ABSTRACT BOOK

ASI SYMPOSIUM 006

22-24 January 2026

Inter-University Centre for Astronomy and Astrophysics

Pune, India

https://events.iiap.res.in/event/352/

ASI Symposium for Communicating Astronomy in India 2026 (ASI SCAI-26)

The ASI Symposium for Communicating Astronomy in India 2026 (ASI SCAI-26) is a pan-Indian Symposium that aims to bring together communicators, outreach practitioners, and public engagement professionals in the field of astronomy in the country. One of the first events of its kind, it is being anchored by the Public Outreach and Education Committee (POEC) of the Astronomical Society of India (ASI). The Symposium will be held during 22-24 January 2026 at the Inter-University Centre for Astronomy and Astrophysics, Pune.

The ASI SCAI-26 is made possible by the generous financial and in-kind support of the Astronomical Society of India, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Indian Institute of Astrophysics (IIA), National Centre for Radio Astrophysics (NCRA-TIFR), and Aryabhatta Research Institute of Observational Sciences (ARIES).

ASI SCAI-26 has 150 in-person attendees and 170 online attendees. With 8 plenary talks, 52 talks in parallel sessions, 51 posters, and 14 demonstrations, the Symposium brings together a wealth of experience and passion from across the country.

This Symposium is dedicated to the memory of Prof Jayant V. Narlikar, who was a pioneering advocate for astronomy and science communication, and scientific temper, in India.

ASTRONOMICAL SOCIETY OF INDIA

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Message from the President, Astronomical Society of India

On behalf of the Astronomical Society of India (ASI), it gives me immense pleasure to welcome all participants to the ASI Symposium (ASIS006) on "Communicating Astronomy in India 2026", being held at IUCAA, Pune, from 22-24 January 2026. Established in 1972, ASI is the premier body of professional astronomers in India, fostering research and promoting astronomy nationwide. The society organizes scientific meetings and supports the popularization of Astronomy and other similar activities. Our vibrant outreach programme inspires young minds and bridges science with society across diverse communities.

This symposium brings together communicators, outreach practitioners, and public engagement professionals in the field of astronomy in the country to meet, present their work, share experiences and resources, and form new networks. The chosen theme, Communicating Astronomy in India 2026, is timely. The ASI Public Outreach and Education Committee (POEC) is the most appropriate organisation that can bring the diverse stakeholder communities together and organise such a conference. Inspiring young minds and strengthening science education is central to ASI's mission, and such platforms for this diversity of astronomy communicators will ensure the regular engagement with the public and schools. This is the first conference of its kind in India, and I expect that it will have a substantial impact in the community.

On behalf of the Astronomical Society of India, I thank the ASI's POEC, and all supporting institutions for their efforts in bringing this symposium to fruition. I am also delighted to note that this symposium is dedicated to the memory of Prof. J. V. Narlikar, as a fitting tribute to his life's work on science popularisation.

I wish the symposium great success and fruitful discussions for all participants.

With warm regards,

Devendra Kumar Ojha
President, Astronomical Society of India

Message from Director, IIA

I am pleased to send a message to the participants of the ASI Symposium–006, titled "Communicating Astronomy to the Public." This is one of the first conferences of its kind, and I am glad to note that the organisers intend to continue hosting similar conferences in the future. I am also happy to share that the Indian Institute of Astrophysics (IIA) is one of the co-organisers of this symposium. It is indeed timely and important that a symposium dedicated to communicating astronomy is being held. At IIA, science communication is taken very seriously. We undertake a wide range of outreach activities aimed at engaging the public and communicating both our scientific work and astronomy in general. These efforts are carried out through our SCOPE section as well as across all our field stations. We also run specific programmes for public engagement, including outreach in the Hanle region through the unique initiative of the Hanle Dark Sky Reserve and astrotourism activities.

Communicating astronomy to the public is not new and has been ongoing for many years. However, it has become increasingly important in recent times, as public interest in understanding the sky and the phenomena observed in it continues to grow. For instance, the planetary alignment observed last year generated enormous curiosity, with people asking a wide range of questions. Events like these provide valuable opportunities to encourage people to look at the sky and to understand what they are observing. What is also becoming increasingly evident is the need for more creative methods of public engagement, especially to reach communities that may otherwise remain disconnected from astronomy.

I believe this symposium will be highly useful as a platform to share ideas, discuss experiences, and inspire one another. It can also serve as a space to explore new, creative methods and modes of communication, as well as to build skills in presentation and public engagement.

Unfortunately, I am unable to attend this meeting in person. Nevertheless, I look forward to hearing about the discussions and outcomes of the symposium. I wish you all a productive and enriching meeting, and I hope that you return inspired to engage in astronomy communication in even more creative and impactful ways.

Prof. Annapurni Subramaniam
Director
Indian Institute of Astrophysics (IIA)

Message from Director, ARIES

I am delighted to welcome all of you to the ASI Symposium for Communicating Astronomy in India 2026 (ASI SCAI-26). It is a wonderful initiative by the ASI and POEC (Public Outreach and Education Committee) to bring together astronomy communicators across India. We all know that young minds and seniors everyone is fascinated by astronomy, universe, black holes etc. Perhaps there is an innate curiosity in the human mind which pushes us to find out our place in the universe and how we came here.

Pursuing astronomy reveals answers to some of these questions and then opens up many more. Considering the size of our country, the variety of languages and access to resources, it is difficult for professional astronomers to reach everywhere. Neither can everyone visit a research institute or an observatory. That's where all of you have filled an important gap by doing outreach in various roles and capacities, which I really appreciate. I am sure this symposium will further enhance your efforts by providing an opportunity to share, learn and collaborate with other communicators.

Along with ASI and POEC, I also thank other major astronomy institutes in the country such as IUCAA, IIA, NCRA, who, along with ARIES, have supported this novel step. I welcome you to visit us in Nainital sometime. ARIES hosts India's largest optical telescope, the 3.6m Devasthal Optical Telescope. I am told there are 300+ participants with 150 attending the symposium in-person. I wish all of you a very productive time with fruitful discussions and learning ahead. Thank you!

Dr. Manish K. Naja
Director
Aryabhatta Research Institute of Observational Sciences (ARIES)

Message from Scientific Organising Committee

India has a vast and diverse community of astronomy communicators and popularisers, a number of whom have been working for many decades. A large number of them carry out astronomy outreach on a voluntary basis (with institutionally supported notable exceptions like IUCAA and planetaria). In a welcome development, the situation has changed substantially over the last decade, not only with a number of institutions hiring full time outreach personnel, but also with the increasing number of commercial and semi-commercial astro-entrepreneurs. The Astronomical Society of India's (ASI) Public Outreach and Education Committee (POEC) has been playing a major role since 2014 as well. India has a large number of amateur astronomers and their organisations, and many professional astronomers also engage in outreach.

In this context, it is striking that there is no regular platform for this community of astronomy communicators to meet, present their work, and share experiences and resources, apart from a few regional workshops in the past. The absence of a national level conference is a lacuna and the ASI POEC took up the task bringing this diverse stakeholder communities together, and organise such a conference. We are grateful that the ASI accepted our proposal as an official Symposium. We are also grateful that IUCAA readily agreed to host the Symposium, along with support from IIA, ARIES, and NCRA-TIFR.

With 150 in-person participants and 170 online attendees, ASI SCAI-26 promises to be a vibrant celebration of the diversity of astronomy outreach, communication, and education in India, bringing together the wealth of experience and passion that exists in the country. We hope that the Symposium will lead to new collaborations and networks being formed, new ideas generated, and a strengthening of the community at large. We are also planning to organise the SCAI every 2-3 years in the future to this effect.

Lastly, we are honoured to dedicate ASI SACI-26 to the memory of Prof. J.V. Narlikar. The theme of this Symposium was always close to his heart, and he spent many decades developing and promoting astronomy across the country. This Symmposium is a fitting tribute to his life's work on science popularisation.

Niruj Mohan Ramanujam
Chairperson, SOC, ASI SCAI-26
(Indian Institute of Astrophysics)

Themes of the Symposium

Abstracts were solicited under the following themes, which will be covered in the Symposium through talks, posters, and demonstrations.

(1) Novel hands-on activities and demonstrations

(2) Public outreach at planetaria, and innovations in planetarium shows

(3) Amateur astronomers and organisations, and public engagement

(4) Astronomy communication in regional languages: strengths and challenges

(5) Inclusive, equitable, and ethical practices

(6) Using digital tools and AI for communicating astronomy

(7) Integrating astronomy with the arts and humanities

(8) Large scale campaigns and building networks and communities

(9) Institutional astronomy communication

(10) Teacher training and student engagement in schools

(11) Astronomy in school education

(12) Using dark and quiet skies, astro-tourism, for public engagement

(13) Countering pseudo-science, misinformation, and promoting scientific temper

(14) Outreach based on history of astronomy in India

(15) Science and astronomy journalism

SCAI26
SYMPOSIUM FOR COMMUNICATING ASTRONOMY IN INDIA
ASI SYMPOSIUM 006

ORAL PRESENTATIONS

Day 1

22 January 2026

Session 1 : Inauguration

Inaugural session will feature short talks by ASI President, Directors or representatives of IUCAA, IIA, ARIES, and NCRA-TIFR.

This is followed by a session dedicated to Prof. Jayant V. Narlikar and his work on astronomy education and outreach, featuring Prof Ajit Kembhavi (IUCAA), Ashish Mahabal (CalTech), Arvind Paranjpye (Nehru Centre Mumbai, online), and Samir Dhurde (IUCAA). This will be followed by a brief session introducing the IUCAA outreach team and its activities.

Session 2 : Plenary Talks

Eighty-One Years of Inspiring Astronomy: The Journey of Jyotirvidya Parisanstha

Atharva Pathak
Jyotirvidya Parisanstha (JVP), Pune

Co-authors: Aniruddh Deshpande (JVP), Sagar Gokhale (JVP), Deepak Joshee (JVP)

Theme: Amateur astronomers and organisations, and public engagement.

Jyotirvidya Parisanstha (JVP), Pune, holds the distinction of being India's oldest amateur astronomy association, consistently propagating astronomy with a scientific temperament since its founding in 1944. As a completely volunteer-driven, non-profit organization, JVP's 81-year journey offers a powerful model for effective and sustained science outreach, inspiring countless individuals across all ages to pursue astronomy.

JVP maintains a massive public engagement calendar, including monthly Overnight Star Parties attracting 100+ people, annual astronomical exhibitions, and lectures by eminent scientists. We also organize impactful road shows for celestial events (eclipses, transits, Zero Shadow Day, etc.), study tours, and comprehensive educational programs like basic astronomy courses and astrophotography workshops.

