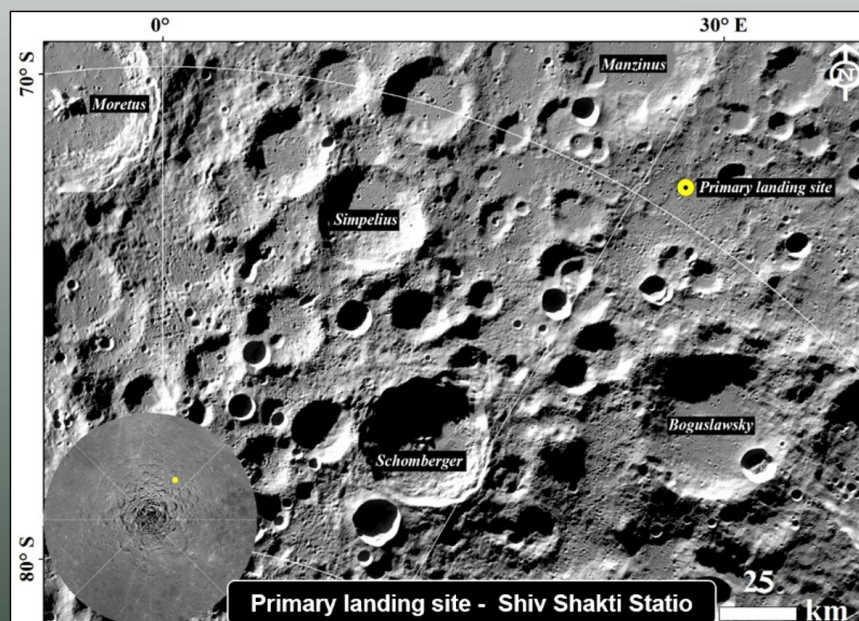




Newsletter of the Physical Research Laboratory

THE SPECTRUM



ALHA 81005 (Lunar Meteorite)



The first meteorite proven to originate from the Moon.
(Image Credit: NASA/JSC S82-35869)

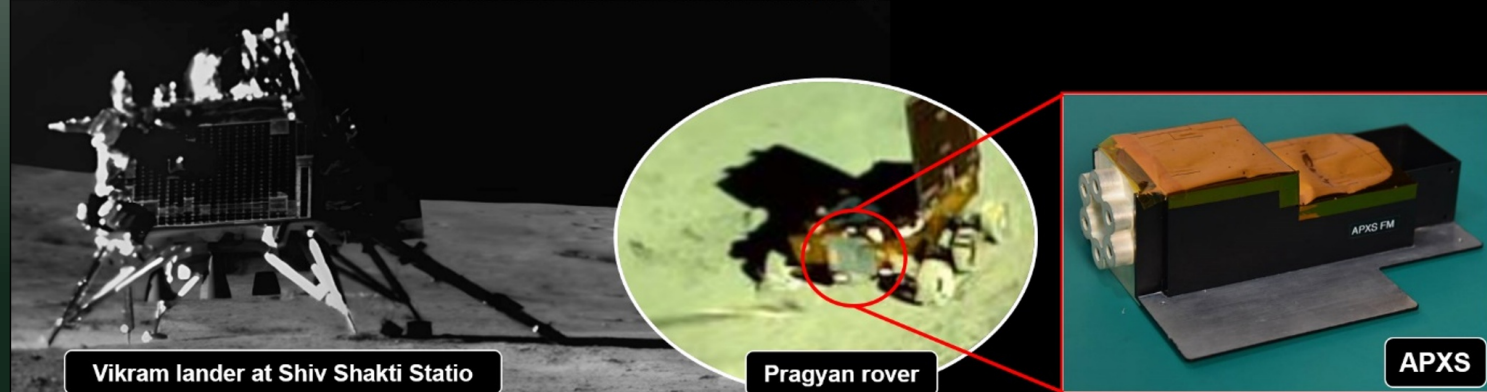


Image of the Month

Chandrayaan-3's Alpha Particle X-ray Spectrometer onboard Pragyan Rover Measurements Connect the composition at Shiv Shakti Statio to the First Lunar Meteorite ALHA 81005 (Allan Hills Antarctica)

July 2026

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The Author



Dwijesh Ray

Chandrayaan-3's Alpha Particle X-ray Spectrometer onboard Pragyan Rover Measurements Connect the composition at Shiv Shakti Statio to the First Lunar Meteorite ALHA 81005 (Allan Hills Antarctica)

(**Dwijesh Ray**, Rishitosh K. Sinha, Santosh V. Vadawale, M. Shanmugam and Anil Bhardwaj)

By conducting a detailed geochemical investigation of lunar soil measurements by the Alpha Particle X-ray Spectrometer (APXS) aboard Chandrayaan-3 Pragyan rover, researchers from the Physical Research Laboratory (PRL), Ahmedabad, have determined that the composition at Shiv Shakti Statio aligns with that of lunar meteorite ALHA 81005 (Allan Hills, Antarctica), the first meteorite confirmed to have come from the Moon. The findings provide new insights into the composition of the Moon's ancient feldspathic crust and strengthen our understanding of the processes that shaped the lunar highlands during the Moon's early history. This is one of the pioneering scientific studies to directly connect the Chandrayaan-3 in situ APXS measurements with lunar meteorite records. By linking the Shiv Shakti Statio to the Moon's first recognized meteorite, the Chandrayaan-3 mission has opened new avenues for understanding the formation of the ancient lunar crust. The results highlight the scientific value of in-situ geochemical investigations and showcase the capability of Indian planetary exploration missions to address fundamental questions about the origin and evolution of the Moon. While numerous lunar missions are planned globally in the upcoming years, yet Chandrayaan-3 mission has left an enduring scientific legacy by providing the first in-situ geochemical insights from the southern high-latitude highlands of the nearside of the Moon.

Source: *npj Space Exploration* - Chandrayaan-3 APXS measurements reveal Lunar highland compositional diversity and meteorite connections - <https://doi.org/10.1038/s44453-026-00041-0>

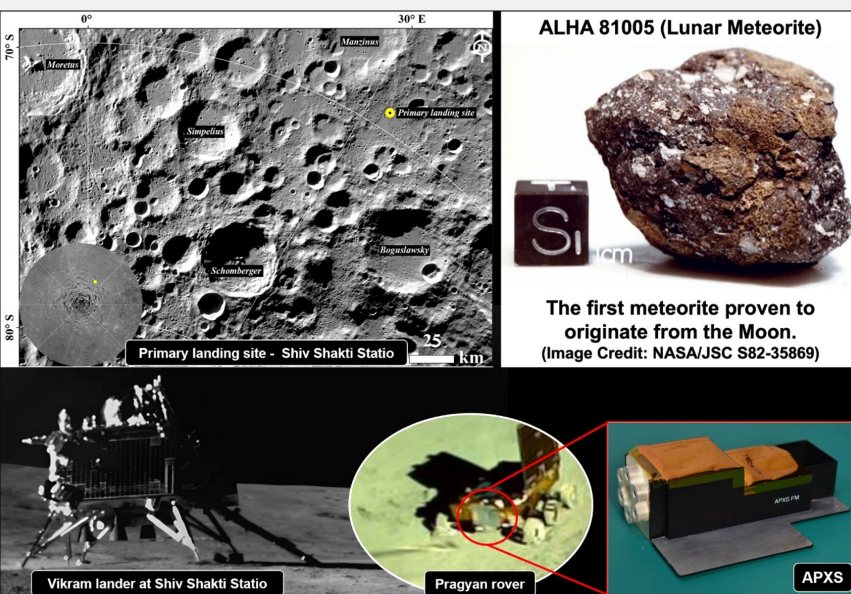


Figure Caption : Chandrayaan-3's Vikram lander and Pragyan rover at Shiv Shakti Statio enabled APXS based in situ geochemical investigation of soils in the southern high-latitude highlands of the nearside of the Moon. The analyses revealed a remarkable geochemical similarity to ALHA 81005, the first meteorite confirmed to have originated from the Moon, linking in-situ exploration of the lunar surface with laboratory studies of lunar meteorites on the Earth.

The Author



**K.
Samadhanam
Raju**

A comprehensive three-dimensional thermophysical model for Mars

(K. Samadhanam Raju, K. Durga Prasad, Ambily G, P. Kalyan Reddy, Varun Sheel and Anil Bhardwaj)

Mars is not a flat world. It is covered with craters, hills, valleys, and rocky slopes that receive sunlight differently throughout the day. These differences cause nearby locations to heat up and cool down at different rates. Until now, most computer models assumed the Martian surface was flat, making it difficult to accurately predict temperatures over real landscapes. We have developed the first of its kind three-dimensional (3D) thermophysical model of Mars that realistically represents the planet's rugged terrain. The model was validated against NASA's widely used KRC thermal model and verified using temperature measurements recorded by the InSight lander. The results showed excellent agreement, confirming the credibility of our model. As a demonstration, the model was applied to the Perseverance rover landing site in Jezero Crater. The study revealed that temperatures can differ by 20–30°C (or K) between nearby locations because of differences in slopes and shadows. Such large temperature differences are important because they can influence the movement of air close to the surface and may contribute to the lifting of dust, which plays a key role in Martian weather and dust storms. This new modelling capability provides a more realistic picture of the Martian surface than ever before. It will help scientists better understand the Martian environment and support future robotic and human missions by improving landing site selection, rover operations, and the interpretation of observations from orbit and the surface.

