

Newsletter of the Physical Research Laboratory

THE SPECTRUM



Vikram Jayanti celebration at PRL on 12th August 2026

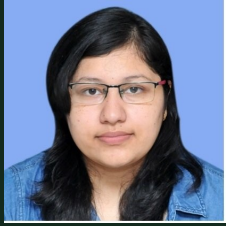
September 2026

Table of Contents

The Hidden Australe Basin on the Moon: Host to Unique Lunar Basalts.....	3
Reconstructing 14 Billion Years of the Milky Way's Chemical History.....	4
PSRDISP: A Novel Approach to Modeling Dispersive Processes in Single-Pulsar Noise Analysis Using Epoch-Wise Dispersion Measures.....	5
Atmospheric Cloud Detection and Cloud Base Height Estimation from the Lidar Backscatter: A Two-Step Statistical and Machine Learning Approach.....	6
Science Express.....	7
3rd CNIT Division Nukkad – Chai Pe Byte	8
107th Vikram Jayanti Celebration in PRL	10
ASI Awards for Excellence in Astronautics 2025.....	11
Celebration of the 5th Anniversary of PRL Crèche.....	12
Independence Day Celebration at PRL.....	13
National Space Day Celebrations 2026.....	14
IC-PRL Orientation Program – PRL Udaipur Solar Observatory 2026.....	16
PRL Amrut Rajbhasha Vyakhyaan.....	17
119th PRL Ka Amrut Vyakhyaan.....	19
PRL Monthly Publications Digest.....	20
Visitors.....	22
Awards and Honors.....	22
Superannuation.....	23
Obituary.....	24

The Hidden Australe Basin on the Moon: Host to unique lunar basalts

The Author



Neha Panwar

(*Neha Panwar, Tvisha Kapadia and Neeraj Srivastava*)

The geological evolution of the Moon is dominantly influenced by two major processes, i.e., impact cratering and magmatism. It has been estimated that ~300 impact formed on the lunar surface, but only 74 have been detected using the gravity data from the GRAIL mission. The role these lost impact basins play on lunar volcanism is also not fully understood. Mare Australe (47.77°S, 91.99°E) is a distinctive volcanic province characterized by 248 small basalt ponds arranged in a circular pattern. Earlier studies suggested the presence of an associated Australe impact basin. However, the region lacks any identifiable ring morphology and a central positive Bouguer anomaly, both typically associated with impact basins, making the existence of the Australe Basin uncertain.

In this study, for the first time, we carried out a detailed mineralogical investigation of the Australe region, assessing both non-mare and mare units using Moon Mineralogy Mapper (M3) to understand its geological evolution. The widespread distribution of orthopyroxene encircling Mare Australe supports the presence of the Australe Basin, previously undetected by gravity and topographic datasets. Our results reveal the presence of basalts dominated by low-to-intermediate-Ca pyroxenes, compositionally distinct from typical high-Ca-pyroxene-bearing lunar basalts. The study highlights that the ancient basins on the Moon have undergone a unique geological evolution and can be traced using mineralogical signatures.

Source/Reference of the Work: <https://doi.org/10.3847/PSJ/ae8ba3>

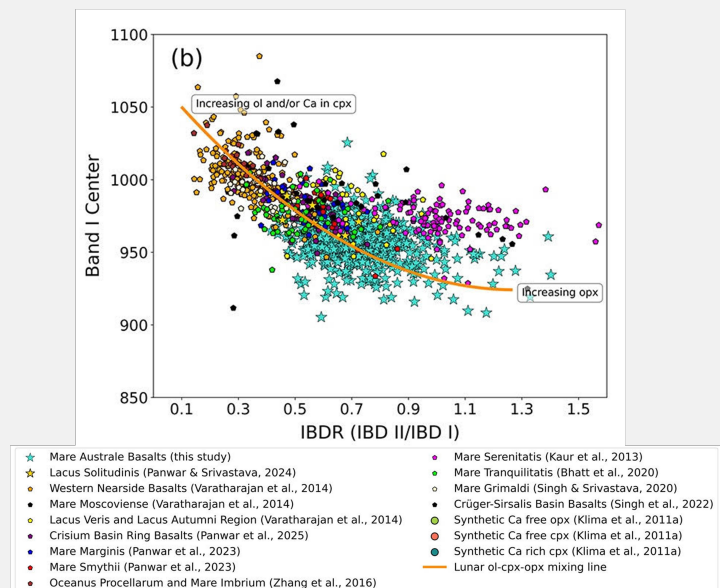
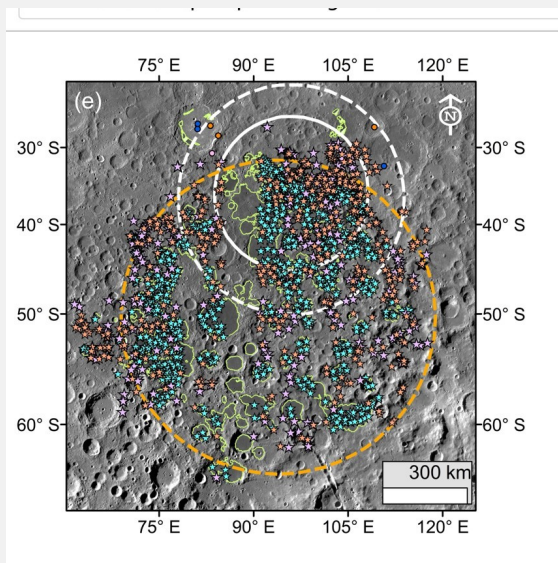


Figure Caption: Figure Caption: (a) Geological setting of the Mare Australe Basin showing the spectral reflectance points. (b) Band I Center vs IBDR plot of the Mare Australe basalts compared to the rest of the lunar basalts.

Reconstructing 14 Billion Years of the Milky Way's Chemical History

The Author



**Antariksha
Mitra**

(*Antariksha Mitra and Kuljeet K. Marhas*)

The Milky Way has evolved for nearly 14 billion years through the continuous birth and death of stars. As stars forge new chemical elements and return them to space through stellar winds and supernova explosions, they enrich the galaxy and provide the building blocks for future stars and planets. Reconstructing this long chemical history remains one of the fundamental challenges in modern astrophysics.

In this study, we developed a new probabilistic model of Galactic Chemical Evolution that follows how stars and chemical elements, isotopes evolve across the entire Milky Way. Unlike conventional approaches that prescribe star formation, our model allows stars to form naturally according to the local physical conditions within the Galaxy. Dividing the Milky Way into nine concentric regions, the model simultaneously tracks the evolution of 83 isotopes of 32 chemical elements over the galaxy's lifetime, making it one of the most comprehensive simulations of its kind.

The model successfully reproduces the observed chemical composition of stars across the galactic disk measured by several major astronomical sky surveys, while naturally predicting how stellar populations change as the galaxy evolves. It further reveals that the chemical elements follow five distinct evolutionary pathways, providing a new framework for understanding how different elements were built up over cosmic time. Together, these results offer a powerful new way to reconstruct the chemical history of our galaxy and deepen our understanding of how the Milky Way transformed from a primordial cloud of hydrogen and helium into the chemically rich environment that ultimately gave rise to our Solar System and the Earth.