Supported by a dedicated volunteer force and facilities including multiple telescopes and the Kesariwada JVP observatory, the organization boasts over 800 members. JVP's success exemplifies how collective enthusiasm and a wide array of programs can successfully nurture public interest, making it a foundational pillar for astronomy popularization in India and inspiring generations

to explore the cosmos.

From Hobby to Career: Astronomy Communication and Outreach by the Astro Club, Fergusson College

Raka Dabhade
Fergusson College, Pune

Theme: Institutional astronomy communication.

The Astro Club Fergusson College, Pune has been involved in outreach activities since its inception just after the landing of the Mars pathfinder till date. Astronomy popularization and out reach is gaining more importance in India and Astronomy clubs in India are doing a great job in bringing common man to enjoy the subject which otherwise is remote and mysterious to many. It is due to these activities and news of achievements of ISRO / NASA many students are also considering this as a career option. We would like to emphasize here that merely popularizing the subject by outreach activities will only be a recreational activity or a hobby and will not produce renowned or professional astronomers. In this regard astro club Fergusson College has carried out many outreach activities which has benefited numerous students and teachers. In this process of communicating and popularizing astronomy, the students themselves have benefited immensely.

In the present case we would like to showcase all the outreach activities of the club due to which 110+ students from the Astro Club have taken up Astronomy and Astrophysics as a career and are presently in renowned institutions in India and abroad.

Session 3 : Parallel Talks

Astronomy clubs in Vadodara-History and present scenario as well as contribution of amateur astronomers

Atman Desai
Faculty of Journalism and Communication, The Maharaja Sayajirao University of Baroda-Vadodara

Theme: Amateur astronomers and organisations, and public engagement

Amateur Astronomy Clubs are an important organizations which popularizes astronomy in masses. These clubs organize sky gazing events, interactive sessions, special events, model making sessions, etc. so that public, especially children are acquainted with different concepts of astronomy. These clubs are important part of non-formal education. Vadodara, a cultural city located in Gujarat has harnessed a history of amateur astronomy clubs. The talk will focus on history of amateur astronomy clubs of Vadodara and its present scenario. The talk will highlight different activities and challenges of astronomy clubs of Vadodara. Major contribution of amateur astronomers of Gujarat will also be included in the talk. The talk will focus on milestones of astronomy popularization in Vadodara.

Interweaving Cultural Astronomy and Science Communication in Informal Science Education

Lal Rinkimi
Mizoram Science Centre
Lal Rammawia, Lal Rinnungi
Mizoram Science Centre, Mizoram Science Centre
Theme: Public outreach at planetaria, and innovations in planetarium shows

It has become a well-established concept that science centres and science museums have resulted in enhancement of scientific tempers in the society through propagation of basic scientific knowledge among the people. The science centres are regarded as educational and cultural resources where infrastructure and instructional facilities are specifically designed to create positive learning ambience. In this regard, the planetariums attached to science centres or functioning as standalone units have helped in disseminating space science knowledge by offering immersive and engaging experiences through modern technological tools and digital planetarium softwares. This mode of science communication has now proven to be an effective medium wherein traditional astronomical knowledge of a particular society or ethnic group can be disseminated and simultaneously, be preserved in a dynamic system. This paper aims to present an overview of how efforts have been given to interweave the traditional and cultural astronomy of the Mizo people, an ethnic tribal group residing in the state of Mizoram in the southernmost area of North-East India, along with the conventional basic astronomy education through digital planetarium software. This approach has clearly awakened in the onlookers, curiosity about the stars and an appreciation of the traditional wisdom found through the star tales.

Three Decades of Celestial Outreach: Inclusive Astronomy Engagement by Astronomy Club Vadodara

Bhargav Joshi
The Amateur Astronomers Association of Vadodara

Theme: Amateur astronomers and organisations, and public engagement

For over 30 years, the Astronomy Club of Vadodara has pioneered creative, community-rooted approaches to public communication of astronomy, with a special focus on young urban audiences and schoolchildren from underserved rural areas. This presentation chronicles our evolving journey—from analog formats to immersive digital experiences—in making astronomy accessible, engaging, and sustainable. In the 1990s, we launched a first-of-its-kind series of audio cassettes offering monthly sky watching guides, bringing stargazing into homes across Gujarat. The early 2000s saw us perform skits and dramatizations that blended science with storytelling. We established a unique telescope and binocular lending library, democratizing access to observational tools alongside a curated book collection. Our sidewalk astronomy events and invitation-based stargazing sessions brought telescopic views of the cosmos to public spaces and village schools, reaching audiences who often lack access to expensive astronomy resources. More recently, we've embraced immersive technologies like virtual reality planetariums to captivate younger generations. Each initiative has been designed not just for outreach, but for long-term sustainability and community ownership. This talk reflects on our strategies, challenges, and impact—offering a replicable model for grassroots science communication that reaches the unreachable and fosters lifelong curiosity.

Storytelling the Skies: Integrating Common Knowledge and Local Culture in Developing Planetarium Shows

Jayant Ganguly (Gangopadhyay)
Regional Science Centre and Planetarium Calicut

Theme: Public outreach at planetaria, and innovations in planetarium shows

Planetariums are dynamic spaces where science converges with imagination, emotion, and culture. At the Regional Science Centre and Planetarium, Calicut—popularly known as the Calicut Planetarium—our in-house productions have evolved as creative endeavours to communicate astronomy through storytelling that resonates with local traditions and collective wisdom. Since its inception in 1997, the planetarium has developed 36 original shows, beginning with Dona and the Universe, followed by Destination Moon, Solar System, Planet Mars, Our Universe, and many more, each exploring new ways of connecting audiences with the cosmos. Developing a

planetarium show demands a careful orchestration of narration, background music, silence, and sound effects—each element shaping the rhythm of storytelling. The thoughtful integration of visuals, graphics, and full-dome video sequences creates an optimum blend for emotional and educational impact. While advanced projection technology enhances immersion, the art of presentation remains independent of hardware, rooted instead in creativity and communication. Our approach makes astronomical concepts simple to understand but not simpler, grounding them in modern scientific reasoning. These shows also serve as a medium to dispel superstitions and foster rational, evidence-based thinking. The Calicut Planetarium thus exemplifies how culturally grounded storytelling can make astronomy both meaningful and socially transformative.

Access to astronomy and open scientific thinking for underprivileged learners - Vatsalya Society

Kartikey Gupta

Vatsalya Society

Theme: Inclusive, equitable, and ethical practices

In 2013, my own relationship with science changed when a hands-on engineering research experience abroad revealed the joy of practical learning—something missing in my, and many others', education. A few years later, I committed myself to creating similar experiences for children, especially those from deprived regions who have tremendous potential but limited access to learning tools. What began as small science innovations at the Vatsalya campus gradually led to a simple experiment in 2020: inviting children to observe the Moon through a basic 3-inch reflector. The response grew rapidly. Astronomy proved to be a gateway science—universal, awe-inspiring, and free from socio-economic barriers. After nearly two dozen submitted proposals over the next 3 years, the opportunity finally arrived. Over past three years (2023-2025), this evolved into a structured, scientific, human-centred astronomy programme in Achrol village, Rajasthan, combining hands-on observation, regional-language learning, citizen-science participation, and peer-led facilitation. Children now operate telescopes independently, process images, contribute to citizen-science platforms, and teach segments of the course to juniors. A learner from this programme was recently selected to attend the HDSR 2025 by the IIA. This presentation shares the journey, achievements, challenges, the model, and the possibilities for adapting our learnings to contexts across India.

Samanta Chandrasekhar- the forgotten traditional astronomer of Odisha

Sudipta Saha

Regional Science Centre Bhubaneswar

Theme: Outreach based on history of astronomy in India

Astronomy, has its roots in the observational and intuitive power of human intellect, which has forever been curious and intrigued by the motion of planets, stars, moon and the sun. India's tryst with observational astronomy started in the Vedic era, gaining proper formalism during the Siddhānta era. It was an era which had stalwarts like Āryabhaṭa, Varāhamihira, Srīpati, Mañjula, the two Bhāskaras, and culminating with Nīlakaṇṭha. Joining this league of the Siddhanta tradition was another genius ,much later in the 19th century – Samanta Chandrasekhara (1835–1904). Unfortunately, he is not known outside his home state of Odisha or outside the academic circles of the history of science and astronomy enthusiasts. However, his exemplary work finds a mention in scientific journals like Nature and Knowledge published way back in 1899! He has revised or reformulated the elements, data, and theories of Indian astronomy that were around for a thousand years through assiduous labour, all single handed and unsupported by any. He has made immense original contributions to the four main aspects of positional astronomy, namely: observation, calculation, instrumentation, and theory and model. This is a humble attempt to throw some light into the life and works of Samanta Chandrasekhar.

Session 5 : Parallel Talks

Radio Meteor detection using Home Built SDR based Radio Telescope

Ram Mohan

Independent Researcher, Association of Bangalore Amateur Astronomers (ABAA)

Ananth Y R

Association of Bangalore Amateur Astronomers

Theme: Novel hands-on activities and demonstrations

Meteor Showers are a treat to watch during clear skies, being in Bangalore, clear skies are a luxury, apart from city light pollution, fog, monsoon season this means clear skies are limited to only a few days of winter and early summer, which is 3 to 4 months of decent skies. As Amateur Astronomers, we have been Visual Observers and Astrophotographers, having our own Roof Top Observatory in Bangalore, with previous experience of building our own Radio Telescopes (to Observe Sun's Chromosphere and Resolving 21 Cms Hydrogen Line & 18 Cms OH Lines) plan was to extend the interest in all year long Astronomical Observations rather than limiting weather dependent skies. Did some reading on Radio Meteors Detection, idea was to have a dedicated 24x7 all weather Detection, Recording and Logging System using the Forward Scatter Meteor Detection Technique using Commercial FM Radio Transmission (88-107 MHz) from faraway Radio Stations (400+ Kms away), wherein ionized meteor trails are reflected. The Radio Telescope has been designed built operational since Nov 2022 & from 19 Jan 2025 this has been converted into a 24x7 365 Days Operational Setup with hourly sharing of Radio Meteor Data to World Wide Scientifc Community via www.rmob.org

Astronomy awareness for laypersons from a cultural approach

Shylaja B S

Jawaharlal Nehru Planetarium, Bengaluru

Theme: Outreach based on history of astronomy in India

Astronomy has played a very important role in the culture and tradition of India. Almost every village has temple or an inscription containing valuable astronomical information such as eclipses, planetary conjunctions apart from the calendrical information. Even natural calamities such drought and earthquakes also get documented. Exposure to these topics will eventually trigger the younger generation to look at the forgotten monuments with a different perspective and develop a sense of pride. A short discussion on this in a question – answer session in a workshop on a completely different topic resulted in a positive feedback from participants from

remote villages. This talk will be on such hidden treasures to promote a sense of history of astronomy.