Source: *Monthly Notices of the Royal Astronomical Society* - A comprehensive three-dimensional thermophysical model for Mars - <https://doi.org/10.1093/mnras/stag932>

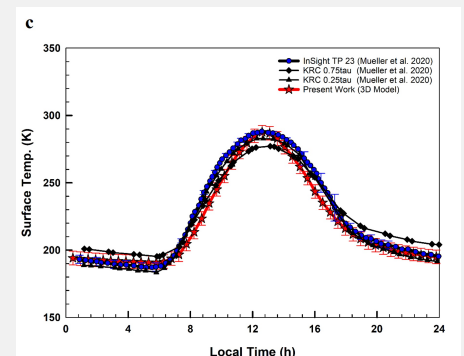
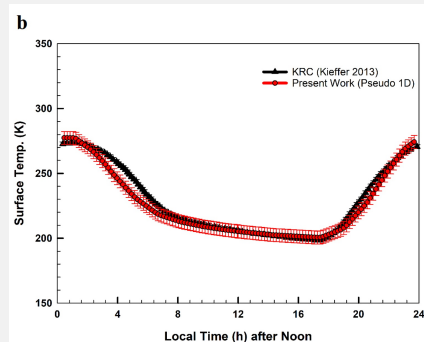
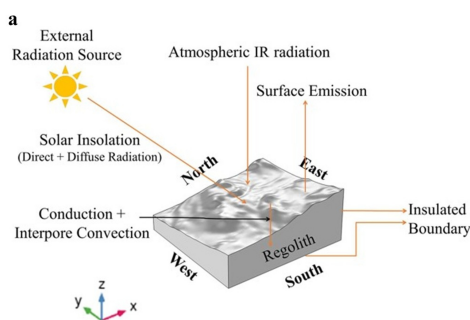
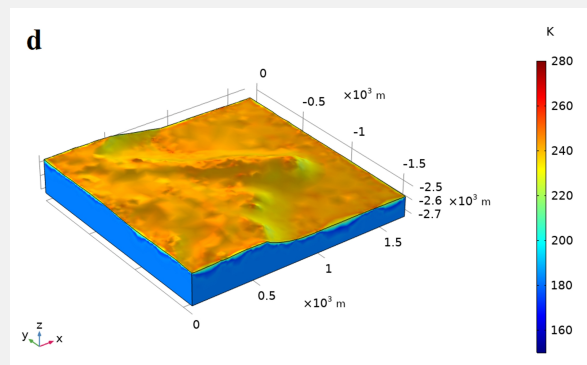


Figure Caption : (a) Schematic representation of the 3D thermophysical model of the Martian surface energy balance. (b). Model validation (configured for a flat-surface) with 1D KRC Model. (c). 3D Model Validation with the in-situ observations from the InSight HP3 radiometer. (d). 3D thermophysical map showing the surface temperature distribution at the Perseverance landing site (Jezero Crater, Mars) at 15 hours Local Time (LT) during a Martian day (Sol), which lasts 24 hours, 39 minutes, and 35 seconds in Earth time. The color bar on the right explicitly quantifies surface temperatures in Kelvin (K), ranging from approximately 150 K to 280 K.



Role of lower atmospheric and solar forcing in annual, semi-annual, and intraseasonal OH(3-1) brightness and temperature oscillations

(Kiran and Ravindra P. Singh)

The Author



Kiran

Annual (AO), semi-annual (SAO), and intraseasonal oscillations (ISOs) in the mesosphere and lower thermosphere (MLT) are investigated using two years (2023–2024) of OH(3–1) nightglow brightness and rotational temperature observations obtained from the PRL Airglow Infrared Spectrograph (PAIRS) over Ahmedabad (23°N, 72.6°E). Mesospheric ozone volume mixing ratio (O_3 VMR), outgoing longwave radiation (OLR), and F10.7 solar flux are incorporated to study the dominant causal mechanism responsible for the observed oscillations in MLT parameters. Lomb–Scargle periodogram analysis identifies prominent AO, SAO, and multiple ISO components, which are also present in mesospheric ozone volume mixing ratio (O_3 VMR), outgoing longwave radiation (OLR), and F10.7 solar flux. The temporal evolution of these oscillations are further examined using continuous wavelet transform and wavelet coherence (WTC) analyses. The results indicate that OH brightness and rotational temperature are influenced by different dynamical and radiative processes. OH brightness is characterized by SAO, consistent with the variations in O_3 VMR, OLR, and F10.7, whereas the temperature is primarily governed by the AO. The SAO in OH brightness remains in phase with O_3 VMR, indicating the direct influence of ozone photochemistry on OH brightness. The ISO activity exhibits significant interannual variability, with stronger oscillations during 2023 in all parameters except F10.7, which show enhanced ISO variability in 2024. Distinct ISO bands (20–50, 50–80, and 80–130 days) are observed. WTC analysis reveals that O_3 primarily drives the variability in OH brightness, whereas the combined influence of O_3 and F10.7 governs the temperature variability through solar-driven exothermic chemical reactions in the MLT region.

Source : *Journal of Atmospheric and Solar-Terrestrial Physics* - Role of lower atmospheric and solar forcing in annual, semi-annual, and intraseasonal OH(3-1) brightness and temperature oscillations - <https://doi.org/10.1016/j.jastp.2026.106891>

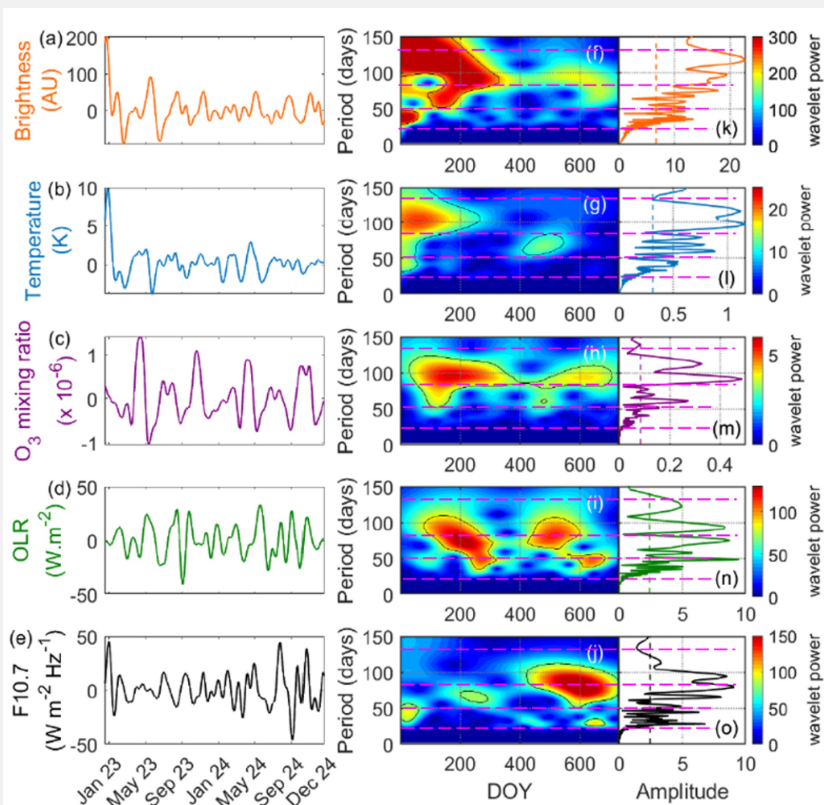


Figure Caption : ISO variability in (a) OH(3–1) nightglow brightness, (b) temperature, (c) mesospheric O_3 , (d) OLR, and (e) F10.7 solar flux for 2023–2024. Panels (f–j) present the corresponding wavelet power spectra, with Lomb–Scargle spectral amplitudes for each parameter shown in panels (k–o), highlighting the statistically significant periodicities.

The Author



Harsh Kava

Evaluation of the dependence of bottom-side ionospheric Total Electron Content (TEC) on thickness parameter (B0) in IRI formulations

(H. Kava, K. Venkatesh and D. Pallamraju)

Accurate estimation of ionospheric Total Electron Content (TEC) is essential for improving the performance of satellite-based navigation and communication. The International Reference Ionosphere (IRI) model is the most widely used empirical model for estimating TEC. However, over the highly dynamic low latitude ionosphere, the model exhibits significant discrepancies when compared with observations. Our earlier investigations, focused on the bottom side ionosphere reported significant deviations in the IRI in estimating the bottom-side ionospheric electron density. In the present study, the impact of the bottom-side thickness (B0) parameter on the estimation of bottom side TEC (TECb) is quantitatively investigated using four years (2015–2018) of digisonde observations over Ahmedabad, India.

Three different B0 formulations available in the IRI-2020 model- Gul-1987, Bil-2000, and ABT-2009- are evaluated by comparing the model-derived B0 and TECb with their digisonde-derived values. The analysis revealed that the representation of the bottom side ionosphere strongly depends on the choice of the B0 method, leading to substantial differences in the estimated TECb. A comparison of the seasonal and solar activity variations of these parameters shows that the uncertainties in the modelled values exhibit distinct seasonal and solar activity dependent trends for the three B0 methods. Among them, the Bil-2000 method consistently produces B0 values that are closer to the measurements, consequently, more accurate estimates of the bottom side TEC compared to the other methods are observed. The TECb differences obtained using the Bil-2000 method remain below 5 TECU, whereas the corresponding differences for the Gul-1987 and ABT-2009 methods can increase to approximately 15 TECU and 13 TECU, respectively. The study also examines the role of NmF2 parameter in TECb estimation. While B0 parameter remains the dominant, particularly during the equinox and winter seasons, the influence of NmF2 becomes more evident during summer, where it compensates the B0 parameter for further accurate estimation of bottom side.

These results provide the first quantitative assessment of the contribution of B0 uncertainties to TECb estimation errors in the IRI model. The findings offer valuable insights for future improvements of empirical ionospheric models to estimate accurate TEC over low latitudes.

Source: *Advances in Space Research* - Effect of the bottom side thickness parameter (B0) on the estimation of bottom side TEC (TECb) in the IRI model over the Indian low latitude station Ahmedabad - <https://doi.org/10.1016/j.asr.2026.05.072>

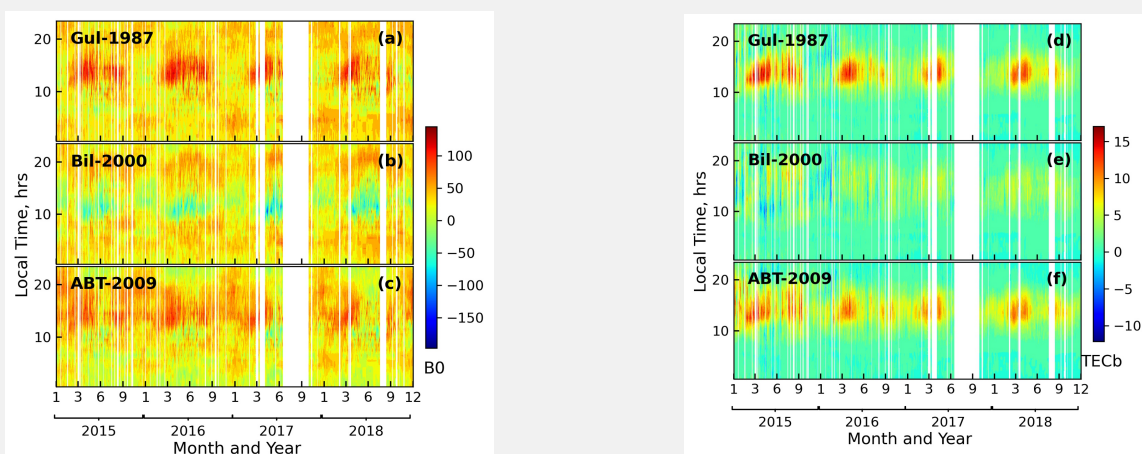
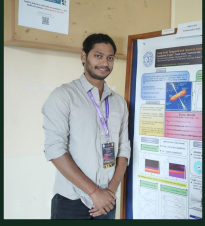


Figure Caption: Differences of IRI sub-models (Gul-1987, Bil-2000, and ABT-2009) w.r.t. digisonde observations in the bottom side thickness parameter (B0) (left panel) and bottom side total electron content (TECb) (rightcolumn) during 2015–2018.