Source/Reference of the Work: <https://doi.org/10.3847/1538-4357/ae9289>

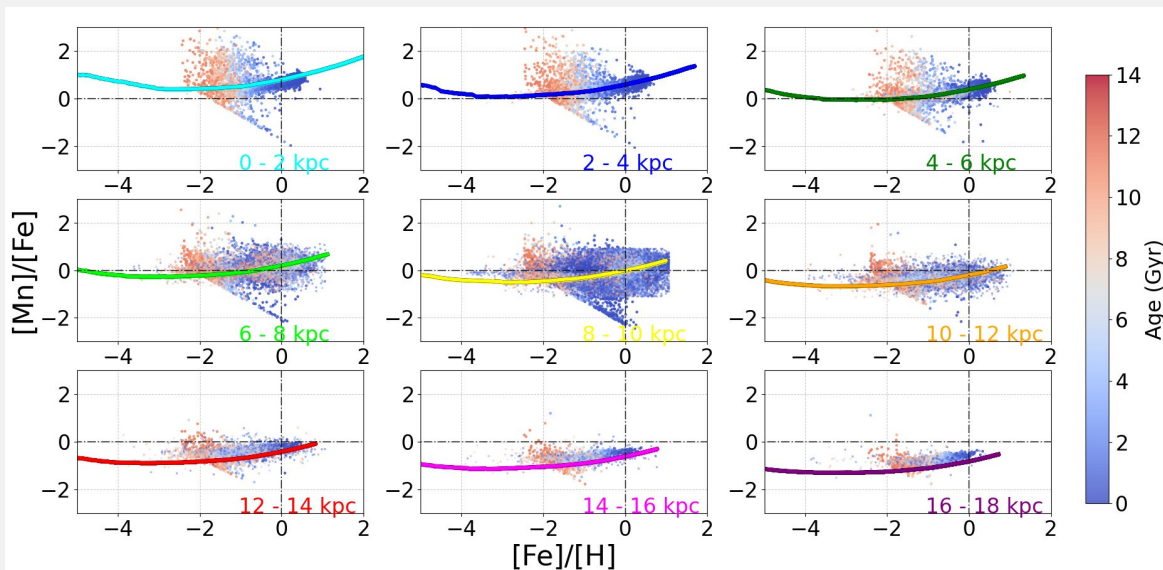


Figure Caption: Evolution of manganese (Mn) relative to iron (Fe) across the Milky Way, compared with observations from astronomical sky surveys. The observed stars are colour-coded by age. The close agreement between the simulations (coloured curves) and observations demonstrates the model's capability to reproduce the chemical evolution of the Galactic disk. Mn is representative of the Class III evolutionary group.

The Author



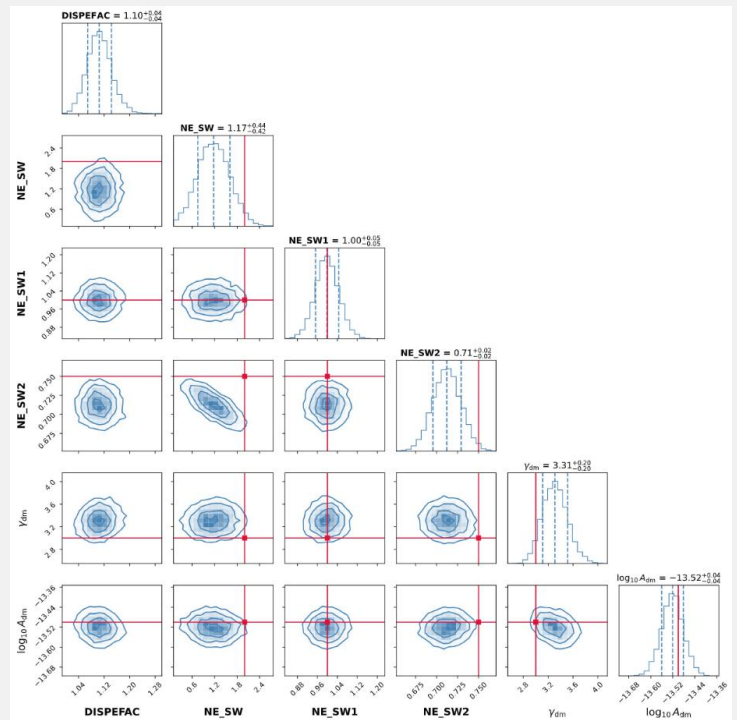
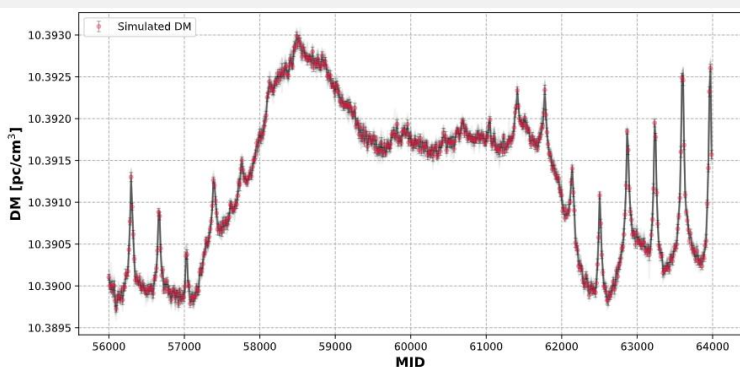
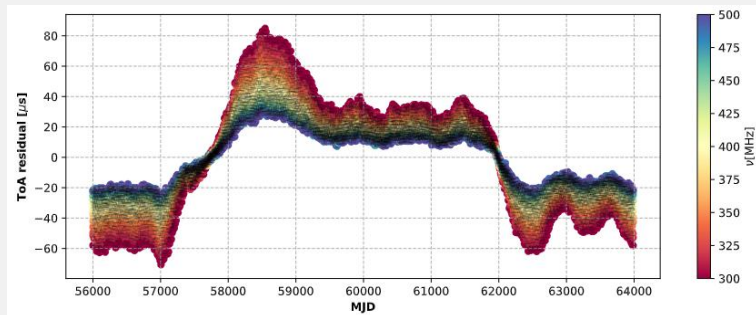
**Churchil
Dwivedi**

PSRDISP: A Novel Approach to Modeling Dispersive Processes in Single-Pulsar Noise Analysis Using Epoch-Wise Dispersion Measures

(Churchil Dwivedi and Abhimanyu Susobhanan)

In this work, we developed a novel framework to model various deterministic and stochastic dispersive processes affecting pulsar timing datasets via high-precision epoch-wise dispersion measure (DM) estimates, with a Gaussian Process-based approach. Unlike the conventional single-pulsar noise analysis methodology, which is applied to frequency-resolved times of arrival (ToAs) of pulses, this technique is applied to epoch-wise DMs which are derived from these ToAs. It can also be applied to wideband DMs measured simultaneously with wideband ToAs. Therefore, this framework provides a paradigm-agnostic approach to characterise single-pulsar dispersive processes. This method is expected to minimise the impact of achromatic red noise processes while characterising these dispersive effects. We substantiate the discussed technique with representative examples using simulated datasets with realistic noise injections (top left panel in Figure 1). We found the recovery to be in close agreement with the injections (right panel in Figure 1), agnostic to the estimation technique, giving precise reconstruction of the DMs (bottom panel in Figure 1). This technique can serve as a powerful diagnostic tool for validating single-pulsar noise analyses, which is crucial for precision pulsar timing experiments, such as Pulsar Timing Arrays.