Developing a science popularization program in a university, for diverse students in National Capital Region (NCR).

Avik Dasgupta

SGT University

Theme: Novel hands-on activities and demonstrations

We try to illustrate here the different initiatives in Astronomy and STEM Outreach, in the last two years of Centre for Cosmology and Science Popularization (CCSP), SGT University. We discuss here one by one the ideation, development and implementation of different initiatives. The different initiatives include planetarium program, setting up of a small-scale science centre, hands-on workshops for university students and celebration of 'days'. These programs were implemented in different educational and socio-economic background specially in the region of NCR and around. The observations and learnings will be discussed here and how a similar program can be approached.

Using Calendars for Astronomy Outreach

Alok Mandavgane

Aryabhat Foundation

Theme: Outreach based on history of astronomy in India

Calendars being imbibed in every day life of everyone are a great tool for Astronomy Outreach. I discuss the various aspects of different calendars I use for doing outreach. Using cultural cues and dating of festivals are something that most of the common people relate with. Under the night sky, I utilize the cultural names of the stars and asterisms and relate them to calendrical concepts. This enables a broader range of audience to understand the various concepts of observational Astronomy.

Hands on Astronomy

JAGADEESWARAN MANI

Tamilnadu Astronomy & Science Society

Theme: Novel hands-on activities and demonstrations

The following Activities are done using simple and low cost materials - Sun - Earth rotation, can create eclipses, black holes, waxing and waning of the moon, measuring the distance of the moon, Umbrella planetarium, central light source, CD spectroscope, CD GYROSCOPE, sun clock, sun-earth-moon model, Planisphere 10, Earth's rotation and axial tilt, balloon rocket, rocket fuel, Orion constellation

Celestial Heritage: Astronomy Outreach Through Architecture, City Planning, and the Night Sky

Harshit Tiwari

Yathartha Labs

Theme: Outreach based on history of astronomy in India

Astronomy outreach in Indian context has been often limited to star gazing sessions or classroom lectures or demonstrations, missing opportunities which are rooted in cultural and architectural heritage of India. With an intent to create an immersive model, series of astronomy workshops were conducted in Jaipur utilizing Jaipur's scientific heritage, combining science-backed heritage walks, urban city plannings, and hands-on celestial activities, creating an experience full of science, history and urban planning. Reflecting on astronomical principles used in building Jantar Mantar, the city planning on Nav-Grahas, and other scientific ventures of the Maharaja Sawai Jai Singh II were explored by participants. Further, these experiences are followed with telescope observations, building sundial (a mini-Jantar Mantar), planisphere making, and interactive discussions at sites that link the ancient sky knowledge with modern science. These workshops are designed with storytelling & experiential learning for students, educators, tourists, and the public to build deeper scientific engagement for all. With changes in modern tourism, these activities reflect how science communication, particularly Astronomy, can connect science, culture, and place — fostering scientific curiosity and temperament across diverse audiences.

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ORAL PRESENTATIONS

Day 2

23 January 2026

Session 6 : Plenary Talks

From Tail to Tale: Comet Photography as a Catalyst for Astronomy Outreach

Dorje Angchuk
Indian Institute of Astrophysics, Hanle, Ladakh

Co-authors: Dawa Dolkar, Tsewang Dorjai, Phunchok Dorjey, Nawang Dorji, Tsewang Gyalson, sonam Jorphail, Tashi Thsering Mahey, Mohd Maqbool, Niruj Mohan, Stanzin Norlha, Vikranth Pulamathi, Thubstan Rinchen, Tsewang Stanzin, Tsewang Yangdol, Skarma Thubstan
All: Indian Intitute of Astrophysics
Theme: Using dark and quiet skies, astro-tourism, for public engagement

Hanle, one of India's most pristine astronomical sites, is on the Trans-Himalayan Tibetan Plateau in Ladakh. Since 2022, Hanle Dark Sky Reserve (HDSR) has pioneered efforts to conserve the natural night sky, promote sustainable development,and preserve important cultural knowledge. However, along with local challenges, wider terrestrial and orbital activities pose significant risk to this critical effort to protect our access to the cosmos and our shared natural heritage. Besides documenting the ongoing conservation work with HDSR, this talk delves into three major challenges affecting Hanle's skies: (1) rise in terrestrial light pollution from expanding astro-tourism and military infrastructure, (2) changing climate trends,and (3) the proliferating low Earth orbit satellites. These events are reducing photometric nights and hours, contaminating astronomical images, and complicating workflows. Besides these scientific issues, the changing skies also often create confusion among people as they struggle to distinguish between natural celestial phenomena and anthropogenic interference. The Hanle case emphasizes the critical role of science communication in helping the public and policymakers make informed decisions around development. The talk argues for an integrated framework that combines responsible astro-tourism, sustainable energy use, and international coordination to secure the future of ground-based astronomy and the well-being of communities in this ecologically critical region

Inspiring Learning in underprivileged Children Through Astronomy

Tejpreet Kaur
IIT Kanpur

Theme: Inclusive, equitable, and ethical practices

Khagolvani, supported by the International Astronomical Union's Office of Astronomy for Development (IAU-OAD), is an astronomy and space science outreach initiative that uses astronomy as a bridge between curiosity and learning. The program works with children from underprivileged, migrant, and labour families, giving them a reason to learn by connecting science with wonder and imagination. Through hands-on activities, stargazing sessions, and simple observation-based learning, Khagolvani helps children realize that the sky belongs to everyone and sparks their curiosity for STEM subjects.

To make the effort sustainable, Khagolvani supports schools in setting up astronomy clubs, provides activity kits, and trains teachers and students to continue the sessions independently. By linking scientific learning with social development, the initiative nurtures curiosity, confidence, and participation among children who are often left out of mainstream education. The presentation will share activities such as exploring the scale of the Solar System, phases of the Moon, lunar and solar eclipses, and building simple radio antennas, along with the learning outcomes from our sessions which have so far reached more than 1,500 children.

Hands on activities in understanding basics of astronomy

Usha Kulkarni

Independent science communicator, Dharwad

Theme: Novel hands-on activities and demonstrations

I would like to share my experience in teaching high school children about some basic principles of astronomy. I have conducted hands on activities for teaching concepts such as the apparent motion of the sun. Different types of sundials, models to explain causes for seasons and zodiac are taught. Plotting and interpreting graphs are used for understanding variation of the position and timings of the sun according to latitudes. About the presenter: I am a maths and physics teacher with an experience of about 35 years. Since last 5 years I have indulged in public outreach programs in astronomy through few science centres, schools and universities with guidance from the Jawaharlal Nehru Planetarium, Bengaluru. I am a regular contributor writing science articles for 'Vigyana Loka' a quarterly journal published by Karnataka Science and Technology Academy and also science talks for AIR Dharwad. I have also contributed to the volume Khagola Darshana and translated a book on astronomy written in 1931 from Kannada to English..

Session 7 : Parallel Talks

25 Years of Celebrating National Science Day at the Giant Metrewave Radio Telescope

Divya Oberoi

National Centre for Radio Astrophysics

Theme: Institutional astronomy communication

The 28th of February is celebrated as National Science Day (NSD) across India. At the Giant Metrewave Radio Telescope (GMRT) we have been celebrating this day by holding what has grown to be perhaps the largest celebration of Science in rural India. During the two day NSD celebrations, everyone is welcome to visit the GMRT and learn about astronomy, radio astronomy as well as the cutting-edge technology behind this telescope, and simply be awed by the majestic GMRT antennas. What makes the GMRT NSD celebration unique is that in addition to learning about the science and engineering at the GMRT, students from grade levels from primary to those pursuing bachelors degrees are invited to present their own science projects to the 20,000+ visitors. In addition, other government and non-government organisations spanning the range from other research groups from TIFR and ISRO, to NGOs working in the fields of education, health care and environment conservation are also invited to set up stalls and share their work with the visitors. In 2026, we will organize the 25th edition of the GMRT NSD and this talk will share our journey along with some experiences and insights gained along the way.

Basic astronomy concepts with physical models

Ravindra Godbole

Independent science communicator

Theme: Astronomy in school education

High school students explore basic concepts in astronomy as a part of their carriculum. These concepts are difficult to visualize without the proper use of physical models. I have designed and developed models to clarify key concepts related to Sun, Earth and Moon and other celestial bodies. I have been visiting schools to demonstrate the same and interact with students as well as teacher community. Models cover areas related to seasons, new moon and full moon, lunar month, phases of moon, eclipses. With the help of gears, these models can show 99 percent accuracy in terms of duration. Some areas related to Indian astronomy such as Adhik Maas, Sankranti, Tithi and Nakshatra are also covrered as a part of this exercise. I would like to share my experiences and future plans for the same.

Activity-Based Demonstrations for Astronomy Outreach in Resource-Limited Environments

Chrisphin Karthick
Indian Institute Of Astrophysics Astrophysics
Leeden Arnold A, Muthuselvam P, Arun S
Kodaikanal Solar Observatory, Indian Institute of Astrophysics
Theme: Institutional astronomy communication

Astronomy outreach is often carried out in diverse and challenging environments where access to ideal infrastructure such as auditoriums, audio-visual systems, or digital presentation tools is limited. In such contexts, it becomes essential to employ alternative, creative, and effective methods to engage audiences and communicate scientific ideas. Activity-based demonstrations offer a versatile and participatory approach that encourages hands-on learning and conceptual understanding without dependence on technological infrastructure. This work presents a collection of interactive, activity-driven demonstrations designed to explain key astronomical phenomena, including seasons, eclipses, zero shadow day (concept), Lagrangian points, the Sun's apparent annual motion, diurnal variations in sunrise and sunset, and sidereal versus non-sidereal motion of celestial objects. These demonstrations enable participants to visualize and comprehend abstract physical concepts through experiential learning and observation. The activities have been implemented successfully in informal outreach settings, particularly in regions where logistical or infrastructural limitations are common. The outcomes demonstrate how activity-based methods can simplify mathematical and physical explanations, foster inclusivity across age groups, and sustain audience engagement even under constrained conditions. This approach highlights the potential of activity-based science communication as a sustainable and adaptable framework for enhancing public understanding of astronomy.