Accretion dynamics and coronal geometry in Mrk 530: Insights from 24 years of X-ray monitoring

(**Priyadarshee P. Dash**, Prantik Nandi, Sachindra Naik, Narendranath Layek and Sandip K. Chakrabarti)

The Author



Priyadarshee P. Dash

Active Galactic Nuclei (AGN) are extremely luminous objects residing at the centers of galaxies, powered by the accretion of matter onto a supermassive black hole (SMBH). Their X-ray emission originates from the innermost accretion flow through inverse Compton scattering of optical/UV disk photons by a hot corona. AGNs exhibit X-ray variability over timescales ranging from hours to decades, including coherent periodic variations known as Quasi-Periodic Oscillations (QPOs). In some AGN, an excess of photons is detected in the soft X-rays below 2 keV over the primary power-law continuum, known as the soft excess. The physical origin of this excess component remains debated. Two possible physical scenarios explain the origin of this soft excess: 1) Warm Comptonization, where disk photons are scattered by a warm corona, and 2) Blurred reflection from the ionized accretion disk.

In this work, we present a comprehensive temporal and spectral study of the Seyfert 1 AGN Mrk 530 using 24 years (2001–2024) of X-ray and UV observations from XMM-Newton and Swift. We find that a prominent soft excess is present only during the 2001–2006 observations and disappears thereafter. We also detected simultaneous QPOs in the X-ray and UV bands during 2018, with periods of approximately ~ 60 and ~ 90 days, respectively. Physical modeling indicates that the observed variability is primarily driven by changes in the mass accretion rate. The disappearance of the soft excess is explained by the reconfiguration of the hot corona at lower accretion rates. The 2018 QPOs arise from oscillations of the hot corona when its heating and cooling timescales become comparable due to accretion-rate fluctuations.

Source: *Monthly Notices of the Royal Astronomical Society* - Accretion dynamics and coronal geometry in Mrk 530: Insights from 24 years of X-ray monitoring - <https://doi.org/10.1093/mnras/stag460>

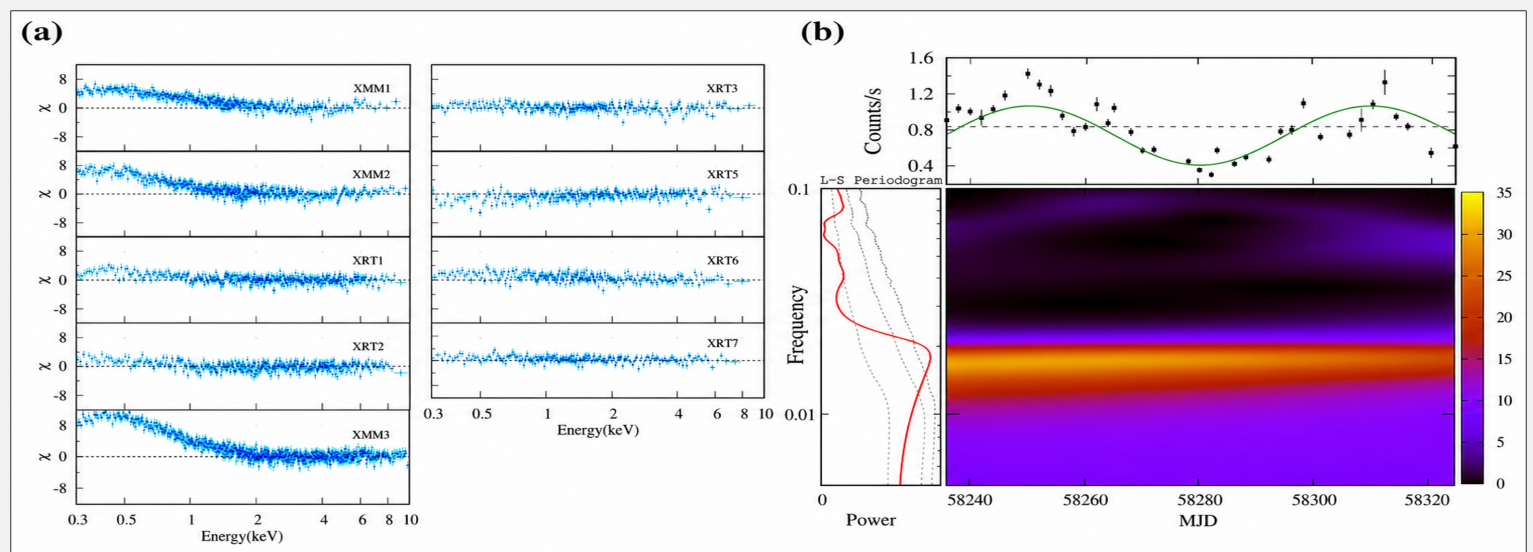


Figure Caption: (a) Ratio plots of the X-ray spectra of Mrk 530 showing the presence of soft excess in the early epochs (left panel) and the disappearance thereafter (right panel). (b) The X-ray QPO observed in the year 2018. The top panel is the sine-fit X-ray light curve, while the left panel presents the corresponding power spectrum. The contour plot shows the evolution of the periodicity throughout the observation.

Making Daksha Better at Finding Cosmic Explosions

(Ashish K. Mandal, Santosh V. Vadawale and Varun Bhalerao)

The Author



Ashish Kumar Mandal

Space missions are shaped by difficult design choices, where improving one capability often comes at the expense of another. For the proposed Daksha mission—a high-energy transient mission—the highest priority is sensitivity: detecting the faintest and most distant gamma-ray bursts (GRBs) and other cosmic explosions across the entire sky. However, accurately determining where these events originate is equally important for enabling rapid follow-up observations of their fading afterglows. This study explores a way to improve localisation without compromising Daksha's exceptional sensitivity. Rather than placing coded masks on the mission's primary medium-energy detectors, which would significantly reduce their sensitivity, we investigate using the low-energy X-ray detectors for both spectroscopy and coded-mask imaging. Simulations show that this approach can improve localisation accuracy from approximately $5\text{--}10^\circ$ to about 0.7° for bright GRBs—an almost tenfold improvement—while preserving the full sensitivity of the primary detectors to faint bursts. These results demonstrate that assigning complementary roles to different detector systems can significantly enhance Daksha's scientific capabilities, enabling faster and more precise follow-up observations while maximizing the mission's potential to study the most energetic transient events in the Universe.

Source: *Experimental Astronomy* - Exploring GRB localisation capability of proposed Daksha mission using coded mask imaging with its low-energy detectors - <https://doi.org/10.1007/s10686-026-10058-8>

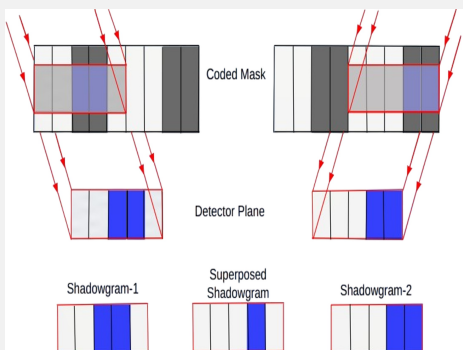


Figure 1: Principle of coded mask imaging. X-rays from two sources arriving from different directions pass through a patterned mask before reaching the detector. Each source produces a unique shadow pattern (shown at the middle and bottom), allowing its position in the sky to be determined. The size of the mask openings and the distance between the mask and detector constrain the localisation accuracy.

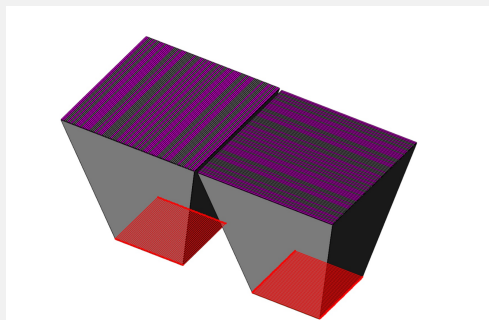


Figure 2: Schematic of a pair of one dimensional coded mask telescopes (CMT). Their bore sights (primary axes) are aligned and share a common field of view (FOV), but the masks are oriented perpendicular to each other. A detector (red) is kept below each mask. The mask has a sequence of transparent (magenta) and opaque (black) strips. The surrounding gray coloured walls are collimators, which block light coming outside the FOV.

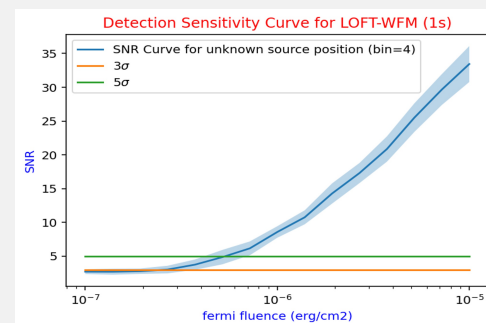


Figure 3: Sensitivity curve for CMT having $6.5 \times 6.5 \text{ cm}^2$ detector. The detection significance for 1s GRBs is $4.8 \times 10^{-7} \text{ erg.cm}^{-2}$ in 10–1000 keV.