Source/Reference of the Work:: <https://doi.org/10.1016/j.jheap.2026.100722>



Top left: Simulated narrowband ToA residuals with realistic DM noise injection; Bottom Left: Estimated DMs from simulated ToAs (red points) along with the reconstruction using estimates from PSRDISP; Right: Posterior distributions of the extracted parameters.

The Author



Aniket Patel

Atmospheric Cloud Detection and Cloud Base Height Estimation from the Lidar Backscatter: A Two-Step Statistical and Machine Learning Approach

(Aniket Patel and Som Kumar Sharma)

Cloud Base Height (CBH), is an important atmospheric parameter used in weather forecasting, aviation safety, and climate research as it provides useful information about the structure of the lower atmosphere, its stability, and how clouds interact with solar radiation. This study presents a two-step approach, combining a simple statistical method with machine learning (ML), which was developed and tested to estimate CBH from Lidar backscatter data. In the first step, the method determines whether a cloud is present by using a Variability Index (VI), which is calculated as the ratio of the standard deviation of the backscatter profile to its peak value. This index is easy to understand physically and able to clearly distinguish between cloud-present and cloud-absent profiles, showing a large effect size (Cohen's $d \approx 1.96$), a maximum F1 score of about 0.83 at a VI value of approximately 0.24, and an area under curve (AUC) of the Receiver Operating Characteristic (ROC) curve of 0.88, indicating good cloud detection performance. In the second step, only the profiles identified as containing clouds were used to estimate the cloud base height using four different machine learning methods: Multiple Linear Regression, Fine Tree Regression, Random Forest, and Gaussian Process Regression (GPR). Among these methods, Random Forest, which is a tree-based nonlinear ML model that combines many decision trees, performed the best, achieving a high correlation coefficient of about 0.94 ± 0.04 . GPR, which is a kernel-based machine learning method, performed slightly worse than Random Forest, with a correlation coefficient of $R = 0.91 \pm 0.05$. The Fine Tree model showed the weakest performance among the nonlinear models tested, with $R = 0.89 \pm 0.07$. In comparison, the Multiple Linear Regression model, which assumes a simple linear relationship between the input variables and CBH, showed the lowest accuracy, with $R = 0.58 \pm 0.13$. Overall, findings reveal that combining a simple and easy-to-understand statistical method for detecting clouds with advanced ML methods for estimating cloud height can significantly improve the reliability and accuracy of CBH retrieval from Lidar backscatter data. The proposed approach is also computationally efficient, and it can process data without requiring excessive computational resources, and therefore has strong potential for real-time use in operational atmospheric monitoring Lidar networks.

Source/Reference of the Work: <https://doi.org/10.1080/01431161.2026.2691978>

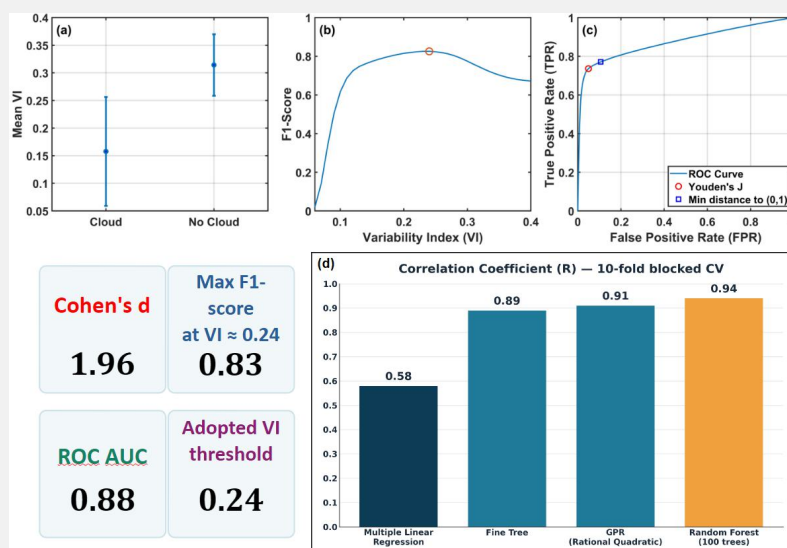


Figure Caption: (a) Statistical comparison of the mean variability index (VI) under cloud and no-cloud conditions with Cohen's $d = 1.96$. (b) Variation of F1-score as a function of VI, showing a maximum F1-score of 0.83 at VI = 0.24 (marked by orange circle). (c) Receiver operating characteristic (ROC) curve for VI-based cloud detection (Area Under Curve, AUC = 0.88). (d) Performance of the Tested ML Algorithms Using 10-Fold Cross-Validation.

Science Express

The PRL-Optica Student Chapter organized the popular science outreach program "Science Express" to promote science among young minds in secondary and higher secondary schools located in remote areas. We are grateful to Optica for providing the funds necessary to conduct this event about 300 km from the Physical Research Laboratory, Ahmedabad, Gujarat.

This outreach event was held at two venues: PM Shri Kendriya Vidyalaya, Mount Abu, Rajasthan, and Senior Secondary High School, Sirohi, Rajasthan. The event took place on July 31st and August 1st, 2026, and was supported by 30 student volunteers from PRL. PRL team received guidance from Professor Goutam K. Samanta, the founding advisor of the PRL-Optica chapter and Dr. Sunil Chandra and his team at PRL's Mount Abu facility for providing essential organizational support.

PRL team brought over 20 working models, and 4 additional models were arranged by members of the PRL Mount Abu Observatory. At PM Shri Kendriya Vidyalaya, started the event at 10 AM, where models and live demonstrations were set up in four large classrooms. More than 400 secondary and higher secondary students from the hosting school and two nearby schools attended the demonstrations. The excitement among the young students was palpable as PRL Team explained the PRL live models and connected them to their textbooks.

The next day, PRL Team reached at Senior Secondary High School in Sirohi, about 70 km from Abu Road by 10 AM. This school was relatively underprivileged, but they greeted us warmly. A significant number of school students from three nearby schools attended, resulting in over 600 student participants. The PRL volunteers worked tirelessly to interact with them, with almost no breaks. Importantly, the event was free of cost to the school and students. After a wonderful day, on August 2nd, 2026, PRL Team headed back to Ahmedabad.



Glimpses from the Event

3rd CNIT Division Nukkad – Chai Pe Byte

The 3rd CNIT Division Nukkad – Chai Pe Byte on “ज्ञानपुनरुत्थान – SPACENET Refresh (Revive, Restore, Relearn)” was held on August 06, 2026 during 10:00hrs to 11:30hrs. This event was held in offline mode both at Main Campus and Thaltej Campus. There were 42 participants attended the session. In the session, 80% discussion was in Hindi and 20% discussion was in English.