Bringing Astronomy and Science to the public using The VelogyaneshwariBicycle

Rupesh Labade
IUCAA, Pune
Theme: Astronomy in school education

The Velogyaneshwari Bicycle consists of about 40 experiments on it. Its main objective was to reconnect students with basic concepts of Astronomy and Science, showing that it is possible to locate yourself spatially. Everything is achieved through just observing nature, basic geometric concepts and some low-cost experiments attached to this bicycle. One can simply take this Bicycle outside to school, playground, gardens, etc., and teach them using experiments

attached to it. Also, students were enjoying this kind of science and Astronomy learning using their own bicycles. These low-cost experiments helped students to understand science as a whole process while reconnecting them with the observation of natural phenomena. They used knowledge of different areas and approached Astronomy and basic science. The students involved in it improved both their performance in the Math and Science classes and their vision of the scientific method and a healthier lifestyle. The approach involving students also creates an even deeper understanding of astronomy itself. Moreover, the fact that the students not only understand the topic, but also build their own materials attached to their own bicycle and make it the Velogyaneshwari, which fosters creativity, resourcefulness, experience and gratification, is empowering.

From Local Outreach to National Recognition: A Case Study in Building a Sustainable Astronomy Ecosystem in Ratnagiri

Babasaheb Sutar

R P Gogate College of Arts & Science and R V Jogalekar College of Commerce (Autonomous), Ratnagiri

Theme: Institutional astronomy communication

This paper presents a case study of a multi-decade effort to build a sustainable astronomy ecosystem in Ratnagiri, a non-urban center in Maharashtra's Konkan region. Our foundation is the 'Khagol Abhyas Kendra' at R. P. Gogate College, active since 2005. For two decades, the Kendra has conducted Marathi-language public outreach, including school workshops, telescope handling, and a certificate course. We expanded by forming a public-academic partnership with the municipal 'Shri Balasaheb Thackeray Tarangan' (Planetarium), where our center provides scientific expertise and volunteers for public observation programs. This work enabled our college to host the 12th State-level Khagol Abhyasak Sammelan (State Astronomy Study Conference) in April 2023, the first in the Konkan region, networking locals with experts from institutions like IUCAA and GMRT. As direct validation, ISRO selected R. P. Gogate College as a Registered Space Tutorön April 28, 2023. Our latest initiative translates science communication into employment. In collaboration with - MTDC, we launched a 30-hour Ästro-tourism Certificate Course. This program trains local participants as skilled 'Astro-Guides', equipping them with telescope, astrophotography, and communication skills to create new livelihoods. This paper details multi-pillar model, demonstrating a replicable framework that leverages astronomy communication for public education and regional socio-economic development.

Engaging Students with Astronomy through Hands-on Activities and Science Projects

Aravindaraja D

Directorate of School Education, Puducherry

Theme: Astronomy in school education

This presentation showcases the impact of engaging students with astronomy through hands-on activities and science projects in government schools in Puducherry, India. Students have explored astronomy through interactive learning, participating in competitions and achieving prizes and recognition from organizations like the International Astronomical Union (IAU). During the COVID-19 pandemic, online astronomy programs ensured continued learning. Trainings by various science organizations enabled organization of events like the Transit of Venus, solar eclipses, and lunar eclipses for students and public across Puducherry and other Indian states. Keywords: Astronomy education, Hands-on learning, Science projects, Government schools, Astronomy outreach, Critical thinking, Community engagement, Online learning, Astronomy events. The initiative enhanced students' understanding of astronomy, developed critical thinking, problem-solving, and communication skills, and inspired a new generation of astronomy enthusiasts. The presentation highlights successes and challenges of astronomy outreach in government schools, demonstrating the power of hands-on learning and community engagement. It shares best practices, lessons learned, and future plans for sustaining astronomy education and outreach. Students gained a deeper appreciation for the universe and developed a sense of wonder and curiosity. The presentation aims to inspire educators and astronomy enthusiasts to replicate and scale up similar initiatives, promoting astronomy education and outreach worldwide.

Communicating the Whispers of the Universe

Saurabh Salunkhe

Inter-University Centre For Astronomy and Astrophysics

Theme: Institutional astronomy communication

LIGO-India, the upcoming mega-science project in India, has been at the center of attention among all the emerging astrophysics projects in the country. Being at the core of these initiatives, it also attracts curiosity, opportunities, and misinformation. The complex concepts of relativity, gravitational waves, and the engineering marvels of LIGO detectors need to be effectively communicated to the general public. We address this challenge using different strategies targeted at diverse groups. From engaging demonstrations to technology-rich workshops, we employ various methods to achieve our goal of communicating the science of gravitational waves

and the vision of LIGO-India. In this talk at the symposium, we will present how we connect different groups through Art and Astronomy, rural science education programs, and workshops introducing gravitational waves, LIGO, and engineering concepts to talented undergraduate and postgraduate students.

Print vs. Digital: Analyzing the Chekhumuki Model for Astronomy Outreach in Rural and Urban India

Priya Shah Hasan

Maulana Azad National Urdu University, Hyderabad, India

Theme: Astronomy in school education

This presentation describes a sustained, multi-modal outreach project designed to bring astronomy to underserved students in rural India, where the school curriculum offers little on the subject and digital access is often limited. For over four years, we have published Ćhekhumuki,ä monthly newsletter in the local language, serving as a core, low-tech resource that features news, explanatory articles, and hands-on activities. This print-based foundation is augmented by educational videos, an online blog, and annual in-person sessions with demonstrations. A key innovation is our Äsk Me Anythingservice, which fosters continuous interaction via WhatsApp and phone. We will share our successful hybrid model, practical and analogy-based teaching techniques, and the significant impact evidenced by high student engagement. This work compares digital and print media and best practices in science communication in resource-constrained environments.

The scope of SCOPE: IIA's bridge to the public

Vikranth Pulamathi

Indian Institute of Astrophysics

Renjithmon A A, Sanjana Anand, Amith Gowtham, Shashwath Gupta, Snehalata K, Vishaak K B, Harikrishnan Menon, Bhakti Mithagri, Niruj Mohan Ramanujam, Srishti Sharma, and IIA SCOPE Team

All at IIA formerly at IIA

Theme: Institutional astronomy communication

With the transition from an Outreach Committee to a full-fledged SCOPE Section with dedicated staff, the scope and scale of the public engagement of the Indian Institute of Astrophysics vastly expanded in recent years. The Section has been able to organise not just a large number of public talks and events, but also engage in longer-term programs as well as large campaigns.

These include collaborations with government departments, information campaigns, creation of multi-lingual resource materials and a campaign to counter pseudo-science, special programs for school students, teacher training workshops and outreach conferences, promotion of astro-tourism via HDSR, visits of students and public to our campuses, facilitation of astronomy clubs, open days and exhibitions, rural outreach around our observatories, formation of unique collaborations and networks, media interactions, showcasing IIA's research, etc. This talk will discuss the major objectives and methodologies of SCOPE, highlight some of the activities listed above, and their impact. It will also describe some of the challenges and strengths of IIA's institutional outreach program, and some future strategies.

From Cosmos to Climate Action: Connecting Astronomy to Environmental Stewardship

Vidhya Ramamoorthy

Naavi

Theme: Astronomy in school education

The talk will be about how astronomy can serve as a bridge connecting classroom curriculum both in science and math, sustainability and heritage encouraging scientific temperament and critical reasoning. I am planning to share my experience in conducting STEM workshops which are a unique blend of astronomy, computing, classroom curriculum, sustainability and Indian astronomy. I connect classroom curriculum concepts such as Light, Sound to astronomy through hands-on activities. While we do hands-on experiments on Light properties such as reflection, students also study the albedo effect and its connection to climate. In our lunar eclipse sessions, we covered the concepts of refraction, mythological and historical stories, how the same refraction concept is used to light up slum homes in Philippines, how ancient astronomers were able to predict the distance between the moon and the earth and the moon's diameter through simple mathematical calculations. While talking about moon phases, we touch upon how is it mentioned in local language such as amavasya, ashtami which would help in addressing false beliefs and addressing pseudo science. By connecting their curriculum through the cosmos to their daily lives, students are encouraged to understand the interconnectedness of the universe and be environmental stewards to protect earth.

Session 8 : Parallel Talks

OMG : One Million Galaxies - A citizen science project to classify galaxies based on morphology

Atharva Pathak
IUCAA & PKC
Sudhanshu Barway, Ajit Kembhavi, Ashish Mahabal, Disha Sawant
PKC, IIA, IUCAA, CalTech, PKC
Theme: Using digital tools and AI for communicating astronomy

The One Million Galaxies-OMG project, launched by the Pune Knowledge Cluster (PKC) and IUCAA, aims to involve citizens to overcome the difficulty of examining the vast amounts of galaxy data collected by astronomers. We launched an interactive online platform for citizen science astronomy projects, of which OMG is the first of many more. A pilot program has been developed and tested with the help of amateur astronomers, college students, homemakers, senior citizens etc. We use galaxy images observed by the Subaru-HSC survey and intend to classify them using citizens as resources. Each galaxy may have several features, like a spiral, dust lane, bar, etc. We include citizens along with experts in the field to classify features in a galaxy. We plan to develop a complete artificial intelligence model, an ensemble of image-based classification and classification based on statistical regression. The image-based classifier would be trained to detect the existence and placement of features in the central galaxy of the image, whereas the condition-based modelling aspect would be trained via the statistical confidence values of answers received from the citizens. The project would serve two goals: spreading knowledge and awareness among amateur astronomers and building a full-fledged catalogue for scientific purposes.

Communicating Science in Vernacular at Planetaria

Guruprasad B R
Jawaharlal Nehru Planetarium
Theme: Astronomy communication in regional languages: strengths and challenges

Communicating Astronomy and Spaceflight is a formidable challenge indeed to those who use vernacular languages as the medium of communication in India. This is especially true for planetaria-based science communicators. Generally, the challenges faced by planetaria in this regard include modest educational background and the comprehensive capability of vernacular

audience, sensationalisation by print/audiovisual media and confusion arising from literal translation of technical terms to the vernacular. Besides, total lack of editorial control on information presentation in the vernacular social media leading to misinformation and misapprehension are the other factors that complicate the task of communicating science in the vernacular Planetaria staff. Thus, additional precautions/effort are essential for such science communicators in general and planetaria science communicators in particular. This includes usage of very lucid language, more conspicuous illustrations/animations and careful translation supported by short explanations whenever necessary and relating the discussed points on the subject to day-to-day life experience. This paper deliberates on the rich experience of the author in science popularisation,especially in subjects related to space and astronomy in Kannada during the past four and a half decades both in Kannada and English.