Investigation of the Mount Ruang Volcanic Eruption in Indonesia: A Case Study

(Aniket Patel and Som Kumar Sharma)

The Author



Aniket Patel

Volcanoes are natural openings in the Earth's crust through which molten rock, ash, and gases are released into the atmosphere. During major eruptions, large amounts of ash and gases, especially sulfur dioxide (SO_2), can rise high into the atmosphere, affecting clouds, temperature, air quality, weather, and even the global climate. The strength of an eruption is measured using the Volcanic Explosivity Index (VEI), which ranges from 0 to 8. The eruption of Mount Ruang in Indonesia on 17 April 2024 was classified as VEI 4, making it one of the most significant volcanic events in recent years. This study investigated how the Mount Ruang eruption affected the atmosphere and the surrounding environment using observations from Landsat-9, Himawari-9, SABER, and TROPOMI satellites, together with the HYSPLIT atmospheric transport model, to track the movement of volcanic gases and examine changes in temperature, clouds, and vegetation. The analysis showed that the eruption released a large amount of sulfur dioxide (SO_2), reaching about 129.2 Dobson Units (DU). The volcanic plume ascended to nearly 18 km into the atmosphere before being transported westward by high-altitude winds, eventually reaching as far as South America by travelling a distance of about 30,000 km. The eruption also caused a noticeable rise in stratospheric temperature from approximately 230 K to 270 K, increased atmospheric aerosol concentrations, altered cloud patterns, and resulted in vegetation loss around the volcano. Measurements of outgoing longwave radiation indicated that increased cloud cover reduced the amount of heat escaping from the Earth following the eruption. Beyond its atmospheric effects, the eruption had significant impacts on nearby communities by disrupting agriculture, fishing, and daily life. The findings demonstrate how a single volcanic eruption can influence both local environments and the global atmosphere. This study highlights the impact of eruption on the atmospheric processes and importance of monitoring of active volcanoes using satellites, ground based observations and atmospheric models to improve hazard assessment, support timely evacuations, strengthen disaster preparedness, and enhance understanding of the role of volcanic eruptions in Earth's weather and climate system.

Source: *Natural Hazards* - Investigation of the Mount Ruang volcanic eruption in Indonesia: a case study - <https://doi.org/10.1007/s11069-026-08243-1>

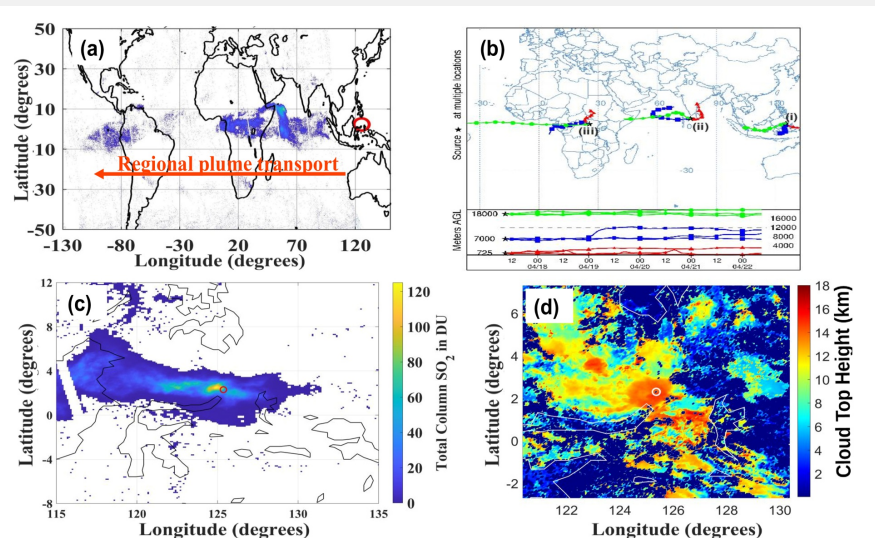


Figure Caption: (a) Mount Ruang eruption on 17 April 2024, showing the westward dispersion of the SO_2 plume. (b) Forward trajectory analysis indicating persistent westward wind flow at an altitude of approximately 18 km, facilitating the transport of the SO_2 plume. (c) Maximum SO_2 column concentration of approximately ~ 129.2 DU observed on 18 April 2024. (d) Himawari-9 observations showing enhanced convective cloud formation associated with the volcanic eruption.

The Author



Arun Jangra

Long-term characteristics of the atmospheric boundary layer over the Himalayan Foothills using ground-based Lidar and reanalysis data

(Arun Jangra and Som Kumar Sharma)

The Atmospheric Boundary Layer (ABL) regulates the exchange of momentum, heat, moisture, and pollutants between the land surface and the free atmosphere, thereby influencing weather, air quality, and climate. Characterizing ABL dynamics is particularly important over the Himalayan foothills, where complex terrain, valley circulations, and land-atmosphere interactions produce highly variable boundary-layer evolution. This study presents a comprehensive characterization of the ABL over Dehradun, a humid subtropical site in the Doon Valley, using five years (2020-2024) of Lidar observations. The analysis reveals pronounced diurnal, monthly, seasonal, and interannual variations in boundary layer height (BLH) governed by topography, surface heating, and cloud cover. BLH reaches afternoon maxima of ~ 2 km during the pre-monsoon season because of enhanced convection, while winter BLH remains below 1 km owing to stable stratification. During the monsoon, increased cloudiness suppresses BLH development below 1 km, followed by recovery to 1.0-1.2 km in the post-monsoon season. Clouds reduce the mean BLH from ~ 1.3 km under clear skies to ~ 0.9 km under cloudy conditions during peak solar radiation (12:00 -16:00 IST). ERA5 and IMDAA reproduce the overall seasonal and diurnal variability but underestimate BLH by 120-250 m, with reduced performance under cloudy conditions. IMDAA agrees more closely with Lidar observations than ERA5 because of its finer spatial resolution and regional data assimilation. These findings establish a baseline for ABL dynamics over the Himalayan foothills and highlight the need for sustained high-resolution ground-based observations to improve regional weather and climate models.

Source: *Atmospheric Research* - Long-term characteristics of the atmospheric boundary layer over the Himalayan Foothills using ground-based Lidar and reanalysis data - <https://doi.org/10.1016/j.atmosres.2026.109005>

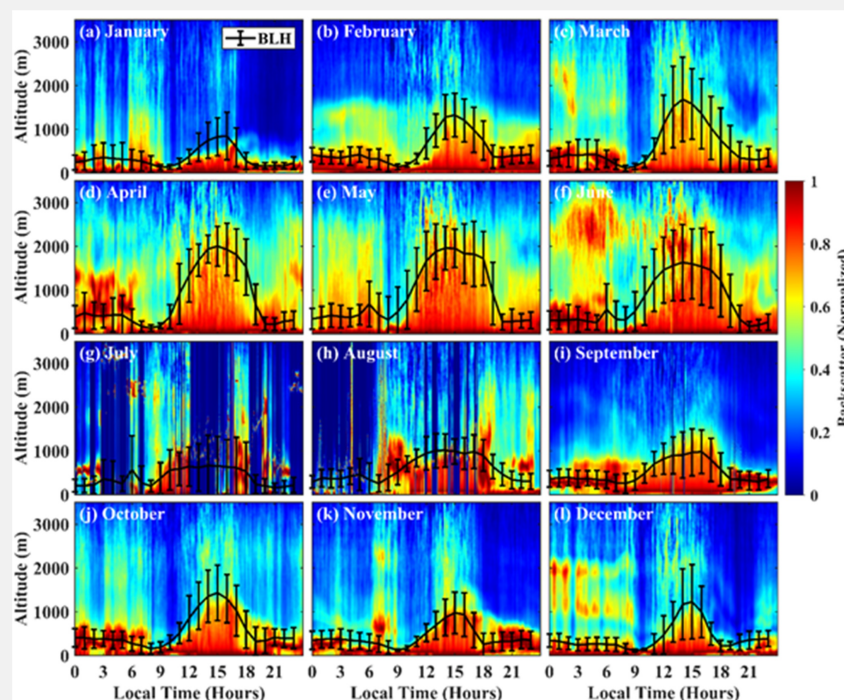
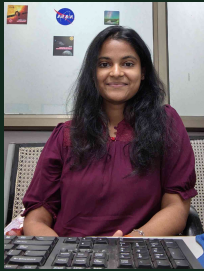


Figure Caption: (a-l) Monthly mean diurnal variation of the BLH over Dehradun derived from Ceilometer Lidar backscatter during 2020-2024. The background illustrates a typical atmospheric boundary layer (ABL) profile for each month, representing the average ABL characteristics for that month.

Investigation of whistler waves associated with a flux rope near Venus

(**Aarti Yadav** and Jayesh Pabari)

The Author



Aarti Yadav

Venus lacks a global intrinsic magnetic field, yet its interaction with the solar wind creates a dynamic plasma environment rich in magnetic structures and wave activity. Among these are whistler waves, electromagnetic plasma waves that have conventionally been considered signatures of lightning in the Venusian atmosphere. However, their origin has remained a subject of debate and extensive research.

In this study, we investigate a whistler wave event observed by the Venus Express spacecraft in the vicinity of a magnetic flux rope, a helical magnetic structure commonly found in the ionosphere and induced magnetosphere of Venus. Using magnetic field and wave observations together with a quantitative linear instability analysis, we examined whether the observed waves could instead be generated locally within the flux rope. The growth rate vs frequency curve has been shown in Figure 1 where the observed wave frequency is highlighted in grey shaded region. Our analysis shows that the electron temperature anisotropy inside the flux rope exceeds the theoretical instability threshold by more than a factor of three, and the predicted wave growth occurs well within the observed wave duration. These results strongly suggest that local plasma instabilities, rather than atmospheric lightning alone, can generate whistler waves at Venus.

This work provides the first quantitative evidence that flux ropes can act as in situ sources of whistler waves in the Venusian plasma environment. These findings may lead to further studies of whistler waves driven by local plasma instabilities and their role in wave-particle energy exchange in the Venusian plasma environment.