The “Chai Pe Byte” initiative by the CNIT Division is designed to foster a culture of knowledge sharing, experience exchange, and collaborative problem-solving. Its core aim is to identify and address IT-related challenges faced by users, while strengthening the connection between the CNIT Division and PRL colleagues. By creating an informal yet focused platform for dialogue, the initiative contributes to enhancing the effectiveness and efficiency of PRL’s IT services and infrastructure.

CNIT has observed that ISRO/DOS SPACENET network services like Sarv-Nabh, Intranet ISRO/DOS center’s/Unit’s websites browsing are primarily used by PRL fraternity for file sharing within ISRO/DOS or browsing ISRO/DOS internal web services. It’s often observed that SPACENET related support requests reach CNIT at the last minutes, largely because these services are not integral part of our daily workflow, leading to infrequent use and over time, reduced familiarity with their functionalities.

Continuing the momentum from our first session on August 1, 2025, this year’s event was designed to help the PRL fraternity refresh their experience, deepen their awareness, and explore the latest updates to SPACENET services. Addressing the need for ongoing skill reinforcement, CNIT organized an interactive, hands-on session—“ज्ञानपुनरुत्थान – SPACENET Refresh (Revive, Restore, Relearn)”—under the banner of CNIT Nukkad – Chai Pe Byte. Planned in direct alignment with the event’s core objective to revive, restore, and relearn, this session encouraged participants to dive back in and effortlessly re-engage with the services.

By combining technical awareness with interactive learning, the session empowered participants to integrate SPACENET into their workflows more effectively, reinforcing the overarching mission of Chai Pe Byte.

Mr. Vaibhav Khairkar and Mr. Rahul CS welcomed all the participants at the Main Campus and Thaltej Campus respectively. Both of them along with other CNIT colleagues have coordinated the entire event including hands-on at both the campuses respectively. All participants at both the locations were briefed on the overall SPACENET infrastructure and its key services, including Sarv-Nabh (ISRO/DOS-wide file sharing), VAST/VISWAS, Office Orders, SPACENET websites of other ISRO/DOS centers and units, and staff contact directories etc. There was discussion on PRL’s web based file transfer service “TempShare” to transfer files between PRL LAN and PRL’s SPACENET network. Both the CNIT members demonstrated live to highlight how

All the participants personally carried out hands-on activities on “SarvNabh” and “Tempshare”, giving them to reconnect themselves with the functionalities and usage of SPACENET services. The hands-on activities played a pivotal role in fulfilling the event’s core theme of “Revive, Restore, and Relearn.”

- Revive: Participants revisited SPACENET services, they had previously used but gradually distanced from, reigniting their familiarity.
- Restore: Through guided practice, they reconnect themselves with SPACENET services.
- Relearn: The interactive format allowed them to deepen their understanding, correct misconceptions, and update their knowledge with current best practices.

This immersive experience empowered participants to seamlessly integrate SPACENET services into their workflows, ensuring readiness and efficiency whenever the need arises. The session proved highly beneficial and given insights of SPACENET services. The attendees overwhelmingly expressed gratitude for the valuable insights and commanded the CNIT division’s new innovative under the “ज्ञानपुनरुत्थान – Revive, Restore, Relearn“ CNIT Nukkad – Chai Pe Byte.

The collaborative efforts of the participants and the CNIT division made the session a success, laying a strong foundation for achieving the objectives of the session.

The CNIT members sincerely thanks Director sir, PRL, for his constant guidance and motivation to initiate such activities in different IT verticals. The CNIT members thank Dean, PRL and Registrar, PRL for their support. We thank Prof. Bijaya Sahoo, Prof. Varun Sheel, Prof. Namit Mahajan, Dr. Shanmugam for their guidance and support in all the IT related activities and projects. From the bottom our hearts, CNIT members thank all the participants who enthusiastically participated, provided their valuable feedback and encouraged us to conduct similar events in future. CNIT also thank all the PRL users for their cooperation and help.

The report is also available on CNIT Division Website under Intranet Access

URL - <https://prlwebsite.lan.prl.res.in/prl-eng/cnit/intranet/chaipebyte>

CNIT keeps all the reports of “Chai Pe Byte” on this website for future reference.



Glimpses from the Event

107th Vikram Jayanti Celebration in PRL

To commemorate the 107th birth anniversary of Dr. Vikram A. Sarabhai, the Founder of the Physical Research Laboratory (PRL) and the Father of the Indian Space Programme, the 107th Vikram Jayanti was celebrated with great enthusiasm across all four campuses of PRL on 12 August 2026.

The celebrations commenced at 9:15 a.m. at the Main Campus of PRL, Navrangpura, Ahmedabad, with the ceremonial garlanding of the statue of Dr. Vikram A. Sarabhai. The ceremony was graced by Dr. V. Narayanan, Secretary, Department of Space (DOS) and Chairman, ISRO; Shri A. S. Kiran Kumar, Chairman, PRL Council; Dr. Mallika Sarabhai, Dr. Kartikeya Sarabhai, Ms. Priti, W/o Dr. Kartikeya Sarabhai and other distinguished dignitaries.

The garlanding ceremony was followed by a tree plantation drive and the ASI Award Ceremony. The dignitaries, PRL members, retirees, and new joiners participated in the tree plantation drive with great zeal and enthusiasm, reaffirming the spirit of environmental stewardship and collective participation that embodies the vision and legacy of Dr. Vikram Sarabhai.



Glimpses from the Event

ASI Awards for Excellence in Astronautics 2025

The Astronautical Society of India (ASI) Awards ceremony for Excellence in Astronautics 2025, was conducted at the Physical Research Laboratory (PRL), on 12 August 2026 coinciding with the 107th birth anniversary of Dr. Vikram Sarabhai, the visionary founder of PRL and architect of India's space program.

Astronautical Society of India (ASI) was set up to foster the development of astronautics and engaged in the dissemination of technical and other information related to astronautics. The ASI has decided to conduct its annual award function on the birth date of Dr. Vikram Sarabhai from this year. Accordingly, the first ASI award function commemorating Sarabhai's birthday was hosted at PRL.

Shri A. S. Kiran Kumar, Chairman, PRL Management Council, Member, Space Commission and Former Chairman ISRO / Secretary DOS kindly graced the occasion as the Chief Guest. The award function was presided over by Dr. V. Narayanan, Chairman ISRO/Secretary DOS and President, ASI. Shri Kartikeya Sarabhai, the Founder and Director, Centre for Environmental Education (CEE) and Member, PRL council of management also graced the occasion as a guest of honour. Nearly 100 delegates attended the function including Scientific Secretary ISRO, Directors of various ISRO/DOS centres, ASI Executive Secretary, ASI members and other invitees.

The award ceremony commenced with a video showcasing history of PRL, its multidisciplinary scientific research spanning astronomy, quantum physics, geosciences, planetary science, solar physics, and theoretical physics. Prof. Anil Bhardwaj, Director, PRL, delivered the welcome address and extended a warm welcome to all delegates. Ms. Ritu Karidhal, ASI Executive Secretary gave an overview of ASI awards, selection process through extensive expert review of nominations from academia, industry, startups, and government organizations. The ASI Awards ceremony recognized thirteen awardees and three distinguished fellows for their outstanding contributions across astronautics, space science, technology, and applications. Honourees included senior scientists, engineers, and leaders from ISRO, DRDO, academia, and private industry, acknowledging lifetime achievements, technical innovations, and team excellence.