VASCSC's Initiatives in Digital Resources for Astronomy Learning

Masoom Jethwa

Astronomy Lab, Vikram A. Sarabhai Community Science Centre (VASCSC), Ahmedabad

Theme: Using digital tools and AI for communicating astronomy

Established in 1966 by Dr. Vikram Sarabhai, VASCSC has led India's practical science movement for decades now, influencing more than 10,000 students annually with creative initiatives in STEM and Astronomy. The Python & Digital Tools for Astronomy initiative by VASCSC has developed ASTROpython, a five-day workshop utilizing Jupyter that teaches students (Grades 8–12) to analyze real STScI data, create H–R diagrams, and recognize asteroids using NumPy, Pandas, and AstroML—all carried out offline through Conda environment. Since 2023, students finishing the course have indicated an 85% rise in their confidence in STEM. Leveraging this groundwork, VASCSC is planning an AI platform (an offline LLM feedback mechanism for astronomy tests) and OpenNEP Assess (a complimentary open-source resource for competency-oriented assessment aligned with NEP 2020 and DIKSHA). Future initiatives include testing AI–Python modules in rural schools, impacting 1,000 rural students by 2027 via a partnership with POEC–NCERT, and seeking initial funding for outreach and educator training. In this talk, the deployment strategy, challenges and technology will be discussed in detail.

Communicating the Cosmos in Assamese: Navigating Strengths and Challenges in Regional Astronomy Outreach

Kamal Kumar Tanti

Mahapurusha Srimanta Sankaradeva Viswavidyalaya (MSSV), Nagaon, Assam, India. PIN 782001.

Theme: Astronomy communication in regional languages: strengths and challenges

This abstract addresses the critical themes and perspectives of astronomy communication in regional languages, focusing specifically on Assamese language. Effective science communication is paramount for fostering scientific temper, and in a linguistically diverse nation like India, regional languages offer invaluable avenues for widespread engagement. This presentation will explore unique strengths and inherent challenges of disseminating astronomical knowledge through Assamese language, drawing on practical experiences and observations. Strengths include immediate cultural resonance and accessibility provided by native language content, enabling deeper understanding and personal connection for a significant segment of the population. Assamese offers a rich tradition of storytelling and indigenous knowledge systems that can be creatively integrated to make complex astronomical concepts relatable. However, significant challenges persist, such as the paucity of specialized astronomical vocabulary in Assamese, limited availability of high-quality translated educational materials, and scarcity of trained science communicators proficient in both astronomy and regional language pedagogy. This talk will propose actionable strategies to overcome these hurdles, including collaborative initiatives for terminology development, creating open-source Assamese astronomy resources, and establishing training programs for regional language communicators. The ultimate goal is to enhance inclusive and equitable astronomy outreach, ensuring the wonders of the universe are accessible to every Assamese speaker.

Astronomy for Beginners: Designing Bite-Sized YouTube Lectures for Conceptual Learning

Akshat Singhal

Homi Bhabha Centre for Science Education, Mumbai

Durgesh Gaikwad, Pritesh Ranadive, Sai Shetye, Aniket Sule

All at HBCSE

Theme: Using digital tools and AI for communicating astronomy

Astronomy for Beginners is an initiative by HBCSE-TIFR and IAU-OAE Center India to create a structured series of short, 8-12 minute video lectures on fundamental topics in astronomy. Designed and presented by astronomers and educators, the series aims to make core concepts accessible to high-school students, teachers, and early undergraduates through clear explanations and visual illustrations. Each video focuses on a single theme, and together they span a broad range of areas within observational and positional astronomy. The content introduces

essential ideas, such as celestial motion, timekeeping, and the nature of telescopes and stars, in a manner that encourages intuitive understanding rather than memorisation. The approach emphasises continuity across topics, so learners can gradually build a connected picture of astronomical reasoning. The initiative grew out of a need to provide reliable, open educational material supporting both self-learning and classroom use. In a context where formal exposure to astronomy is limited, such concise and concept-driven explanations help bridge the gap between curiosity and comprehension. Preliminary informal feedback from teachers, students, outreach participants, and leaders from international Olympiad suggests that the series helps learners engage more deeply and think more scientifically about everyday celestial phenomena.

Regional language as a tool for astronomy outreach: Experiences from Kannada science communication

Pavan Gramapurohit

Indian Institute of Astrophysics

Theme: Astronomy communication in regional languages: strengths and challenges

Mathematics and science are often considered difficult subjects to understand, partly because they are written in English and employ abstract technical terms. To break this barrier and make science concepts more accessible, we attempted to popularize science through the medium of Kannada. The narratives included storytelling, music, and theatre, bringing physics, astronomy, and astrophysics closer to the rural people. Our collective efforts involve writing and translating popular science articles, essays, and books, composing science-themed songs and plays, and organizing performances in schools and community gatherings. We employed a range of creative methods to promote scientific thinking and explain concepts such as the phases of the Moon, Earth's seasons, and Eclipses. These methods proved particularly effective for observing astronomical events, such as Zero Shadow Day and eclipses. Short articles in both English and Kannada were easy to follow, featuring cartoons and using local dialectal words. When villagers and school children perform science dramas, it transforms the subject into a hands-on experience. This approach enables children, youth, and elders to engage with scientific concepts while enjoying the learning process. Our experience shows that communicating science in regional languages, when combined with art and creativity, can effectively make science accessible to everyone.

Live Discovery in the Dome: Using ZARTH for Real-Time Astronomy Outreach

Ashish Mahabal

Caltech. Caltech. IIT Mumbai
Varun Bhalerao; Mansi Kasliwal
IIT Mumbai, California Institute Of Technology
Theme: Public outreach at planetaria, and innovations in planetarium shows

With ever-increasing survey data, the challenge for public engagement is not just *what* to show, but *how* to bring fresh, genuine discovery into the planetarium environment. ZARTH was developed to engage users with a curated set of transients. We propose to adapt ZARTH for ingestion of alerts from AstroSat, ZTF, Rubin, Roman etc., and project them into planetarium shows—with minimum operator intervention and maximum audience participation. **What exists**: A working 'Pokemon GO'-style outreach game with nightly selection of transients. **Low-hanging fruit**: Planetaria offering Latest in the skyšegments with minimal human-expert overhead by generating automated visualization cues. **Outreach Benefits**: This approach brings real discovery into the public space, offers audience participation, and supports multilingual, inclusive formats, linking planetaria to survey science. With modest investment in automation this can become a comprehensive platform: multiple data streams (exoplanets, asteroids, supernovae), regional-language engagement, teacher/student modules, and citizen-science. With more resources, the system could integrate live alerts, interactive mobile apps, data-driven dashboards, and regional hubs, forming a scalable infrastructure for astronomy communication in India. Here we outline the architecture, a pilot plan, planetarium workflow, and the outreach roadmap—inviting collaboration from planetaria, educators and communicators. This project aligns directly with multiple symposium themes.

Experiences of Communicating Astronomy in Regional Languages and Non-Urban India

Snehith AM
Bangalore Astronomical Society
Pramodh S.
Bangalore Astronomical Society
Theme: Astronomy communication in regional languages: strengths and challenges

Astronomy is a universal science, yet much of its communication in India remains confined to English and urban audiences. This presentation shares on-the-ground experiences from our outreach initiatives conducted in regional language across non-urban regions of Karnataka. The session explores how local languages and cultural narratives can transform astronomy outreach into a more inclusive and engaging experience. The presentation will showcase examples of translated learning materials, community sky-gazing sessions, and the use of folk storytelling

traditions to explain celestial events. It will also discuss the practical challenges of language diversity, resource limitations, and training local educators. By highlighting both successes and lessons learned, this talk aims to inspire collaborative, locally rooted approaches to science communication that make Astronomy accessible to all — regardless of geography or language. This will typically aim to create more curiosity among children to learn science.

Session 9 : Parallel Talks

The Challenges of Teaching Astrobiology: Navigating Enthusiasm, Ethics and Evidence

Pallavi Kajrekar
Independent astronomy educator, UK Centre for Astrobiology, The University of Edinburgh

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

”The prospect of extraterrestrial life captivates curious young students and the rapt general public alike. A child’s first question in any astronomy class is invariably ””are there aliens?”” While this curiosity provides an excellent teaching opportunity, it carries significant responsibility. Astrobiology’s history is marked by sensationalised misinformation. From the infamous 1938 ’War of the Worlds’ radio broadcast that sparked panic about Martian invasion, to modern headlines misinterpreting news like ””organic molecules detected in space”” as definitive proof of alien life. These misrepresentations can erode public trust in science and create unrealistic expectations about space exploration. How do we responsibly communicate this essential field? This talk will explore ethical frameworks for teaching astrobiology, emphasising accurate terminology, proper contextualisation of discoveries, and critical evaluation of claims. Drawing from classroom-tested pedagogical approaches, I discuss strategies for helping students & teachers distinguish between evidence-based science and speculation, understand the rigorous methodology behind biosignature research, and spotting fake news. The goal is twofold: to promote scientific literacy about what astrobiology actually entails and to equip learners with tools for independently evaluating astrobiology claims. By fostering this critical thinking, we can harness natural curiosity about life beyond earth while building public understanding of authentic astrobiological research.”

Teaching the shape of earth and day/night cycle at upper primary level: A ’Knowledge rich’ approach to curriculum using history of science.

Venkateswaran Thathamangalam viswanathan
Indian Institute of Science Education and Research, Mohali

Theme: Astronomy in school education

”Abstract: Using the history of the evidences, arguments, theoretical frameworks and objections made by classical Indian astronomers, a ’knowledge rich’ curricular approach to teach the shape of earth and its diurnal motion in the upper primary level is suggested. The curricular approach called ’Knowledge rich’ curriculum takes the academic knowledge to be the vital purpose of schooling; second, to promote the equitable access of academic knowledge to all social groups;

third, to develop public reason skills imperative for socialisation into modern pluralist societies. This approach integrates concepts, content and competencies in a coherent way, thereby avoiding several tendencies such as 'skills' versus 'concepts' bifurcation; an over-emphasis on fragmented content without conceptual integration; and a similar over-emphasis on pedagogy (the 'how') at the expense of what is taught."

Dispelling the shadow of superstition during the 2025 Total Lunar Eclipse - a campaign led by IIA.

Prasanna Deshmukh

Indian Institute of Astrophysics

Niruj Mohan Ramanujam, Vikranth Pulamathi, Amoghavarsha N, Yashaswini K S, and IIA SCOPE Team

All at IIA

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

"Eclipses have been important occasions for science communicators in India to talk about science and dispel widespread superstitions and pseudo-science for many decades. In this talk, we will highlight how the total lunar eclipse of 7 September 2025 was used effectively by IIA for this purpose through a concerted mass campaign. IIA spearheaded the formation of two collaborative Platforms in Karnataka and Tamil Nadu, which coordinated the efforts of a large number of organisations and individuals. It produced infographics in English, Kannada, and Tamil which were used nationally. Training workshops were organised at our Observatories for science communicators in Tamil, and for rural librarians in Karnataka. 50,000 posters were printed in Tamil, which were pasted in schools and public places. Information was sent to every school in Tamil Nadu through the government. Kannada and English poster sets were distributed to schools in Bengaluru and Mysuru, along with the dissemination of over 7500 stickers in over 20 schools that we visited and gave talks at. Joint press conferences were organised in Bengaluru and Chennai. The eclipse itself was livestreamed from five of our campuses nationally and internationally. The impact of this work, especially in countering superstitions, will be discussed."