Source: *Publications of the Astronomical Society of Japan* - Investigation of whistler waves associated with a flux rope near Venus - <https://doi.org/10.1093/pasj/psag083>

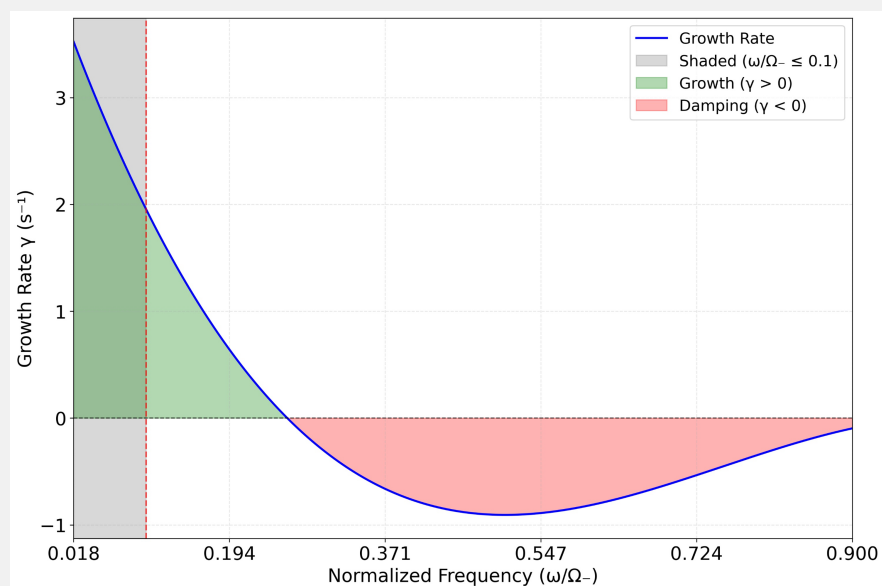


Figure Caption: Whistler wave growth rate with frequency up to $0.9 \Omega_e$. The grey shaded region covers the observed wave frequency.

The Author



**Mudit Kumar
Srivastava**

Development of ProtoPol - a medium resolution echelle spectropolarimeter for PRL Telescopes

(**Mudit Kumar Srivastava**, Arijit Maiti, Vipin Kumar, Bhavesh Kumar Mistry, Ankita Patel, Vaibhav Dixit, Kevikumar A. Lad, Ruchi Pandey and Jay Chitroda)

ProtoPol is a medium-resolution echelle spectro-polarimeter developed for Physical Research Laboratory (PRL) 1.2 and 2.5 m telescopes, Mt. Abu, India. Although initially conceived to evaluate the development methodology of the echelle spectro-polarimeter, it was subsequently elevated to the level of a full-fledged back-end instrument for PRL telescopes. ProtoPol is developed on the traditional concept of using a half-wave plate with a Wollaston prism to achieve the separation of two mutually orthogonal polarized beams. These separated beams are modulated and directed into an echelle spectrometer, which employs an echelle grating and two plane reflection gratings as the cross-dispersers. Therefore, the cross-dispersed spectra for two orthogonal polarized beams are recorded in multiple orders on a CCD detector. ProtoPol provides a spectral resolution in the range of ~ 0.4 to 0.75 angstroms across various orders in the visible wavelength range of 4000 to 9600 angstroms. On PRL 2.5 m telescope, a signal-to-noise ratio of 10 is achieved for $V \sim 13.2$ magnitude source in 1 hour of integration time, and its throughput is estimated to be $\sim 6\%$, including all the contributing factors such as atmospheric transmission, telescope reflectivity, the instrument's optics, and CCD efficiency. ProtoPol achieved a linear polarization accuracy of 0.1 to 0.2% in 2 hour of integration time for a source with $V \sim 8$ magnitude. The instrumental polarization is determined to be around 0.1% .

The capabilities of the instrument were demonstrated with the first science results wherein the samples of Herbig Ae/Be stars, classical Be stars, symbiotic stars, and AGB/post-AGB stars were observed over the period of one and half years for their spectro-polarimetry measurements. They explored various physical mechanisms such as intrinsic line polarization in Herbig and classical Be stars, Raman scattered features in symbiotic stars, and continuum polarization in AGB/post-AGB stars to verify the polarization performance of the instrument. The uniqueness of ProtoPol lies in its design, which has been entirely developed with commercially available off-the-shelf optical and optomechanical components. This feature makes ProtoPol a noteworthy development as it offers a cost-effective way to develop spectro-polarimeters with such resolutions for small-aperture (2 to 3 m) telescopes around the world, in a much shorter development period.

Source 1. *Journal of Astronomical Telescopes, Instruments, and Systems* - Development of ProtoPol: a medium resolution echelle spectro-polarimeter for PRL telescopes, Mt. Abu, India—Part I: the design, development, and laboratory characterization - <https://doi.org/10.1117/1.JATIS.12.2.028001>

Source 2. *Journal of Astronomical Telescopes, Instruments, and Systems* - Development of ProtoPol: a medium-resolution echelle spectro-polarimeter for PRL telescopes, Mt. Abu, India—Part II: the data-reduction pipeline, on-sky characterization and performance verification, and first science results - <https://doi.org/10.1117/1.JATIS.12.2.028002>

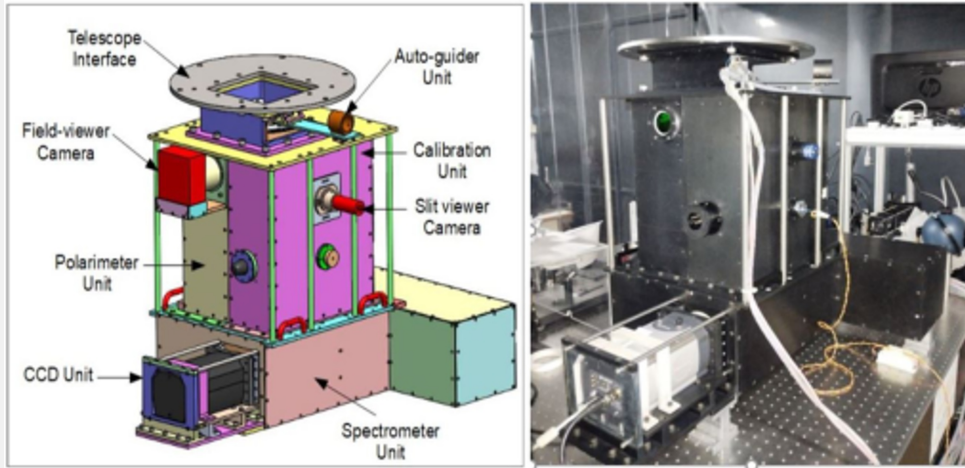


Figure 1: The CAD model of ProtoPol. Right: ProtoPol completed assembly in the laboratory.



Figure 2: Images showing ProtoPol mounted on PRL 1.2 m (top) and 2.5 m telescopes at Mt. Abu (bottom).

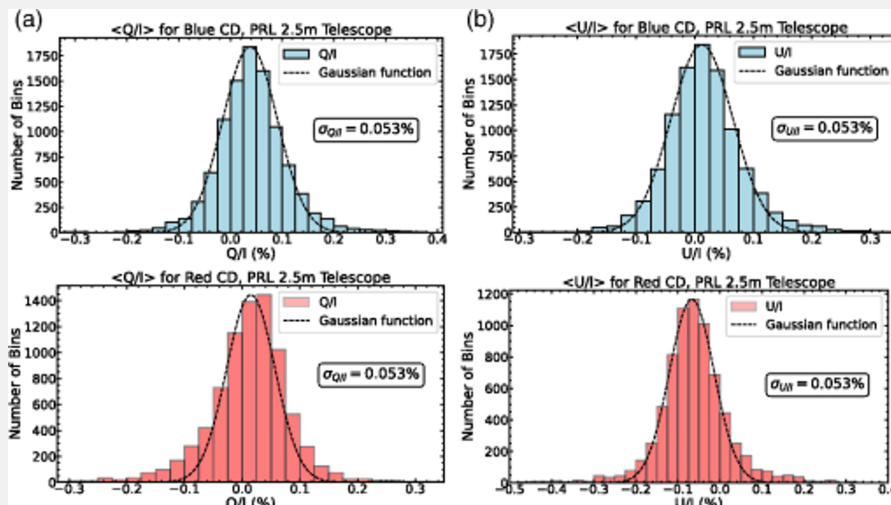


Figure 3: Histograms showing the instrumental polarization of ProtoPol for Stokes q ($=Q/I$) and u ($=U/I$) parameters. Combined histograms of Q/I (a) and U/I (b) of several standard unpolarized stars for observations from the PRL 2.5 m telescope for both Blue (top row plots) and Red (bottom row plots) cross-dispersers. The dashed line shows the Gaussian fit to the data. The estimated standard deviation is 0.053% for $\langle Q/I \rangle$ and $\langle U/I \rangle$ determined for Blue CD and Red CD.

Discovery of Variable Polarization in the H-alpha Emission of the Symbiotic Star Y Gem with ProtoPol on PRL 2.5m Telescope

(Arijit Maiti, Mudit K. Srivastava and Vipin Kumar)

The Author



Arijit Maiti

Symbiotic stars are one of the most elusive stellar systems in our galaxy, only few hundreds are known out of nearly few hundred billion of stars. They are interacting binary star systems consisting of a very hot compact white dwarf star and a very large, relatively cooler red giant star. A strong and variable polarization has been discovered in the H-alpha emission line of a recently confirmed symbiotic system Y Geminorum (Y Gem). The discovery was made with the indigenously developed ProtoPol instrument on the 2.5 m telescope at the Physical Research Laboratory (PRL), Mt. Abu Observatory. Observations with ProtoPol spanned nearly 22 months and additional complementary low-resolution spectroscopic observations were acquired with another indigenously developed MFOSC-P instrument on the PRL 1.2 m telescope. These observations reveal a remarkable evolution of the H-alpha polarization profile, with the degree of polarization increasing from an undetectable level in 2024 March to approximately 4.5% in 2025 December, accompanied by a characteristic 90° rotation in the polarization position angle across the emission profile. Such strong, phase-dependent polarization across H-alpha has not previously been observed in a symbiotic system. Monte Carlo simulations have also been conducted to confirm the Raman scattering process which is responsible for the underlying polarized emission around H-alpha line, and a simple orbital model of Y Gem has been constructed in an attempt to explore its possible orbital parameters. The agreement between the observations and simulations strongly suggests that the detected H polarization arises predominantly from Raman-scattered Ly-beta photons and that its temporal variability is governed by changes in the scattering geometry associated with orbital motion. This rare polarization signature, attributed to Raman scattering in the neutral wind of the evolved giant star, offers new insights into the circumstellar environment, orbital configuration etc. that cannot be obtained through conventional spectroscopy alone. These observations establish Raman-scattered Ly-beta polarization as a powerful diagnostic of the geometry, inclination, and circumstellar morphology of interacting binaries.