The program concluded with the remarks of Prof. Dibyendu Chakrabarty, chair LOC who expressed sincere appreciation for the cooperation received from ASI and all LOC members during the event's planning and execution. He also conveyed his gratitude to the ASI dignitaries, PRL staff, and supporting teams for their collective efforts in ensuring the success of the ceremony. The ASI award function was followed by the Annual General Body Meeting (AGBM) of the ASI.



Group Photo with the Awardees

Celebration of the 5th Anniversary of PRL Crèche

The 5th Anniversary of PRL Crèche was celebrated on Thursday, 13 August 2026 at the PRL Crèche premises, Navrangpura. The occasion marked a significant milestone, commemorating five years of the Crèche's dedicated service in providing a safe, caring and nurturing environment for the children of PRL employees.

The celebration commenced with addresses by the Director, PRL, and the Chair, PRL Crèche Committee. This was followed by a rendition of the national song "Vande Mataram" by Master T. S. Shayanav, Master T. S. Sastik and Master Amythya. Ms. Kiara Verma presented a lively dance performance. The cultural performances by the children were warmly appreciated by all the attendees.

As part of the celebration, Ms. Vaishaliben Kansara, Supervisor, PRL Crèche, was felicitated in recognition of her exemplary and dedicated service over the past five years. The celebrations continued with a joyful cake-cutting ceremony, followed by the distribution of stationery kits to all the children.

The programme concluded with a group photograph and tree plantation on the campus, symbolizing growth, sustainability and a bright future for the Crèche.

The anniversary celebration provided an opportunity to reflect the Crèche's journey, to appreciate the dedicated efforts of its staff, and celebrate this important milestone with the children and PRL fraternity.



Glimpses from the Event

Independence Day Celebration at PRL

The 80th Independence Day was celebrated with great enthusiasm at the Library Lawn of the PRL Main campus on Friday, August 15th, 2026.

The celebrations commenced with the playing of the national song "Vande Mataram" upon the arrival of Prof. Anil Bhardwaj, Director, PRL. Prof. Bhardwaj thereafter hoisted the National Flag, followed by the National Anthem. In keeping with the ceremonial protocol, CISF, PRL conducted a parade, symbolizing discipline, dedication and perseverance.

Addressing the gathering, the Director delivered an inspiring speech highlighting the significance of Independence Day and the nation's progress. He also indicated on the significant scientific, technical, and administrative achievements of PRL over the past year.

The ceremony also featured the presentation of various awards and recognitions. Merit Awards were presented to the CISF cadets, while Service award were conferred upon PRL employees who had completed 25 years of dedicated service. Prizes were also awarded to the winners of the Rajbhasha Pratibha Puraskar, recognizing their excellence and contribution to the promotion of the Hindi Language.

As a part of the celebrations, children released tricolor balloons, adding a vibrant and festive spirit to the occasion. This was followed by a tree plantation drive, in which PRL members and their family members actively participated. The celebrations concluded with the Director inaugurating the newly established Purchase Committee Room, marking the completion of a memorable and meaningful Independence Day at PRL.



Glimpses from the Event

National Space Day Celebrations 2026

The Physical Research Laboratory (PRL) celebrated National Space Day (NSpD) 2026 through a series of scientific outreach and public engagement activities across its three campuses—Ahmedabad, Udaipur Solar Observatory (USO), and Mt. Abu Observatory.

At the PRL Main Campus, Ahmedabad, the celebrations on 17 August 2026 included a student outreach programme involving approximately 350 students and accompanying teachers from 14 schools and colleges. A Space Science Exhibition showcased scientific models and demonstrations, including models of the 2.5-m telescope, APXS, XSM and proposed DISHA mission payloads, along with demonstrations of the radiocarbon dating technique, lightning and dust detector, Faraday cage, Lissajous figures and ceilometer. Displays of the Vikram Lander and Pragyan Rover models, along with a drone demonstration, further enriched the programme. The students also participated in the interactive session “Know Your Space” with Prof. Anil Bhardwaj, Distinguished Professor & Director, PRL, invited scientific talks delivered by Prof. Duggirala Pallamraju, Dr. Neeraj Srivastava and Dr. Arvind Singh Rajpurohit, and dedicated sessions on “How Can I Become a Space Scientist?” and Career Guidance & Student Interaction. An evening public lecture, “Space Exploration: Challenges, Discoveries and Opportunities,” delivered by Prof. Anil Bhardwaj, was attended by 150 registered participants. PRL distributed stationery kits to participants, with SAC, Ahmedabad, providing 700 pens and 360 caps in support of the celebrations. In addition to these events, interactive sessions were organized at seven schools in Ahmedabad and Gandhinagar. PRL scientists visited the schools and delivered engaging lecture on space science and exploration, which was followed by interactive session with the students.

At the Udaipur Solar Observatory, NSpD activities were conducted between 7 and 19 August 2026, which included workshops and outreach programmes at educational institutions and USO. A mini-workshop at Sir Padampat Singhanian University engaged more than 200 students, while a full-day programme at RNT PG College, Kapasan, involving lectures, poster sessions and discussions on space science and careers, reached around 700 students from 10 schools and colleges located in the rural areas of Udaipur and Chittaurgarh districts. An in house workshop was organized on 18 August 2026 at the USO, which included lectures, quiz competition, poster sessions and interactions with the invited students and teachers attending this workshop from 10 schools located in the Udaipur city. A major Space Science Outreach Programme was organized on 19 August 2026, in collaboration with Vidya Bhawan Society, RRSC-West, NRSC/ISRO and SAC/ISRO, which engaged around 400 students and teachers through scientific presentations and an exhibition. The celebrations also highlighted USO's Golden Jubilee year and its contributions to solar research through facilities and programmes such as MAST, CALLISTO and GONG. The NSpD celebration at USO was further supported by SAC, Ahmedabad. They provided 25 certificates for winners, 3 mementos of Chandrayaan-3 lander, 550 pens, 250 caps, and 25 frames for encouraging the participants of the NSpD celebrations.

The PRL Mt. Abu Observatory conducted an extensive outreach programme across Mt. Abu, Abu Road, Sirohi, Pindwara and nearby areas. A total of 18 outreach programmes, conducted between 31

July and 19 August 2026, reached approximately 4,426 students, teachers and other participants. The activities included presentations on India's space programme, astronomy and space science, scientific demonstrations, quizzes and interactions with PRL scientists. A dedicated NSpD programme was held on 21 August 2026, where approximately 150 students and teachers from nine schools from the Mount Abu and Sirohi regions have participated. The programme included an inaugural ceremony commemorating Dr. Vikram Sarabhai, followed by academic and technical talks on the heritage of PRL and Mt. Abu Observatory, defence and aerospace opportunities, high-energy gamma-ray astrophysics, astronomy and international higher-education opportunities, and India's lunar exploration programme. An interactive panel discussion provided students with insights into space technology, astronomy, academic pathways, scholarships, internships and career opportunities in science, engineering, aerospace and defence. The programme also featured inter-school Space Science Quizzes, working scientific models, and a poster and painting exhibition, followed by guided visits to the 1.2 m and 2.5 m telescopes, where students were introduced to telescope mechanisms, spectrographs, detectors, alignment systems and other advanced facilities. The event provided an enriching platform for science, discovery, creativity and inspiration, connecting young learners with India's scientific and technological community.