Science to Sustainability: Empowering Lives Through Space Science and Astronomy

Sachin Bahmba

Space Foundation

Theme: Astronomy in school education

"[iPoster Link][1] **This abstract highlights the transformative efforts initiated in India since 2001 to popularize science and astronomy education**, particularly targeting young learners. Recognizing the dearth of educational resources in schools, the initiative led by SPACE aimed to bridge these gaps, resulting in the development of over 300+ indigenous astronomy-based educational aids and DIY STEM learning kits. SPACE's pioneering work includes integrating astronomy education into the school curriculum, fostering citizen science projects, and enabling student-led asteroid discoveries. Moreover, the establishment of India's first Astronomy and Space Education Labs - Khagolshala, along with the engineering of a cutting-edge Astronomical Observatory for Schools, underscored a commitment to fostering exploration and research. This vision not only underscores the significance of astronomy education in Sustainable Development but also aligns closely with several Sustainable Development Goals (SDGs), notably SDG 4 (Quality Education). By engaging thousands of students annually and nurturing their interest in STEM subjects, these efforts contribute significantly to fostering a generation equipped with the skills and passion for scientific inquiry and innovation. Website: [www.space-global.com][2] Social: [instagram.com/space_india][3] [1]: https://aas244-aas.ipostersessions.com/default.aspx?s=A1-6C-D0-DD-77-30-FB-60-FF-7D-11-C0-92-93-6B-1B [2]: http://www.space-global.com [3]: http://instagram.com/space_india"

Birthing' a science story

Anjali Marar

Anjali Marar, The Indian Express

Theme: Science and astronomy journalism

"Journalists are mothers. We give birth to stories everyday, literally. The gestation period of a news story can be anywhere between a few minutes, few hours and seldom, a few days. We are also hunter gatherers and marketing professionals. Just like our ancestors, here we hunt 'story subjects' and gather 'material' to tell a good story. At the ASI Symposium 006, I propose a brief walk-through talk wherein the audience will be informed how journalists identify a subject to narrate a story ; do a basic, quick yet effective research ; wear our 'marketing' hats on to pitch the story idea to editors; if successful, then go on live the gestation period till the story is "delivered". And, start all over again. The talk will also touch upon successful and unsuccessful story pitches, the challenges of science journalism in India and highlight the role of institutions / scientists in joining the bandwagon of informing the mass on the latest strides across the field of sciences. / Matter ends"

Reaching for the Sky: A Multi-Lingual and Multi-Tiered Approach to School Astronomy Outreach

Durva Sonawane
Fergusson College(Autonomous)
Prathamesh Shirke, Raka Dabhade
Fergusson College (Autonomous)
Theme: Astronomy in school education

”he Astronomy Outreach in Schools initiative, conducted by the Astro Club, Fergusson College, Pune, was designed with the primary objective of fostering scientific curiosity and interest in astronomy among school students. The initiative targeted three categories of schools — low-income Zilla Parishad schools, government-aided mid-range schools and established private schools— thereby ensuring inclusivity and diversity in outreach. The methodology adopted emphasized interactive, adaptable and language-sensitive learning in Marathi, Hindi, and English — accordingly our students prepared presentations to ensure effective communication. Teaching aids like 3D models previously developed for the college’s science exhibition, were employed to enhance conceptual understanding. In several schools, teachers and headmasters actively participated, transforming the outreach sessions into collaborative learning environments. The outcomes demonstrated significant educational and attitudinal impact. Teachers, many of whom had limited prior exposure to astronomy, gained pedagogical insights and expressed enthusiasm for incorporating such topics into regular teaching. It was also noticed that sstudents from private institutions tended to ask conceptually analytical questions, while those from Zilla Parishad schools displayed profound excitement and curiosity. Government-aided schools exhibited a balanced mix of both. The initiative also contributed to the personal and professional growth of volunteers by improving their communication, teamwork, and leadership skills.

The Beyonder’s Newsletter: A case study of Astronomy and Space journalism

Sibsankar Palit
LIFE-To & Beyond Foundation, India.
Swathipriya D.G., Darshan Deshpande, Subhajit Hazra
LIFE-To & Beyond Foundation
Theme: Science and astronomy journalism

”Astronomy education inspires us to explore the universe, yet awareness about reliable learning resources and opportunities remains limited. That’s where the Beyonder’s Newsletter comes in handy. Initiated by the LIFE-To & Beyond Foundation®, under The Beyonder’s Initiative, this

newsletter bridges that gap by offering carefully curated, peer-reviewed content every month, featuring blogs, stories, videos, and updates on cutting-edge developments in astronomy and space. Each issue highlights educational and career opportunities, key celestial events, rocket or payload launches, ongoing scientific projects, alongside busting astronomy or space-related myths or misconceptions. It also fosters community engagement by celebrating individuals and organisations contributing to STEAM related to space. A highlight of every issue is the ""Beyonder of the Month"" feature showcasing inspiring journeys of space professionals and changemakers. Subscribers receive summaries of the foundation's latest activities and opportunities, maintaining a dynamic link between the outreach community and ongoing developments in the space ecosystem. Since its inception two years ago, The Beyonder's Newsletter has published over 25 issues on LinkedIn, attracting 1,700+ active subscribers and consistent reader feedback. The newsletter ensures inclusivity and accessibility through open-access jargon-free content, contributions from diverse backgrounds, featuring the stalwarts and emerging minds and making astronomy more relevant to all."

Exploring Moon Phases through Roleplay: Insights from Vigyan Pratibha Classrooms

Mukul Mhaskey
Homi Bhabha Centre for Science Education (HBCSE-TIFR)
Aniket Sule, Pritesh Ranadive
Homi Bhabha Centre for Science Education
Theme: Astronomy in school education

The Moon and Its Phases' is a learning unit developed under the Vigyan Pratibha (VP)(1) program that engages students in understanding the origin of lunar phases through inquiry and roleplay. Inspired by the activity booklet ""Basics of Astronomy through Role Play"" (Venkateshwaran & Gupta 2009), this unit moves beyond conventional diagram-based explanations by enabling learners to physically enact the Sun-Earth-Moon system. The embodied experience helps overcome common misconceptions, particularly the belief that phases arise from Earth's shadow by foregrounding the role of relative positions and illumination. The activity combines roleplay with data-based reasoning: students first model the changing geometry of the system, and then analyse real or recorded observations of the Moon's appearance, rising and setting times, and daylight visibility. Classroom implementations across VP network schools and teacher training camps indicate that the performative approach promotes active participation, collaboration, and conceptual reasoning. Observations from these sessions suggest that

roleplay and data interpretation help learners connect everyday sky observations with underlying astronomical ideas. We will discuss pedagogical insights from the learning unit, classroom insights and teacher experiences, highlighting how embodied modelling and real-sky data foster inquiry-based understanding of astronomical phenomena. (1) https://vigyanpratibha.in/”

SCAI26
SYMPOSIUM FOR COMMUNICATING ASTRONOMY IN INDIA
ASI SYMPOSIUM 006

ORAL PRESENTATIONS

Day 3

24 January 2026

Session 12 : Plenary Talks

Audio Overviews in NotebookLM as a tool for making Multi-Lingual Podcasts: Enabling astronomy outreach in regional languages

Yogesh Wadadekar
NCRA-TIFR, Pune

Theme: Using digital tools and AI for communicating astronomy

With the increasing importance of public engagement in astronomy, there is a compelling need to communicate research findings from Indian institutions in regional languages, using modern digital tools. In this contribution, I present a workflow that combines the capabilities of NotebookLM—an AI-enabled notebook environment—with audio generation and podcast production techniques to create accessible astronomy-outreach audio content in Indian languages. We illustrate how a researcher can upload research papers into NotebookLM, generate concise audio overviews, and then adapt these to generate podcasts in most of the widely spoken languages of India. The workflow enables institutions across India to engage their local communities and schools via these audio media. We also address practical considerations: output formatting for mobile listening and distribution strategies via streaming platforms or institutional websites. By sharing the first case-studies from NCRA, we highlight both the promise and limitations: how AI tools can accelerate production, but require careful human editing to maintain scientific accuracy. We conclude with some guidelines for institutional adoption and recommended best practices.

Breaking the Chain of Misconceptions: Impact of Teacher Training Workshops on Astronomy Understanding

Moupiya Maji
Formerly at IUCAA, Pune

Theme: Using digital tools and AI for communicating astronomy

Teachers are among the most influential astronomy communicators for students. However, in the absence of formal training in astronomy, many hold persistent misconceptions that can silently propagate through generations of learners. Addressing these gaps at the source is essential for improving astronomy literacy.

The Office of Astronomy for Education (OAE) Center India organized two Teacher Training Programs in 2024, at Pune and Calicut, for school teachers of grades 5–10. Each two-day

workshop combined lectures, discussions, demonstrations, and a night-sky session designed to revisit fundamental astronomy concepts.

Pre- and post-workshop surveys revealed significant conceptual gains. Understanding of the cause of seasons rose from 13.7

These results demonstrate that short, well-designed training programs can substantially improve conceptual understanding and build teachers' confidence as astronomy communicators, which will amplify accurate scientific thinking across classrooms."

Reimagining Astronomy Education with the Spacetopia Learning Ecosystem

Mila Mitra

STEM & Space

Co-authors: Gautam Agawari Theme: Teacher training and student engagement in schools

Children learn best when they explore and investigate—and astronomy naturally encourages such learning. As an exciting gateway to STEM, astronomy integrates multiple disciplines and sparks universal curiosity. Through visuals, challenges and art, it transforms wonder into discovery. In today's digital age, engaging young minds demands creativity, interactivity, and technology—tools that make astronomy an immersive path to STEM learning.

This belief forms the foundation of **Spacetopia**, a digital learning ecosystem that reimagines how space and astronomy are taught and experienced in schools and learning centres.

Spacetopia for Kids turns space exploration into an experiential adventure for children, through webinars, DIY activities, videos and comics— matching diverse learning styles and rewarding curiosity.

Spacetopia for Educators empowers teachers with ready-to-use, grade-wise content, hands-on STEM challenges, and engaging lesson plans— helping them inspire without being subject experts.

An Astronomy Teachers' Workshop held in November 2024 at ARIES Observatory, jointly organised by ARIES and STEM & Space with support from the Office of Astronomy Education (OAE), India, showcased this platform along with expert-led sessions and observing experience. The Spacetopia platform will be discussed and demonstrated. Our vision is to build a global community of space educators and learners—making astronomy education inclusive and inspiring.