Source : *The Astrophysical Journal* - Discovery of Variable Polarization in the H α Profile of the Symbiotic Star Y Gem: A Case for Orbital-phase-dependent Variation in Raman-scattered Ly β Emission - <https://doi.org/10.3847/1538-4357/ae732a>

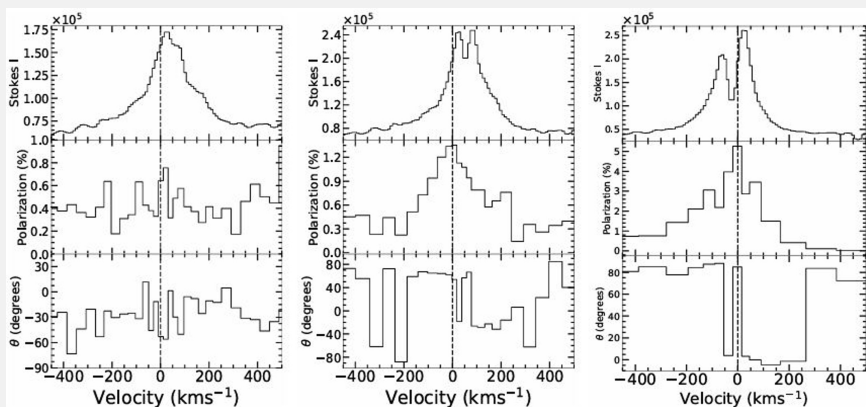


Figure 1: H α polarization profiles of Y Gem for March 2024 (left), March 2025 (middle), and December 2025 (right).

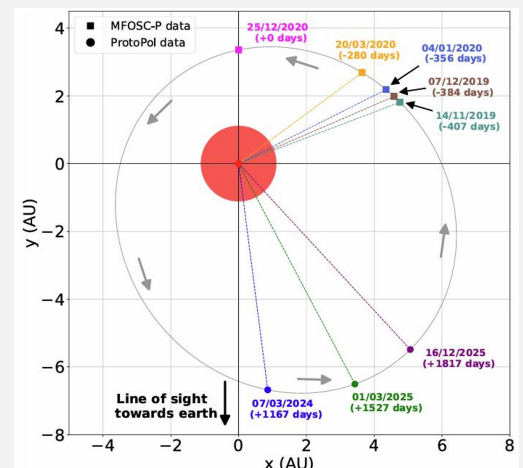


Figure 2: Constructed simple orbital phase model for Y Gem symbiotic system.

Neutrino mass variables in three active and two-sterile neutrino scenario

(S. Goswami, Hemanth M., D. Pachhar and N. Rajeev)

The Author



S. Goswami

Neutrinos are the most mysterious particles in the universe. Scientists have discovered that there are three active flavors of neutrinos—electron, muon, and tau—and they can oscillate into each other while travelling through space or matter. This oscillation is governed by the difference in their mass-squared values. However, scientists are yet to determine the exact masses, and they are also searching for evidence of a possible fourth type, known as sterile neutrino, which does not have any interaction with matter.

Scientists in PRL have performed a comprehensive study which explores the impact of two additional sterile neutrinos on neutrino mass observables, i.e., the sum of neutrino masses (Σ) from cosmology, the effective electron mass (m_β) from nuclear β decay and the effective Majorana mass ($m_{\beta\beta}$) probed in neutrinoless double beta decay. In this article, two cases are considered: (i) $\Delta m_{s1}^2 = 1.3 \text{ eV}^2$, $\Delta m_{s2}^2 = 0.01 \text{ eV}^2$, and (ii) $\Delta m_{s1}^2 = 1.3 \text{ eV}^2$, $\Delta m_{s2}^2 = 10^{-4} \text{ eV}^2$. Three active neutrinos along with the two sterile neutrino states can be classified into four distinct mass orderings (see extreme left of Figure). These are named SSN, SSI, SNS, and SIS according to the relative positioning of the active and sterile mass eigenstates. For each ordering, the values of the neutrino masses are different and therefore contribute differently to the mass observables. As an example, we have described the impact of SSN on the mass variables in the following.

It is seen from Figure that the SSN scenario is allowed by the cosmological model up to $\sim 0.015 \text{ eV}$ for the lightest neutrino mass. For the effective electron mass, the eV-scale sterile neutrino contribution dominates for the entire range of the lightest neutrino mass. As for the effective Majorana mass, it is seen that there can be a larger cancellation region that originates from the cancellation between the active and sterile neutrino contributions. In conclusion, the three active and two sterile neutrino framework offers a rich and highly constrained phenomenology; some of the predictions can be tested in upcoming experiments.

Source : *Phys. Rev. D* - Neutrino mass variables in three active and two sterile neutrino scenario- <https://doi.org/10.1103/3lb9-29zh>

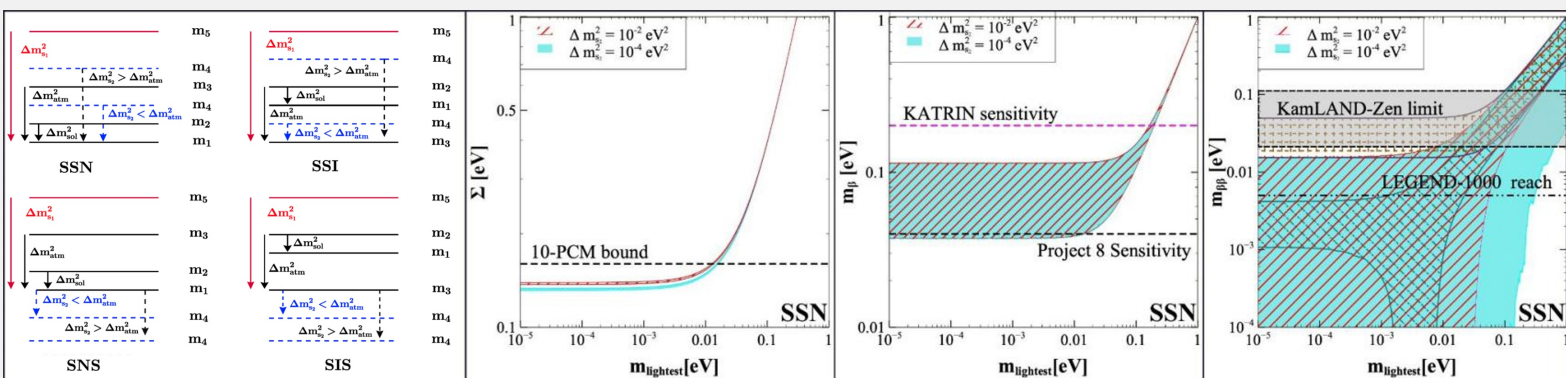


Figure Caption: From the left, (First:) Four distinct mass spectra in the three active two sterile neutrino scenarios. (Second:) variation of sum of neutrino masses as a function of the lightest neutrino mass, (Third:) variation of effective electron mass as a function of the lightest neutrino mass, (Fourth:) variation of effective Majorana mass as a function of the lightest neutrino mass.

The Author



Veeresh Singh

Spectral ages of remnant radio galaxies and their evolution

(Sushant Dutta, **Veeresh Singh**, C.H. Ishwara Chandra, Yogesh Wadadekar, Russ Taylor, Mattia Vaccari, Lucia Marchetti, Matt Jarvis, Catherine Hale, Solohery Randriamampandry, and Zara Randriamanakoto)

Radio galaxies, as a subclass of active galactic nuclei (AGNs), are characterized by their distinctive radio morphologies that consist of a core and bipolar outflowing jets terminating into lobes. Radio galaxies devoid of core and jets depict their remnant phase during which AGN-jets are no longer active but lobes can still be detected for a period of time before they fade away due to radiative losses. Remnant radio galaxies are rare sources due their short lifespan. In this work, we have performed spectral aging of a dozen of remnant radio galaxies using multi-frequency radio observations across 150 MHz – 3.0 GHz including recent uGMRT and MeerKAT observations. We find that, unlike nearby remnant radio galaxies, our sample sources being at relatively higher redshifts ($0.35 \leq z \leq 2.85$; median $z = 1.25$) show short spectral ages (8 - 42 million years) possibly due to enhanced inverse-Compton losses at higher redshifts and the rapid lobe expansion in low-density environments. The ratios of remnant to total source ages ranging over 0.04 - 0.83, indicates that our sample sources belong to diverse evolutionary stages. Our study reveals a previously underrepresented population of faint, rapidly fading remnants, suggesting that the remnant phase may be shorter and more dynamic than that previously thought.

Source : *Monthly Notices of the Royal Astronomical Society* - SuperMIGHTEE : Spectral Ages of Remnant Radio Galaxy Candidates in the XMM-LSS Field - <https://doi.org/10.1093/mnras/stag1328>

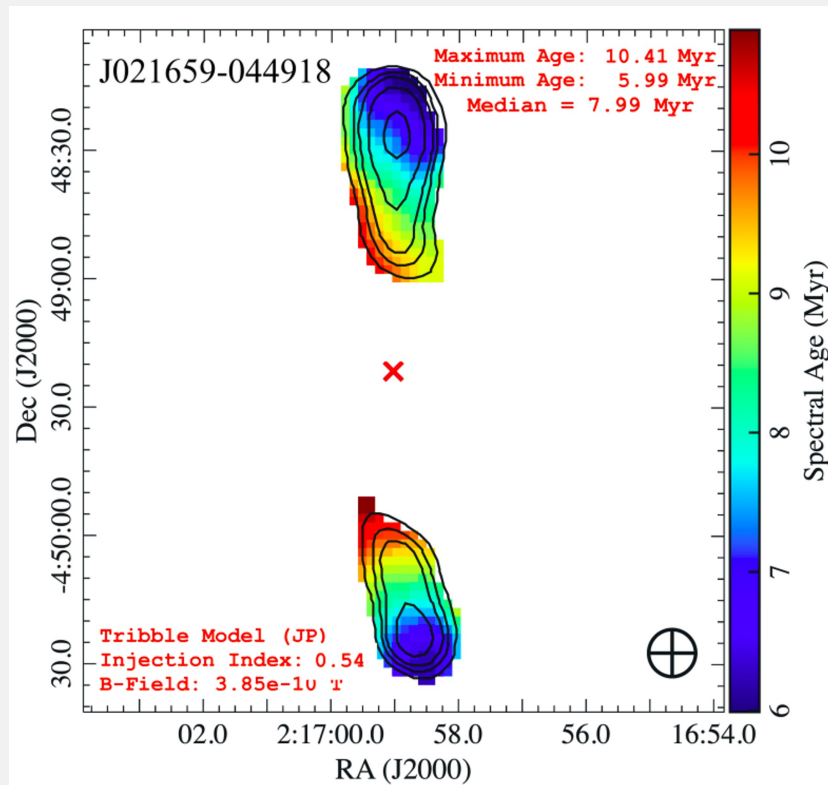


Figure Caption: The spectral age map of a remnant radio galaxy J021659 with 1.284 GHz radio contours overlaid on it. The age gradient of the source morphology is evident.