Through scientific exhibitions, demonstrations, lectures, interactive sessions, competitions and career guidance activities, the National Space Day 2026 celebrations across PRL campuses successfully promoted scientific awareness and engagement with India's space programme, while inspiring students and the wider public towards science, innovation and space exploration.



Glimpses from the Event

IC-PRL Orientation Program-PRL Udaipur Solar Observatory 2026

An Orientation program was organized by the IC-PRL Committee on August 24, 2026 for PRL Udaipur Solar Observatory 2026. The aim of the program was to sensitize employees, ensuring they understand their collective rights and the importance of fostering a safe, respectful, and gender-neutral work culture in USO. The program was also meant to educate the workforce on the formal grievance redressal mechanism, outlining clear, step-by-step instructions on how to securely file a complaint outlining the legal frameworks, such as the POSH Act. Additionally, it focused on the procedure necessary to conduct fair, highly confidential, and completely unbiased inquiries.

It started with a formal introduction of all committee members wherein each member shared different aspects of formation of Internal Committee at workplace to address sexual harassment of women and steps involved in the redressal mechanism. This orientation helped build a transparent organizational culture that fosters zero tolerance for sexual harassment at workplace.

Prof. Nandita Srivastava, Senior Professor who had been a member since the inception of this committee shared her journey and efforts for creating a safe workplace at Udaipur Solar Observatory.

There was an interaction session with all employees of campus and one separately with female employees as well.



vivo V40 Pro | ZEISS

25mm f/2.0 1/50s ISO1001
08/24/2026, 16:28

Glimpses from the Event

PRL Amrut Rajbhasha Vyakhyaan



पीआरएल अमृत राजभाषा व्याख्यान (पर्व) का 39वां व्याख्यान 25 अगस्त, 2026 को आयोजित किया गया था। इस अवसर पर मुख्य वक्ता प्रोफेसर अंशु जोशी, प्राध्यापक, स्कूल ऑफ इंटरनेशनल स्टडीज, जवाहरलाल नेहरू विश्वविद्यालय (JNU), नई दिल्ली की थीं।

The 39th lecture of "PRL Amrut Rajbhasha Vyakhyaan (PARV)" was held on 25 August, 2026. The eminent speaker for the occasion was Professor Anshu Joshi, Professor, School of International Studies, Jawaharlal Nehru University (JNU), New Delhi.

प्रो. अंशु ने जेएनयू के स्कूल ऑफ इंटरनेशनल स्टडीज के कूटनीति एवं निरस्त्रीकरण विभाग से डॉक्टरेट, एम.फिल., और अंतर्राष्ट्रीय संबंध में स्नातकोत्तर की उपाधि प्राप्त की है। वे विदेश नीति एवं कूटनीति, वैश्विक सुरक्षा अध्ययन, आतंकवाद, जैव आतंकवाद, भू-राजनीतिक घटनाक्रम और महिला अध्ययन विषयों की विशेषज्ञ हैं। उन्होंने मध्य प्रदेश के उज्जैन स्थित विक्रम विश्वविद्यालय से बी.ए. में स्वर्ण पदक प्राप्त किया है।

Prof. Anshu holds a Doctorate, M.Phil., and a Master's degree in International Relations from the Department of Diplomacy and Disarmament, School of International Studies, JNU. She is an expert in foreign policy and diplomacy, global security studies, terrorism, bioterrorism, geopolitical developments, and women's studies. She has also received a gold medal in her B.A. from Vikram University, located in Ujjain, Madhya Pradesh.

व्याख्यान का शीर्षक था/ The vyakhyaan was titled "बदलती वैश्विक राजनीति और वैश्विक सुरक्षा, अर्थव्यवस्था और भू-राजनीति पर प्रभाव"

प्रो. अंशु जोशी ने अपने व्याख्यान में कहा कि बदलते शक्ति समीकरणों, महाशक्तियों के टकराव और कमजोर पड़ती अंतरराष्ट्रीय संस्थाओं के कारण वैश्विक राजनीति तेजी से बदल रही है। इसका मुख्य उदाहरण पश्चिम एशिया का मौजूदा संकट है, जो अब सिर्फ एक क्षेत्रीय विवाद नहीं रह गया है। इस संघर्ष ने दुनिया भर में सुरक्षा की चिंताएं बढ़ाई हैं, मानवीय संकट को गहरा किया है, और व्यापार, ऊर्जा आपूर्ति व वैश्विक बाजारों में भारी अनिश्चितता और महंगाई पैदा की है।

Prof. Anshu Joshi stated in her vyakhyaan that global politics is changing rapidly due to shifting power equations, conflicts between major powers, and weakening international institutions. A prime example of this is the ongoing crisis in West Asia, which is no longer just a regional dispute. This conflict has heightened security concerns worldwide, deepened the humanitarian crisis, and created massive uncertainty and inflation in trade, energy supplies, and global markets.

उन्होंने इस बात पर भी प्रकाश डाला कि इसका सीधा असर वैश्विक शांति, ऊर्जा सुरक्षा, आपूर्ति श्रृंखला और विश्व अर्थव्यवस्था की स्थिरता पर पड़ता है। इसके साथ ही, यह प्रस्तुति में इस बात की व्याख्या की, कि कैसे भारत की सकारात्मक कूटनीति इस वैश्विक संघर्ष

को समाधान की ओर ले जा सकती है।

She also highlighted that it directly impacts global peace, energy security, supply chains, and the stability of the world economy. Furthermore, the presentation explained how India's positive diplomacy can lead this global conflict toward a resolution..

व्याख्यान के बाद एक रोचक प्रश्नोत्तर सत्र हुआ, जिससे श्रोताओं को विषय के बारे में नई और अधिक जानकारी प्राप्त हुई।
A lively Q&A session followed the lecture, provided the audience with new insights and a clearer understanding of the topic.