Session 13 : Parallel Talks

Bringing the Universe Closer: A Journey of Inspiring Curiosity in Villages and Tribal Regions through Astronomy Outreach

Abhishek A S

Gravity Science Foundation, Chamarajanagar, Karnataka

Theme: Amateur astronomers and organisations, and public engagement

Astronomy serves as a gateway to inspire curiosity and scientific thinking among young learners and also has the power to spark curiosity and connect people with the wonders of the universe. However, access to astronomy education and opportunities for direct engagement remains limited in rural and tribal regions due to lack of resources and exposure. This presentation highlights a series of astronomy outreach activities conducted across rural and tribal schools in Chamarajanagara & Mysore region Karnataka State. The program included night-sky observation sessions, interactive talks, space science concepts, low-cost model demonstrations, and storytelling in local languages to connect cosmic phenomena with indigenous knowledge. Thousands of students, teachers and the general public participated, showing significant improvement in interest and understanding of basic astronomical concepts. The initiative not only promoted scientific literacy but also encouraged community participation, bridging the gap between traditional wisdom and modern science. These programs were designed not only for students but also for the general public, encouraging families and local communities to participate together. The response was overwhelmingly positive and participants expressed excitement, curiosity, and a renewed interest in science.This initiative demonstrates how inclusive, community-based astronomy outreach can foster scientific awareness and inspire future learners in underrepresented regions.

Bridging Science and Society: Astronomy Education through Theatre.

Shubha BS

Indian Institute Of Astrophysics

Manjunatha Hegde, Pavan Grama Purohit

Indian Institute Of Astrophysics

Theme: Teacher training and student engagement in schools

Art has always served as a bridge between knowledge and people. Since ancient times, poetry, drama, and dance have been powerful mediums for education and communication. Among these, theatre has played an influential role in bringing scientific ideas closer to the public.

This practice, was used as a tool to popularize and simplify complex astronomical concepts for general audiences. As part of an RDPR workshop, under COSMOS project held in Mysore, we presented a drama for librarians from rural parts of Karnataka. The play vividly demonstrated key astronomical phenomena such as the summer and winter solstices, seasonal changes, lunar phases, Earth's rotation, and revolution around the Sun. Performed in regional languages and enriched with local dialects and cultural expressions, the drama effectively engaged the audience and made abstract ideas accessible and relatable. The response was overwhelmingly positive. Inspired by the performance, participants later organized their own plays and interactive sessions on events like Zero Shadow Day, sparking curiosity and enthusiasm among children in their communities. Such initiatives reinforce scientific understanding and help dispel prevalent myths and misconceptions about astronomy. This highlights the potential of theatre as a culturally resonant medium like a workshop to foster awareness and promote astronomy education.

Astronomy communication for diverse communities

Syed Najamul Hasan
Maulana Azad National Urdu University, Hyderabad

Theme: Inclusive, equitable, and ethical practices

Astronomy communication is a multi-faceted challenge, requiring tailored methods to connect diverse audiences—from the public to post-graduate researchers—with complex scientific concepts. This presentation synthesizes core principles derived from 25 years of experience across the entire educational spectrum. We will analyze and contrast communication strategies for high-impact public engagement, competitive Olympiad training, and advanced academic mentorship. The central thesis is that transcending linguistic and conceptual divides demands more than factual translation; it requires an empathetic, bridge-building process that is both a science and an art. Authors*

Exploring Moon Phases through Roleplay: Insights from Vigyan Pratibha Classrooms

Mukul Mhaskey
Homi Bhabha Centre for Science Education (HBCSE-TIFR)
Aniket Sule, Pritesh Ranadive
HBCSE-TIFR

Theme: Astronomy in school education

The Moon and Its Phases' is a learning unit developed under the Vigyan Pratibha (VP)(1) program that engages students in understanding the origin of lunar phases through inquiry and

roleplay. Inspired by the activity booklet Basics of Astronomy through Role Play (Venkateshwaran & Gupta 2009), this unit moves beyond conventional diagram-based explanations by enabling learners to physically enact the Sun-Earth-Moon system. The embodied experience helps overcome common misconceptions, particularly the belief that phases arise from Earth's shadow by foregrounding the role of relative positions and illumination. The activity combines roleplay with data-based reasoning: students first model the changing geometry of the system, and then analyse real or recorded observations of the Moon's appearance, rising and setting times, and daylight visibility. Classroom implementations across VP network schools and teacher training camps indicate that the performative approach promotes active participation, collaboration, and conceptual reasoning. Observations from these sessions suggest that roleplay and data interpretation help learners connect everyday sky observations with underlying astronomical ideas. We will discuss pedagogical insights from the learning unit, classroom insights and teacher experiences, highlighting how embodied modelling and real-sky data foster inquiry-based understanding of astronomical phenomena. (1) https://vigyanpratibha.in/

Promoting Women-led Astropreneurship: Perspectives from the C-STERC Women AstroPreneurs' Collective (CWAPC)

Anupama Pradeepan

C-STERC Techno Science, Coimbatore

Theme: Inclusive, equitable, and ethical practices

The C-STERC Women Astropreneurs' Collective (CWAPC), supported by the International Astronomical Union's Office of Astronomy for Development (IAU-OAD), links astronomy education with women's leadership, livelihoods, and social inclusion. Anchored at C-STERC, Coimbatore, the project demonstrates how astronomy can evolve into a platform for women's technical empowerment and entrepreneurship. Through a structured year-long programme, 20 first-generation women graduates were trained in telescope construction, mirror grinding, optics, machinery handling, and educational kit development, complemented by modules on leadership, marketing, and e-commerce. A robust outcome-based framework guided implementation, including competency surveys, skill evaluations, and employment tracking. Preliminary data show 80% of participants reported a two-point confidence gain in technical and leadership skills, with several progressing toward income generation and enterprise creation. CWAPC advances both gender inclusion and economic resilience by enabling women to enter traditionally male-dominated STEM and manufacturing spaces while creating a local market for affordable,

high-quality astronomy products. Beyond training, the project established an astropreneurship ecosystem, integrating policy dialogue, dark-sky awareness, and sustainable astro-tourism practices. The paper will outline CWAPC's pedagogical design, measurable outcomes, and policy relevance, and propose pathways for national replication linking IAU, C-STERC, and local educational institutions.

GMRT Online National Science Project Competition & Exhibition

Nilesh Chhadawelkar

Indian Institute of Knowledge

Theme: Teacher training and student engagement in schools

The Indian Institute of Knowledge (IIK), Pune, under its innovative education initiative Growing Dots, proudly collaborates with GMRT–NCRA–TIFR to organize the GMRT Online National Science Project Competition & Exhibition, successfully running for the past five years. The initiative began during the pandemic to keep students connected with science through a digital platform. It follows a fully online process—from registration to expert evaluation—with a unique feature of public viewing and feedback that increases engagement among students and the community, making it one of India's most interactive science learning experiences. Hosted through the Growing Dots mobile app, the exhibition welcomes participants from Grades 5 to 12, Higher Education, and Teachers across India. Last year, over 900 projects were showcased, including international student entries, breaking geographical and time barriers. Unlike traditional exhibitions limited by physical presence, this online platform allows anyone to view projects anytime, anywhere, fostering continuous participation and science awareness. Each year, the exhibition receives over 80,000 views, and this number continues to grow. This initiative encourages hands-on learning, creativity, and scientific curiosity while motivating students to address real-world challenges—reflecting the shared mission of providing every learner with equal access to quality science education.

Rural Libraries as astronomy centres - IIA's experiment with 5888 Arivu Kendras

Yashaswini K S

Indian Institute of Astrophysics

Amoghavarsha N, Niruj Mohan Ramanujam, Vikranth Pulamathi, Pavan Gramapurohit, Shylaja B S, Seetha S, Sanjana Anand

IIA, IIA, IIA, IIA, JNP, RRI, VITM/IIA

Theme: Inclusive, equitable, and ethical practices

Promoting science literacy in rural India in regional languages remains a challenge for inclusive science communication. In a unique venture, IIA is partnering with the Rural Development and Panchayat Raj Department of the Government of Karnataka to promote astronomy in rural Karnataka through their 5880 Arivu Kendras, which are community learning hubs. Utilising darker rural skies and working solely in Kannada, we engage with the network of Library Supervisors, and train them as astronomy knowledge facilitators. This includes online talks broadcast to all libraries, regional hands-on training workshops (e.g. Zero Shadow Day and the total lunar eclipse), short videos, voice messages, and infographics on upcoming naked eye events, activity sheets through the Oduva Belaku program, and in-person events in some libraries. The impact is already visible, with many libraries organising events for the eclipse, ZSD, etc on their own, questions from the communities about astronomy, hands-on sessions in the library, etc. A vibrant network of trained rural astronomy communicators is also being nurtured. In this talk, we will summarise our methodology and activities, and discuss our plans to substantially expand this engagement in the coming years and demonstrate how language, mentorship, and participation can make astronomy accessible across rural Karnataka.

Integrating Experiential Astronomy and Amateur Radio Communication in School Education: A Multidisciplinary Model for Public Engagement and Scientific Temper

Mahesh M B

Astronomy and Amateur Radio Club, Excel Public School, Mysuru

Theme: Teacher training and student engagement in schools

Astronomy communication in India benefits from experiential, interdisciplinary approaches that encourage students to learn by doing, observe real celestial events, and use authentic scientific tools. This presentation highlights a school-based model at Excel Public School, Mysuru—an ISRO-Recognized Space Tutor institution and home to the licensed Amateur Radio Club VU2TQA—which integrates astronomy education, HAM radio communication, and hands-on engineering to promote scientific temper and public engagement. The programme includes telescope-building internships, DSLR solar imaging, Zero Shadow Day observations, crater-formation experiments, planetary-alignment outreach, and structured night-sky viewing sessions. Students construct refractor and reflector telescopes, create optical components using 3D printing, and develop communication technology skills through HAM radio activities, including SSTV reception from the International Space Station and participation in India's first live ARISS interaction with an Indian astronaut aboard the ISS. These initiatives are supported through collaborations with COSMOS (IIA Mysuru), URSC-ISRO, and the University of Mysore, along

with peer-led outreach for government schools. More than 700 students participate annually, demonstrating a scalable model for experiential astronomy in education. The initiative also counters misinformation through evidence-based demonstrations, such as scientific explanation of planetary alignment events. This multidisciplinary approach nurtures curiosity, confidence, and science communication skills.