World Blood Donor Day Celebration 2026 “One Drop of Humanity. Give Blood. Save Lives.”

World Blood Donor Day is a global celebration held annually on the 14th of June every year. To commemorate World Blood Donor Day 2026, Dispensary at Physical Research Laboratory Ahmedabad scheduled Blood Donation Camp on 11th June, 2026 in association with Shree Jalaram Abhyuday Sadbhavana Trust, Ahmedabad.

Prior to the commencement of the camp, efforts had been conducted through various channels to raise awareness & encouragement. Registration was made available online. Dispensary team communicated with PRL employees, Research Fellows, Contractual staff, CISF and others to make this camp successful by coming in a large number to donate their blood. To ensure a smooth and organized event, blood donors' arrivals had been scheduled in phases to avoid any overcrowding. Total 42 voluntary donors had registered themselves in advance to contribute their gesture as a unit of blood. The camp began at 08:30 am and concluded at 01:30 pm. Total 60 units of blood were collected within 5 hours of the Blood Donation Camp.

The Dispensary staff of PRL wish heartiest thanks to all blood donors for their selfless act of saving lives through their voluntary Blood Donations.



Glimpses from the event

PRL's Recent Developments: Pramana, Anweshika, and LCU – A Comprehensive Toolkit for Robotic Telescope Operations and its Applications Beyond Astronomy

During this special talk held on 19.06.2026, Dr. Sunil Chandra, Assistant Professor from Infra-Red Observatory, PRL, Mt. Abu presented his recent software developments: PRAMANA, ANWESHKA, and USLC, highlighting their architecture, capabilities, scalability, and applicability beyond astronomy.

PRAMANA (PRL Proposal, Resource Allocation, Monitoring and Networked Astronomical Architecture) is an integrated observatory management platform designed to encompass all major modules associated with observatory operations, beginning with proposal submission and extending through resource allocation, telescope scheduling, and telescope and instrument operations. It is envisioned as a key component of the future PRL Mount Abu Intelligent Observatory Programme, the seed development of which is supported under the ISRO-RESPOND 2026 programme. The software builds upon the legacy framework of the Las Cumbres Observatory while being extensively redesigned to address PRL's specific operational requirements and long-term vision. Dr. Chandra also highlighted his developments in the line with the development of Local Control Unit (LCU) which is intended to activate and operate the telescope control system and instrument controls, autonomously based on the information passed from PRAMANA.

ANWESHKA (Autonomous Networked Workflow Engine for Scientific Data Handling and Integrated Knowledge Archive) has been developed with the vision of serving not merely as a data archive but as a comprehensive knowledge server offering web-based services for diverse scientific applications, along with seamless integration with the ADS and SIMBAD astronomical databases. The core architecture of ANWESHKA has been designed to be highly adaptable, enabling it to be readily customized for general-purpose scientific data archiving, including datasets from disciplines such as oceanography, planetary sciences, geosciences, and other research domains.

USLC (Unified Service Log Console) is a fully in-house application developed to manage the maintenance activities of various systems and subsystems operating across the observatory campus. In addition to an automated email-based alert mechanism, the application provides issue tracking, status flagging, and a streamlined approval workflow that enables authorized officials to accept, reject, or seek clarifications through a single unified portal. This has significantly improved transparency, accountability, and the overall efficiency of maintenance management.

During the presentation, Dr. Chandra demonstrated the key features of all three software modules, discussed their scalability, and provided hands-on demonstrations of their various functionalities. The ensuing discussions explored the potential of integrating PRAMANA and ANWESHKA as the frontend operational and scientific data management framework for PRL's PASS facility.

Celebration of International Day of Yoga-2026

The 12th International Day of Yoga (IDY-2026) was celebrated with great enthusiasm and participation on 21 June 2026 (Sunday) at the Library Lawn of the PRL Main Campus. The event was organized to promote awareness about the importance of yoga in maintaining physical, mental, and emotional well-being. The theme for this year's celebration was “Yoga for healthy ageing”.

The programme commenced with a welcome address by Mr. Pradeep Kumar Sharma. Subsequently, Ms. Harsha Parmar introduced the guest instructor, Ms. Niharika Raval, a Level-3 Yoga Teacher and Evaluator. She welcomed the guest and shared her achievements and experience in the field of yoga.

Thereafter, Ms. Niharika Raval began the yoga session by explaining the importance and benefits of Pranayama (breathing exercises) as a preparatory practice before performing yoga asanas. She elaborated on how proper breathing techniques improve concentration, reduce stress, and prepare the body and mind for yoga practice. The practical yoga session commenced with demonstrations of various yoga postures (asanas). Ms. Niharika explained different categories of yoga poses, including standing poses, sitting poses, and lying poses, and described their respective health benefits. She then provided a step-by-step demonstration of each asana, ensuring that all participants could perform them correctly and safely. All members enthusiastically participated in the session and practiced the various standing, sitting, and lying postures under her guidance. At the conclusion of the session, participants performed Pranayama, followed by Shavasana.

Followed by the yoga practice, Ms. Niharika was felicitated by Prof. Anil Bhardwaj, Director, PRL in recognition of her valuable contribution to the event. The event coordinators presented her with a Tulsi plant pot. The programme concluded with a Vote of Thanks delivered by Ms. Nandini Ravi Rao.

The celebration of the 12th International Day of Yoga was a memorable and enriching experience for all participants.



Glimpses from the event

37th PRL Amrut Rajbhasha Vyakhyaan



"PRL अमृत राजभाषा व्याख्यान (पर्व)" का 37वाँ व्याख्यान 24 जून, 2026 को आयोजित किया गया। इस अवसर पर मुख्य वक्ता प्रोफेसर पी. के. जोशी, स्कूल ऑफ़ एनवायरनमेंटल साइंसेज़ (SES), जवाहरलाल नेहरू यूनिवर्सिटी (JNU), नई दिल्ली थे।

The 37th lecture of "PRL Amrut Rajbhasha Vyakhyaan (PARV)" was held on June 24, 2026. The eminent speaker for the occasion was Professor P. K. Joshi, School of Environmental Sciences (SES), Jawaharlal Nehru University (JNU), New Delhi.

प्रोफेसर पी. के. जोशी अभी नई दिल्ली स्थित जवाहरलाल नेहरू यूनिवर्सिटी (JNU) के स्कूल ऑफ़ एनवायरनमेंटल साइंसेज़ (SES) में काम कर रहे हैं। 2007 में दिल्ली आने से पहले, उन्होंने लगभग दस साल तक इंडियन इंस्टीट्यूट ऑफ़ रिमोट सेंसिंग (IIRS) में वैज्ञानिक के तौर पर काम किया; यह संस्थान इंडियन स्पेस रिसर्च ऑर्गनाइजेशन (ISRO) का हिस्सा है। इस दौरान, उन्होंने संयुक्त राष्ट्र से जुड़े संस्थान CSSTEAP में पार्ट-टाइम फैकल्टी सदस्य के तौर पर भी काम किया। प्रोफेसर जोशी ने पृथ्वी और बायोस्फीयर (जीवमंडल) के बीच के संबंधों को समझने में अहम योगदान दिया है।

Professor P. K. Joshi is currently serving at the School of Environmental Sciences (SES), Jawaharlal Nehru University (JNU), New Delhi. Prior to moving to Delhi in 2007, he worked as a scientist at the Indian Institute of Remote Sensing (IIRS)—part of the Indian Space Research Organisation (ISRO)—for nearly a decade. During this period, he also served as a part-time faculty member at CSSTEAP, an institution affiliated with the United Nations. Prof. Joshi has made significant contributions to understanding the relationships between the Earth and the biosphere.

व्याख्यान का शीर्षक था/ The vyakhyaan was titled "सतत विकास के लिए प्रकृति-आधारित समाधान-बुनियादी ढांचे के रूप में प्रकृति रचनात्मकता"

प्रोफेसर जोशी ने इस बात पर जोर दिया कि सतत विकास के लिए एकीकृत दृष्टिकोण की आवश्यकता है जो पर्यावरणीय, सामाजिक और आर्थिक चुनौतियों का एक साथ समाधान करे। उन्होंने समझाया कि प्रकृति-आधारित समाधान (एनबीएस) किस प्रकार वनों, आर्द्रभूमियों, नदियों और तटीय क्षेत्रों जैसे पारिस्थितिक तंत्रों को महत्वपूर्ण प्राकृतिक अवसंरचना के रूप में मान्यता देते हैं जो जलवायु परिवर्तन के प्रति लचीलापन, जैव विविधता संरक्षण और सतत आजीविका का समर्थन करते हैं।

Prof. Joshi emphasized that sustainable development requires integrated approaches that address environmental, social, and economic challenges simultaneously. He explained how Nature-based Solutions (NbS) recognize ecosystems such as forests, wetlands, rivers, and coastal areas as vital natural infrastructure that supports climate resilience, biodiversity conservation, and sustainable livelihoods.