Via **webex** by CISCO

04 / महाशक्ति प्रतिस्पर्धा

उभरता विश्व व्यवस्था

मुख्य निहितार्थ

संयुक्त राज्य अमेरिका गठबंधन प्रतिबद्धताओं, निवारण और समुद्री सुरक्षा को प्राथमिकता देता है।

चीन ऊर्जा हितों को कूटनीतिक स्थिति और आर्थिक प्रभाव के साथ जोड़ता है।

रूस क्षेत्रीय रंगमंचों में हथियारों, ऊर्जा और कूटनीतिक प्रभाव का लाभ उठाता है।

परिणाम एक अधिक प्रतिस्पर्धी, बहु-संरक्षित और तेन-देन आधारित व्यवस्था है।

संयुक्त राज्य अमेरिका

गठबंधन, निवारण और समुद्री सुरक्षा

चीन

ऊर्जा तक पहुंच, मध्यस्थता और प्रभाव

रूस

हथियार, ऊर्जा और कूटनीतिक लाभ

के जो इंटरेस्ट्स हैं उसमें भी हम देखते हैं कि एक बड़ा बदलाव

06

Glimpses from the Event

Youtube Link: <https://www.youtube.com/watch?v=KkVyxCO-IU4>

119th PRL Ka Amrut Vyakhyaan



The 119th PRL Ka Amrut Vyakhyaan was delivered by Prof. G. C. Anupama, INSA Senior Scientist, Indian Institute of Astrophysics, Bengaluru on 27 August 2026. In this engaging Vyakhyaan titled “Time Domain Astronomy: A Peek into the Restless Universe”, Prof. Anupama shared the dynamic nature of the universe through transient astronomical phenomena, which are cosmic events and objects that change in brightness or physical behaviour over timescales ranging from hours to decades. Prof. Anupama highlighted the scientific importance of studying these events, including stellar explosions and binary star mergers, in understanding extreme physical processes, nucleosynthesis, and the chemical enrichment of galaxies.

Prof. Anupama described how modern time-domain astronomy detects and studies transient events using wide-field optical surveys such as Pan-STARRS, ZTF, and ASAS-SN. Prof. Anupama explained the image subtraction technique, which compares astronomical images to identify new or variable sources against a background of relatively static stars. She further discussed the role of artificial intelligence, machine learning, and alert brokers in processing large volumes of survey data and rapidly disseminating transient alerts. International collaborations such as the GROWTH network enable coordinated follow-up observations across multiple wavelengths and through different messengers, facilitating the detailed investigation of rapidly evolving cosmic events.

Prof. Anupama discussed several important classes of transient phenomena, including novae and recurrent novae, whose observations provide insights into accretion, nuclear burning, and shock interactions. The lecture also covered Type Ia and core-collapse supernovae, their diversity, progenitors, and explosion mechanisms, including the use of Type Ia supernovae as cosmological probes. Other topics included luminous fast blue optical transients (LFBOTs) and the scientific significance of gravitational-wave events such as GW170817. The discussion highlighted how observations of these phenomena can reveal the physical processes governing some of the most energetic events in the universe.

The lecture also highlighted the contributions of Indian astronomical facilities, particularly the Growth India Telescope (GIT), a 0.7-metre robotic telescope at the Indian Astronomical Observatory in Hanle, which is dedicated to transient follow-up observations. Looking toward the future, Prof. Anupama emphasised the importance of advanced survey facilities such as the Vera Rubin Observatory, a network of 1–2-metre-class wide-field telescopes across India, and upcoming projects including LIGO-India and the Square Kilometre Array (SKA). She concluded by stressing that continued advances in instrumentation, automation, and multi-wavelength and multi-messenger astronomy will be essential for understanding the restless universe.

Overall, the 119th PRL Ka Amrut Vyakhyaan offered an engaging perspective on how time-domain astronomy is transforming our understanding of the dynamic universe through the study of transient phenomena and the power of multi-wavelength and multi-messenger observations.

Youtube Link: <https://www.youtube.com/live/Sh7S9mIFDVQ>

PRL Monthly Publications Digest

Total Publications :-16

Atomic, Molecular and Optical Physics [02]

1. Nikhil Vangety, Shashi Prabhakar , 2026, Hybrid vision transformer and convolution-based image reconstruction via multimode fiber speckle patterns of scaled Laguerre–Gaussian modes , Applied Optics, Date of Publication: 21/08/2026, Impact Factor: 1.7

2. Swetapuspa Soumyashree, Prashant Kumar, 2026, Simulation and experimental study of self-reversal effects in Al laser produced plasma, Journal of Physics D: Applied Physics, Date of Publication: 03/08/2026, Impact Factor: 3.2

Astronomy & Astrophysics Division [03]

1. Namita Uppal, Shashikiran Ganesh, Santosh Joshi, Dmitry Blinov, Konstantinos Tassis & Sadhana Singh , 2026, DHARA: Data handling and automated reduction pipeline for AIMPOL, Journal of Astrophysics and Astronomy, Date of Publication: 20/08/2026, Impact Factor: —

2. Chhotaray, Birendra., Sachindra Naik, Manoj Mandal, S. Manik, S. Pal, G. K Jaisawal, A. Jana, 2026, X-ray and radio view of the Be/X-ray binary pulsar 1A 1118–61 during the 2026 giant outburst, Monthly Notices of the Royal Astronomical Society, Date of Publication: 18/08/2026, Impact Factor: 5.2

3. Churchil Dwivedi, Abhimanyu Susobhanan, 2026, PSRDISP: A novel approach to modeling dispersive processes in single-pulsar noise analysis using epoch-wise dispersion measures, Journal of High Energy Astrophysics, Date of Publication: 12/08/2026, Impact Factor: 6.1

Planetary Sciences Division [02]

1. Panwar, N., Kapadia, T., & Srivastava, N., 2026, Unveiling the Lost Australe Basin on the Moon: Spectroscopic Evidence from Chandrayaan-1 M3, The Planetary Science Journal, Date of Publication: 14/08/2026, Impact Factor: 3.9

2. Ali H. Almohammed, U.K.Bhui, D. Ray, A.D.Shukla, N.Madhavan, 2026, Environmentally sustainable extraction and recovery of rare earth elements from alkali-activated carbonatite using dual water and acid leaching and clay adsorption, Minerals Engineering, Date of Publication: 12/08/2026, Impact Factor: 6

Space and Atmospheric Sciences Division [03]

1. Yogesh, Aparupa Apsara Baruah, Dibyendu Chakrabarty, Kalyan Bhuyan, Aakash Gupta, and Gregory G. Howes, 2026, Statistical Insights on the Decorrelation Lengths of Solar Wind Parameters at L1 Point Under Varying Conditions., Advances in Space Research, Date of Publication: 31/08/2026, Impact Factor: 3.2

2. Aakash Gupta, Yogesh , Dibyendu Chakrabarty, Leon Ofman, and Gregory G. Howes, 2026, Evidence for Solar

Cycle Modulation of the Alpha-to-Proton Temperature Ratio in Solar Wind, The Astrophysical Journal Letters, Date of Publication: 21/08/2026, Impact Factor: 11.7

3. Abhishek Kumar, Shivam Parashar, Prashant Kumar, Dibyendu Chakrabarty, Bhas Bapat, Aveek Sarkar, Manan S. Shah, Hiteshkumar L. Adalja, Arpit R. Patel, Pranav R. Adhyaru, M. Shanmugam, Swaroop B. Banerjee, K. P. Subramaniam, Tinkal Ladiya, Jacob Sebastian, Bijoy Dalal, Aakash Gupta, M. B. Dadhania, Santosh V. Vadawale, Shiv Kumar Goyal, Neeraj Kumar Tiwari, Aaditya Sarda, Sushil Kumar, Nishant Singh, Deepak Kumar Painkra, Piyush Sharma, Abhishek J. Verma, P. Janardhan & Anil Bhardwaj, 2026, One year of ASPEX-SWIS operation: characteristic features, observations and science potential, Journal of Astrophysics and Astronomy, Date of Publication: 12/08/2026, Impact Factor: 1.6

