosity and taught the power of understanding. That small laboratory quietly shaped my analytical skills and planted the seed of research in my mind long before I even knew what research meant.

After my 10th standard, like many students with engineering dreams, I went to Kota. It seemed like the obvious next step, the city of competition, ranks, and relentless preparation. But within two months, I realized something was missing. The focus was on solving as many questions as possible i.e. speed over depth, tricks over understanding. I was not afraid of hard work but afraid of losing clarity. So I made a decision that many considered a mistake — I left Kota.

At that moment, it felt uncertain. Walking away from a structured system meant stepping into isolation. There was fear and doubt. But there was also something else — self-trust. I chose to prepare on my own. Self-study was not glamorous. There were no rankings, no daily comparisons, no constant validation. Only silence, books, and discipline. Slowly, my mindset shifted. I stopped counting the number of questions I solved and started focusing on whether I truly understood the concept behind them. That transition from solving to learning became the turning point of my journey. Through persistence and conceptual clarity, I qualified well enough to reach SVNIT Surat.

At SVNIT, physics transformed from a subject into a perspective. Under the mentorship of my professors, I began to see the elegance of Maxwell's equations and quantum mechanics beyond examination patterns. Once again, I faced a choice to run behind competitive exams and titles, or to invest deeply in research skills and understanding. I chose learning.

Finding my research field was not immediate. I explored multiple areas and experienced confusion. But when I encountered nanophotonics — the study of light interacting with matter at the nanoscale something resonated deeply. For the first time, I was not studying because I had to. I was studying because I was genuinely excited. Even though I started internships later than many of my peers, I refused to let timing define me. I joined IIT Mandi to explore my chosen field in depth. There, I learned that research is not about quick answers but it is about asking better questions. Later, understanding that modern photonics lies at the intersection of physics and engineering, I made another bold decision.

To strengthen my technical foundation, I chose to pursue my dissertation in Electrical Engineering at **IIT Hyderabad**. It was not about leaving physics; it was about expanding it. In nanofabrication labs filled with cleanrooms, lithography systems, and vacuum chambers, I witnessed theory transforming into real devices. Equations were no longer abstract — they were engineered structures. During my time at IITH, I also contributed as a teaching assistant in the SPARC program and was involved in training others in nanofabrication, experiences that deepened my own understanding through responsibility and practice. Being selected for advanced technical training in Taiwan further expanded my horizon. It exposed me to precision, discipline, and global research standards. It reinforced a lesson I had learned long ago in my small home laboratory to true growth comes from curiosity, not from labels. Looking back, my journey was not linear. I left Kota. I prepared alone. I started internships late. I shifted academic directions. I chose depth over speed and learning over prestige. Each decision seemed uncertain at the time, but together they built resilience.

"That small laboratory in my village and mentorship of my father taught me something no institute could i.e. real learning begins when curiosity replaces fear."

True success in physics and in life is not about where you start. It is about how honestly you evolve.

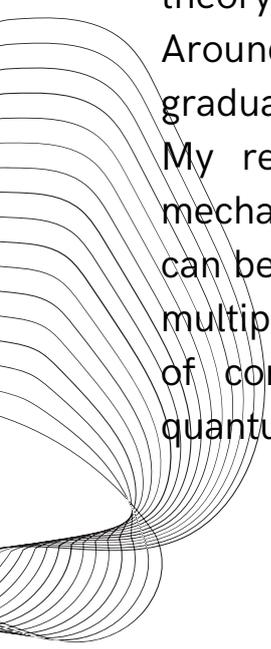
Learning to Understand the Universe

Abhishek Kumar (I23PH008)

When I joined college, I was never satisfied with simply accepting things as they are. I always wondered what was actually happening behind the theories we studied in our courses. One of the subjects was Optics, and it reminded me of my Class 10 practical experiments. Questions began to appear in my mind: Why does light bend? Why do atoms remain stable? How can something as small as a particle determine the behaviour of the entire universe? These questions slowly became more than curiosity, they became direction.

When I joined the Integrated M.Sc. Physics program at SVNIT Surat, physics stopped being just a subject and started becoming a way of thinking. I realised physics is not only about solving numerical problems; it is about learning how to ask the correct questions. During my early semesters, I explored many areas: - electronics, programming, and mathematics, because I understood that modern physics cannot exist without computational tools.