इस व्याख्यान में जलवायु परिवर्तन के असर को कम करने और साथ ही लंबे समय तक विकास के फ़ायदे सुनिश्चित करने के लिए प्राकृतिक संसाधनों की सुरक्षा, उन्हें बहाल करने और उनके टिकाऊ प्रबंधन के महत्व पर

जोर दिया गया। प्रोफेसर जोशी ने 'नेचर-बेस्ड सॉल्यूशंस' (प्रकृति-आधारित समाधानों) के वैज्ञानिक आधार, नीतिगत महत्व और व्यावहारिक इस्तेमाल पर भी चर्चा की। उन्होंने बताया कि तेजी से हो रही तकनीकी तरक्की के दौर में भी प्रकृति के साथ तालमेल बिठाकर काम करना ज़रूरी है। सेशन का समापन एक प्रेरणादायक संदेश के साथ हुआ कि प्रकृति-आधारित तरीकों को अपनाकर एक ज़्यादा मज़बूत, समावेशी और टिकाऊ भविष्य बनाया जा सकता है।

The vyakhyaan highlighted the importance of protecting, restoring, and sustainably managing natural resources to mitigate the impacts of climate change while ensuring long-term developmental benefits. Prof. Joshi also discussed the scientific foundation, policy relevance, and practical applications of Nature-based Solutions, stressing that working in harmony with nature remains essential even in an era of rapid technological advancement. The session concluded with an inspiring message that adopting nature-based approaches can help build a more resilient, inclusive, and sustainable future.

व्याख्यान के बाद एक रोचक प्रश्नोत्तर सत्र हुआ, जिससे श्रोताओं को विषय के बारे में नई और अधिक जानकारी प्राप्त हुई।

Following the lecture, an engaging question-and-answer session was held, which provided the audience with fresh insights and a deeper understanding of the subject.

YouTube Link: <https://www.youtube.com/live/PUJG1PudF0M?si=J9WgIBtYEdUbq9Cc>



117th PRL ka Amrut Vyakhyaan



The 117th PRL Ka Amrut Vyakhyaan entitled ``Superfluid in Space: The Exotic World of Neutron Stars'' was held on Thursday, 25 June 2026, at 4:00 PM (IST). The Vyakhyaan was delivered by Prof. Dipankar Bhattacharya, Head, Department of Physics, and Sunanda and Santimay Basu Professor of Astrophysics, Ashoka University, Sonipat. The event attracted good number students and faculty members interested in astrophysics, condensed matter physics, and quantum phenomena, offering a fascinating glimpse into the remarkable physics of neutron stars.

Neutron stars are among the most extraordinary objects in the Universe. Formed in the aftermath of massive stellar explosions, they compress more than the mass of our Sun into a sphere only about twenty kilometers across. Under such extreme conditions, matter behaves in ways that cannot be reproduced on Earth, providing a unique natural laboratory for studying the laws of quantum mechanics, nuclear physics, and gravitation. Among the most fascinating phenomena predicted to exist inside neutron stars are superfluidity and superconductivity-macroscopic quantum states that govern the dynamics of their interiors.

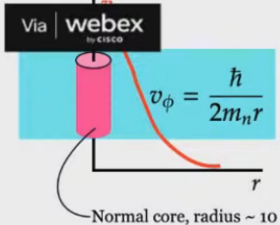
Beginning with the fundamental concepts of superfluidity, Prof. Bhattacharya explained how certain quantum fluids can flow without viscosity and why rotating superfluids form quantized vortices instead of rotating as ordinary liquids. He discussed the distinction between bosonic and fermionic superfluids, highlighting the role of Bose-Einstein condensation in helium-4 and Cooper pairing in helium-3, while drawing insightful parallels between superfluid vortices and the magnetic fluxoids found in Type-II superconductors.

The lecture then explored the formation and internal structure of neutron stars, where densities exceed those found inside atomic nuclei. Under these extreme conditions, neutrons are expected to form a superfluid while protons become superconducting, giving rise to a rich interplay between quantum mechanics and astrophysics. These exotic states of matter profoundly influence the thermal, magnetic, and rotational evolution of neutron stars.

A major highlight of the lecture was the discussion of pulsar glitches-sudden increases in the rotation rate of pulsars that interrupt their otherwise remarkably regular spin-down. Prof. Bhattacharya explained how these glitches arise from the interaction between the superfluid interior and the solid crust through the pinning and unpinning of quantized vortices.

The lecture concluded with an engaging question-and-answer session on the hierarchy of energy scales in neutron stars, the observational challenges of detecting glitches, and future directions for understanding matter under extreme density and gravity.

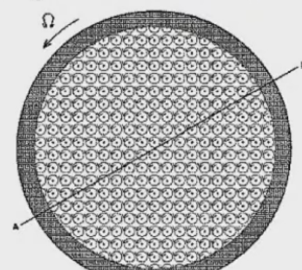
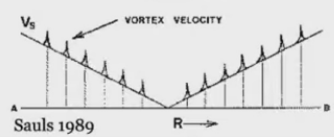
YouTube Link: https://www.youtube.com/watch?v=6hQ8SUh_2vE&t=3481s



Normal core, radius ~ 10 fm

$v_\phi = \frac{\hbar}{2m_n r}$

Anatomy of a neutron superfluid vortex

Sauls 1989

In the crust, vortices can **pin** to nuclei $\Rightarrow$

Electromagnetic torque acts on the nuclear crust and spins it down

$\downarrow$

Differential rotation builds up between vortex array and the superfluid $\Rightarrow$



Pinning force

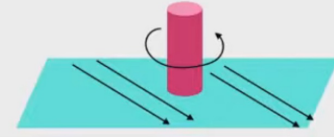
+ Vortex mutual interaction,
+ Boundary effect
+ Dissipation

Magnus Force

$\rightarrow$

Vortex Dynamics

$\downarrow$






Dipankar Bhattacharya

PRL Monthly Publications Digest

Total publications in July 2026: 30

Atomic, Molecular and Optical Physics [05]

1. Naresh Degda, Elison Macwan, Malika Singhal, Naveen Chauhan, 2026, Thermoluminescence dosimetry investigation of Dy³⁺-activated barium aluminate: TL response and trap analysis, Materials Science and Engineering: B, Date of Publication: 17/06/2026, Impact Factor: 5.7
2. Kavil Mehta, Garima Arora and Prashant Kumar, 2026, Nanoparticle-enhanced continuum emission during early-stage of laser-produced plasma, Journal of Physics B: Atomic, Molecular, and Optical Physics, Date of Publication: 17/06/2026, Impact Factor: 1.7
3. Abdul Kalam, Prasenjit Deb, Akitada Sakurai, B. K. Sahoo, V. S. Prasanna and B. P. Das, 2026, Efficient quantum information-inspired ansatz for variational quantum eigensolver algorithm: Applications to atomic systems, Phys. Rev. Research, Date of Publication: 11/06/2026, Impact Factor: 4.2
4. Ganesh Velagala, Md Haider Ansari, Ravi Kumar, Shashi Prabhakar and Salla Gangi Reddy, 2026, Scattering of tunable Laguerre-Gaussian modes: controlled functional engineering of speckle size, Journal of Optics, Date of Publication: 10/06/2026, Impact Factor: 2.2
5. Santunu Kumar Panda, Rahul Kumar Kaushal, Sukumar Parida, Naveen Chauhan, Ashok Kumar Singhvi, 2026, Variation in luminescence sensitivity of quartz across the semi-arid Sabarmati River basin in Western India: Caveats and new possibilities for luminescence-based provenance studies, Earth Surface Processes and Landforms, Date of Publication: 09/06/2026, Impact Factor: 2.7

Astronomy & Astrophysics Division [04]

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Space and Atmospheric Sciences Division [03]

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Geosciences Division [03]

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Udaipur Solar Observatory [07]

1. Vipin K. Yadav, Srikar P. Tadepalli, Geeta Vichare, Nandita Srivastava, Y. Vijaya, B. Krishnam Prasad, Monika Mahajan, K. V. L. N. Mallikarjun, Syeeda N. Zamani, K. A. Lohar, M. M. Kandpal, S. Narendra, Abhijit A. Adoni, Vijay Shankar Rai & D. R. Veeresha , 2026, The extreme solar transient events as observed by the MAG payload onboard Aditya-L1 spacecraft around L1 point, Journal of Astrophysics and Astronomy, Date of Publication: 30/06/2026, Impact Factor: 1.6

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7. Srinjana Routh, Anshu Kumari, Rohan Bose, Vaibhav Pant, Divya Paliwal, Dipankar Banerjee, and Nat Gopalswamy, 2026, Radio Signature of Higher Atmospheric Meridional Flow and Implications for Magnetic Trees in the Sun, The Astrophysical Journal, Date of Publication: 02/06/2026, Impact Factor: 5.4

Awards & Honors

1. Mr. Anirban Ghosh, Senior Scientific Assistant-A of the Atomic, Molecular and Optical Physics Division of PRL, has been awarded the prestigious 2026 SPIE Optics and Photonics Scholarship.
2. Prof. Neeraj Rastogi, Geosciences Division, Physical Research Laboratory (PRL), has been elected as the President of Indian Aerosol Science and Technology Association (IASTA) Executive Committee for the term 2026-2028.
3. Charotar University of Science and Technology and Physical Research Laboratory have been jointly granted patent for an invention entitled, "A System and Method for Performing Lightning Characterization and Detection for Realization of a Planetary Lightning."
The inventors from PRL are: Jayesh Pabari, Ramakant Mahajan, and Anil Bhardwaj

Visitors

1. In June 2026, a total of Eight (8) personnel, including Officials from other Government Organizations, Faculties/Students from various Colleges and Schools, visited Udaipur Solar Observatory (USOOB), Udaipur to explore its various scientific facilities.
2. In June 2026, a total of One hundred and forty six (146) personnel, including officials from DOS/ISRO, representatives from other Government Organizations, Students from various IITs and other Educational institutions, and the general public, visited the Infra-Red Observatory (IRO) at PRL in Mount Abu to explore its various scientific facilities

Hearty welcome to our new members



Name: Mr. Khaikar Vaibhav Dilip
 Designation: Technical Assistant
 Date of Joining: 08.06.2026
 Division/Area: Computer Networking And Information Technology



Name: Mr. Daniel Eliyyahu Bolishetti
 Designation: Laboratory Assistant
 Date of Joining: 12.06.2026
 Division/Area: Planetary Science Division



Name: Dr. Aishwary Awasthi
 Designation: Post Doctoral Fellow
 Date of Joining: 15.06.2026
 Division/Area: Planetary Science Division

Obituary



स्वर्गीय श्री डी. जी. वंकर
वरिष्ठ तकनीशियन-ए

Late Shri D.G. Vankar
Sr. Technician-A

Date of Birth 01.05.1945

Date of Joining PRL 18.01.1971

Date of Retirement 30.04.2005

Date of Death 23.06.2026

Teary Eyes for our Departed Member

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