Geosciences Division [02]

1. Milan K. Mahala, Amzad H. Laskar, Pankaj Goyal, Jeewan S. Kharakwal, Narender Parmar, Yadubir S. Rawat, Angad Lamba, Alok K. Kanungo, Jyotiranjana S. Ray, 2026, Regional bio-mobility of bovines during the Harappan period: Evidence from stable C–O–Sr isotopes of faunal bioapatite at Kanmer and Tigrana, Journal of Quaternary Science, Date of Publication: 20/08/2026, Impact Factor: —

2. Pathak, P.; Singh, D.; Goswami, V.; Ghosh, P., 2026, Strontium isotopic evidence for heterogeneous sediment-water interactions in inland groundwater of the western Bengal Basin, Applied Geochemistry, Date of Publication: 12/08/2026, Impact Factor: 3.5

Theoretical Physics[01]

1. Debajyoti Dutta, Srubabati Goswami, Monal Kashav, Ketan M. Patel, 2026, Testing predictions of discrete flavour and modular symmetries at DUNE and Hyper-K with JUNO constraints, Journal of High Energy Physics, Date of Publication: 14/08/2026, Impact Factor: 4.9

Udaipur Solar Observatory [03]

1. Dinesh Mishra, P. Vemareddy, and Brajesh Kumar, 2026, Formation and Eruption of Filament Channel in Solar Active Region 12975: Insights from Observations and Simulations of Magnetic Field Evolution, The Astrophysical Journal, Date of Publication: 13/08/2026, Impact Factor: 5.7

2. Sandeep Kumar, Nandita Srivastava, Parthib Banerjee and Nat Gopalswamy, 2026, Propagation characteristics of the April 21, 2023 CME, Journal of Astrophysics and Astronomy, Date of Publication: 07/08/2026, Impact Factor: 1.5

3. Chaurasiya, R., Pereira, T. M. D., Bayanna, A. R., 2026, Multi-thermal dynamics and transverse oscillations of solar spicules revealed by coordinated SST, IRIS, and SDO observations, Astronomy & Astrophysics, Date of Publication: 01/08/2026, Impact Factor: —

Awards and Honors

1. Dr. Kavutarapu Venkatesh, Associate Professor, Space and Atmospheric Sciences Division, Physical Research Laboratory (PRL), has been selected as a member of the COSPAR/URSI International Reference Ionosphere (IRI) Working Group.
2. Dr. S. A. Haider, former Head, Planetary Sciences Division of PRL has been selected for the position of NASI Senior Scientist under Science Promotion Scheme.
3. Dr. Harsha Avinash Tanti, ANRF-NPDF at PRL's Udaipur Solar Observatory has won The Best Paper Award in the IEEE SPACE Conference 2026

Visitors

1. A Ph.D. student from National Institute of Science Education & Research, Bhubaneswar visited Theoretical Physics Division of Physical Research Laboratory, Ahmedabad during 01.08.2026 to 14.08.2026 and again from 18.08.2026 to 21.08.2026 for giving a talk and research related discussion.
2. A post doctoral researcher from Institute for Basic Science, Daejeon, South Korea visited Theoretical Physics Division of Physical Research Laboratory, Ahmedabad from 03.08.2026 to 05.08.2026 for scientific discussion and giving a talk.
3. Prof. Ranjan Laha, Professor from IISC, Bengaluru visited Physical Research Laboratory, Ahmedabad on 07.08.2026 for scientific discussion.
4. Prof. Bipul Bhuyan, Professor from IIT, Guwahati visited Physical Research Laboratory, Ahmedabad on 14.08.2026 for scientific discussion and giving a talk.
5. Dr. Amol Patwardhan, a visiting Assistant Professor from Physics Department, Reed College, USA visited Physical Research Laboratory, Ahmedabad from 23.08.2026 to 26.08.2026 for scientific discussions and giving two talks.
6. In August 2026, a total of Two hundred thirty nine (239) personnel, including officials/representatives from other Government/Defense Organizations, students from different IITs and educational institutions, as well as the general public, visited the Infra-Red Observatory (IRO) at PRL in Mount Abu to gain insights into and explore its various scientific facilities.
7. In August 2026, a total of ten (10) personnel, including officials from DOS/ISRO, representatives from other Government Organizations, students from various educational institutions, visited the Udaipur Solar Observatory, Udaipur to explore its various scientific facilities.

Superannuation



Name: DR. (MRS.) Nandita Srivastava

Designation: Senior Professor

Date of Joining: 03.07.2000

Date of Superannuation: 31.08.2026

PRL family wishes her a happy, healthy and peaceful retired life

Obituary



Name: Late G.N. Desai

Designation: Canteen Manager II

Date of Joining: 01.03.1969

Date of Superannuation: 30.09.2006

Date of Death: 18.08.2026

Teary Eyes for our Departed Member

Compiled, Designed and Published by

The Newsletter Team

Prof. Navinder Singh Chair
Dr. Amitava Guharay Co-Chair

Data Collection and Proofreading Team

Dr. Satyendra Nath Gupta Member
Dr. Yogita Uttam Kadlag Member
Dr. Sanjay Kumar Mishra Member
Dr. Rohan Eugene Louis Member
Dr. Paramita Dutta Member
Mr. Senthil Babu T J Member
Dr. Manash Ranjan Samal Member

Formatting and Editing Team

Mr. A Shivam Member
Dr. Pragya Pandey Member
Ms. Shreya Pandey Member
Mr. Kushagra Upadhyay Member
Mr. Jacob Sebastian Member
Mr. Shivansh Verma Member
Ms. Purvi Giri Member
Mr. Vimlesh Kumar Member
Ms. Jyoti Limbat Member
Mr. Rutuj Gharate Member
Ms. Srishti Sharma Member
Mr. Abhishek Kumar Member

For any suggestions or query, please contact us at: newsletter@prl.res.in

Follow PRL on Social Media



<https://x.com/PRLAhmedabad>



<https://www.facebook.com/PhysicalResearchLaboratory>



https://www.youtube.com/c/PRLAhmedabad_webinars



<https://www.instagram.com/prl1947/>



<https://www.linkedin.com/in/prl-ahmedabad-89600122b>



<https://www.threads.net/@prl1947>



<https://bsky.app/profile/prl1947.bsky.social>

PRL Contact



<https://www.prl.res.in/prl-eng/home>



Website (English)



Website (Hindi)

Physical Research Laboratory
(A unit of Dept. of Space, Govt. of India)
Navrangpura, Ahmedabad - 380009
Phone: (079) 26314000
Fax: (079) 26314900
E-Mail: director@prl.res.in

भौतिक अनुसंधान प्रयोगशाला
(अंतरिक्ष विभाग की यूनिट, भारत सरकार)
नवरंगपुरा, अहमदाबाद - 380009
दूरभाष: (079) 26314000
फैक्स : (079) 26314900
ई - मेल: director@prl.res.in