I began working with programming, microcontrollers, and sensors, learning how real physical measurements are taken. Building small electronics projects in the Drishti Club taught me an important lesson: theory becomes meaningful only when you can observe or simulate it. Around the same time, I started learning Python and data analysis, which gradually introduced me to computational physics and machine learning. My real research interest developed when I encountered quantum mechanics more deeply. I became fascinated by how information itself can be stored in quantum systems. The idea that a particle can represent multiple states at the same time completely changed my understanding of computation and communication. This naturally led me toward quantum information and quantum computing.



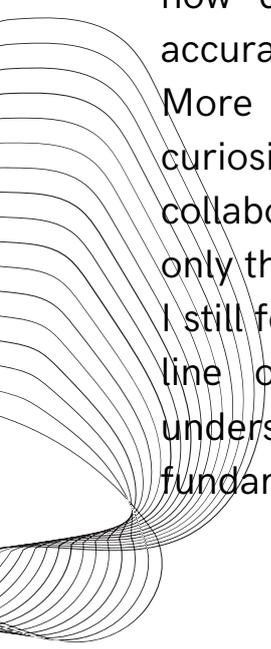
Following this interest, I worked on quantum optics and quantum state tomography during my research internship at IIT Jodhpur in the summer of 2025. I studied spontaneous parametric down-conversion (SPDC) sources, learned to simulate quantum states, and implemented linear and maximum likelihood quantum state tomography using Python. Through this work, I realised that research is not about immediately getting correct results; it is about patience, debugging, and continuously refining understanding. Many times, the code failed, matrices became non-physical, or reconstructed states were incorrect, but each failure improved my intuition.

Parallel to theoretical work, I also enjoy experimental and applied projects. I am involved in building a model rocket and designing its ignition and measurement system. Working on thrust measurement, sensors, and data acquisition helped me appreciate how physics, engineering, and computation combine in real-world research. It showed me that modern physicists must be comfortable working across disciplines.

At present, I am learning machine learning and data science because I believe the future of physics research will strongly depend on computational methods: - especially in quantum systems where analytical solutions are limited. My long-term goal is to work in quantum communication and quantum information, particularly in understanding how quantum states can be transmitted reliably and reconstructed accurately.

More than publications or achievements, my motivation comes from curiosity. I want to contribute to a scientific community where students collaborate, share knowledge, and learn together. Physics, to me, is not only the study of the universe; it is the study of understanding itself.

I still feel I am at the beginning of my journey, but each experiment, each line of code, and each question brings me one step closer to understanding how information and nature are connected at the most fundamental level.



Newsletter Team



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Singh



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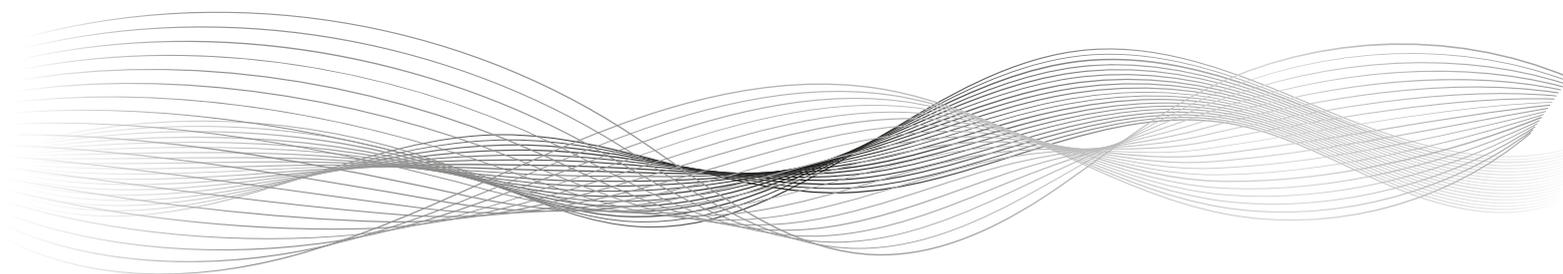
Neelam Jat

Message from Newsletter Team

As members of the Physics Department Newsletter Team, we are delighted to present this edition of our departmental magazine. This newsletter is a reflection of the curiosity, dedication, and vibrant academic spirit that define our physics community. Through these pages, we aim to capture the diverse activities, events, and accomplishments that continue to enrich our learning environment.

Over the past months, the department has witnessed engaging seminars, hands-on experiments, collaborative projects, and notable achievements by students and faculty alike. Each contribution showcased here represents collective effort, scientific enthusiasm, and the drive to explore beyond the classroom.

We sincerely thank everyone who shared their experiences, supported this initiative, and contributed content to make this newsletter possible. We hope this edition informs, inspires, and strengthens our sense of community as we continue our journey of discovery in physics.





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