Stars Over Hills: Empowering Teachers and Students through Astronomy Outreach in the rural school communities of Uttarakhand

Aasheesh Raturi

Dolphin PG Institute of Biomedical and Natural Sciences (DIBNS) Dehradun

Theme: Teacher training and student engagement in schools

The Stars Over Hills programme is an innovative astronomy outreach and teacher training programme that aims to bring hands-on science and astronomy learning to the remote hilly school communities of Uttarakhand. This initiative led by the PUNARVASU Astronomy Club of DIBNS, it bridges the gap between scientific exposure and geographical isolation by combining hands-on telescope-making, sky observation, and astronomy software training with contextualized classroom pedagogy. In its five-year existence, it has successfully trained over 200 teachers and community members and actively worked with over 300 students through the astronomy centered workshops. It combines indigenous sky knowledge with contemporary observatory technology to promote an inquiry-based, students-centered approach that encourages curiosity, creativity, and self-esteem. Apart from sparking scientific curiosity, the programme now develops the educational action research that explores how the early exposure to astronomy programs can impact the Gross Enrolment Ratio (GER) of fundamental sciences, especially Physics, at the undergraduate level. It highlights the role that astronomy can play as a highly effective tool to trigger teacher empowerment, STEM motivation and inclusive science communication towards India's NEP 2020 dream of holistic and equitable education. Keywords: Astronomy outreach, Teacher training, STEM education, Science communication

IIA COSMOS-Mysuru: How to build a district-wide Astronomy education and outreach program from the ground up.

Amoghavarsha N

Indian Institute of Astrophysics

Shylaja B S, Sumukha Bharadwaj, Yashaswini K S, Punith R, Niruj Mohan Ramanujam, Seetha S

JNP, formerly at IIA, IIA, formerly at IIA, IIA, RRI

Theme: Large scale campaigns and building networks and communities

COSMOS-Mysuru is one of the world's first LED Dome planetaria being built by the Indian Institute of Astrophysics in Mysuru. With relatively low prior astronomy activity in the region, a comprehensive education and outreach program was launched three years ago across the District of Mysuru. Mysuru has a compact yet vibrant urban area surrounded by extensive rural regions, and efforts are underway to establish an effective, long-term, district-wide program centred around a single urban hub - the upcoming planetarium. A novel plan was designed to cater to both urban and rural audiences, and mainly in the Kannada language. We established collaborations, built networks, and facilitated capacity building. Through more than 135 individual events that we organised over three years, we have reached 35,000 participants in diverse communities, including rural school programs, radio broadcasts, public talks, public events and night sky watch, training workshops, academic talks in colleges, etc. In this talk, we will discuss our strategy, summarise our activities, explore their impact, and discuss how our early, grassroots engagement prepares us for the era of the next-generation planetarium to be inaugurated in 2026.

Elevating Amateur Astronomy: Science Projects for Sustained Engagement

Aniruddha Deshpande

Jyotirvidya Parisansth (JVP)

Sagar Gokhale, Deepak Joshee, Atharva Pathak

All at JVP

Theme: Large scale campaigns and building networks and communities

Jyotirvidya Parisanstha (JVP), Pune, India's oldest association of amateur astronomers with 81 years of legacy, has historically focused on popularizing astronomy through star-gazing programs and lectures. However, we've identified a common challenge: interest stagnation after the initial excitement of viewing Moon, planets, and bright clusters with small telescopes. This lack of tangible, ongoing work often leads to a significant loss of enthusiastic members. To combat this, JVP launched a strategic effort to bridge the gap between amateur popularization and professional research. We introduced three key science projects that offer amateur astronomers meaningful opportunities to contribute: (1) Variable Star Observations, (2) Occultation Observations, and (3) Meteor Shower Observations. These activities are highly rewarding, transforming simple star gazing into genuine scientific contribution. Amateurs can submit valuable data to international

organizations like AAVSO, IOTA, and IMO, supporting professional research on stellar evolution, asteroid dynamics, and solar system formation. This talk will explore the methodologies and accessible instrumentation for integrating these next-level projects into any amateur astronomy setting, ensuring long-term engagement and scientific relevance. It will enable fostering collaborations for large-scale campaigns aligned to specific astronomical events or phenomena like eclipses, occultations and transits on a national scale.

Dark Skies and Sustainable Livelihoods: Institutionalising Astro-Tourism through Policy and Capacity Building in the Andaman & Nicobar Islands

Anupama Pradeepan

C-STERC Techno Science and Open Space Foundation

Theme: Using dark and quiet skies, astro-tourism, for public engagement

The Andaman & Nicobar Islands host some of India's most pristine dark skies and quiet zones—an untapped resource for sustainable astro-tourism. Recognising this potential, the Department of Tourism, Andaman & Nicobar Administration, in partnership with C-STERC, launched the Astro Guide Training Programme 2025 as part of its emerging Astro-Tourism Policy Framework. The initiative represents a policy-level effort to integrate astronomy outreach, dark-sky conservation, and livelihood generation within the islands' ecotourism strategy. Piloted across South Andaman and Niel Island, the programme trained 88 participants, including local youth, tour operators, and eco-guides, through a 30-hour modular curriculum covering astronomy fundamentals, observational techniques, responsible lighting, and visitor interpretation. Participants gained hands-on telescope experience and contextual communication skills integrating storytelling and indigenous knowledge. Certified as Astro Guides, graduates are now qualified to deliver astronomy-based tourism experiences. The programme shows promising economic and social outcomes, fostering new local enterprises and encouraging interdepartmental collaboration toward Dark Sky Reserve designation. This presentation examines its policy architecture, training design, and governance framework, highlighting its potential for replication across other eco-sensitive regions and contributing to the creation of a National Astro-Tourism and Dark-Sky Network.

Propagating Scientific Temper Across India: The Outreach Activities of Aryabhat Foundation

Kartikey Dixit

Aryabhat Foundation

Alok Mandavgane, Pranshu Kurel, Akash Verma

Aryabhat Foundation, St. Xaviers College Mumbai, Aryabhat Foundation

Theme: Large scale campaigns and building networks and communities

Aryabhat Foundation actively engage in pan-India astro-campaigns outreach events. Our aim is to propagate astronomical events, awareness and scientific rigor among the masses across India. From Kanyakumari to Hanle, Ladakh, from Tanot Mata temple in the western most India to Siliguri in the east, Aryabhat has conducted public workshops to cover major astronomical events. We annually coordinate with institutes and organizations like Nehru Planetarium in Bangalore, RSC Karwar to conduct the Eratosthenes experiment. We've had over 100 gnomons designed and installed by school students from Mandsaur (Madhya Pradesh) and Bhilwara (Rajasthan) at once to measure the circumference of the earth via Eratosthenes experiment. Organizations and institutes like IITs, IISERs, NITs, Border Security Force, Indo-Tibetan Border Police, Indian Air Force, Govt. of Madhya Pradesh have played host to Aryabhat in organizing astronomy camps at various occasions. Aryabhat is making astronomy accessible to all, not just scientists or urban centres. We aim to transform astronomy into a people's science via a commitment of inclusivity for the masses.

SCAI 26

SYMPOSIUM FOR COMMUNICATING ASTRONOMY IN INDIA

ASI SYMPOSIUM 006

POSTER PRESENTATIONS

The Extended Classrooms: Integrating Astronomy Education through instructional strategies among Secondary Students

Anand Joshi
Smt. M M Mehta English Medium School, Vidyamandir

Theme: Astronomy in school education

India has been the centre of learning since ancient times where Astronomy has been an essential part as far as Indian Education system is concerned. Indian education concentrates on the holistic development of children by keeping them in center. A couple of questions arise when innovative pedagogical methods are applied in the classroom during teaching- learning process, would it be helpful to the students? And as far as Astronomy Education is concerned, which method is preferable? here we aim to answer it. A study was conducted by an investigator among 335 students of Std. 9 and 10 who were of the age group of 14 to 15 years when they were asked to learn "the birth of star and it's whole life cycle" by using three innovative methods that is lecture, singing and drama. After recording their responses, comparative quantitative analysis was performed by an investigator having the positive result where the investigator could find that it would be helpful for the students to understand the chosen topic with high interest that makes the classroom environment alive and found that students do like practical approaches. If given a chance, we would like to broaden our research area.

Integrating Citizen Science and Digital Tools into Astronomy Education: A Classroom-Based Approach

Annal Deva Priya Darshini Chandrasekaran
Madras Christian College, Tambaram, Chennai, India

Theme: Using digital tools and AI for communicating astronomy

Astronomy has transformed into a data-intensive and computational discipline, where vast sky-survey datasets exceed the capacity of traditional analysis. With Artificial Intelligence (AI), Machine Learning (ML), and Virtual Observatories shaping modern workflows, citizen science has emerged as a powerful model for broadening participation in research. This paper examines how citizen science can be integrated into undergraduate astronomy education in India, aligning with SDG 4 (Quality Education) and SDG 17 (Partnerships for the Goals). Using open-access datasets and online platforms, students can engage in authentic scientific inquiry without the need for expensive institutional infrastructure.

A case study from the Department of Mathematics at Madras Christian College illustrates this approach through participation in the International Asteroid Search Collaboration (IASC). Students analysed real astronomical images using astrometric software, gaining hands-on experience in data processing, pattern recognition. The activity fostered interdisciplinary learning, digital competency, and a sense of global scientific collaboration. It demonstrated the educational value, scalability, and zero-cost feasibility of integrating citizen science into the curriculum. The findings highlight citizen science as an effective pathway to enhance engagement, literacy, and research exposure in astronomy education.

UniGrasp: Agentic AI as a Strategic Tool for National Transformative Astronomical Outreach.

Arshi Rastogi

University of Manchester

Theme: Using digital tools and AI for communicating astronomy

The biggest challenge in India is elevating astronomy from a niche hobby to a mainstream, interdisciplinary science. I propose UniGrasp, an agentic AI platform designed to revolutionize this perception by aligning outreach with the National Education Policy (NEP 2020). The Cosmic Explorer Module uses generative AI to create personalized, physics-based simulations, replacing passive learning with dynamic, hands-on inquiry. The Celestial Object Digital Twin Agent is strategically localized: it autonomously processes raw data from Indian space assets, such as ISSDC, GMRT and ISDA archives , to generate explorable 3D environments, directly connecting students to national research. Crucially, the Cosmic Navigator Module solidifies career viability. It integrates specialized psychometric tests, accessible to all ages, to assess aptitudes and deliver personalized roadmaps for high-demand, interdisciplinary roles like Astroinformatics, Data Scientist, Astrobiology, etc. UniGrasp guarantees enhanced, qualified student interest by making careers transparent and complex data accessible. This verified demand will, in turn, drive the necessary expansion of specialized astronomy education and course offerings across institutions in India.

Astrophotography as a Medium for Accessible and Scientifically Engaging Astronomy Outreach

Askand Alurkar

Askand Alurkar, Fergusson College

Theme: Novel hands-on activities and demonstrations

Our astronomy club has utilized astrophotography as a medium to make astronomy accessible and scientifically engaging for a wider audience. Through regular night-sky observation sessions,

image-processing workshops, social-media outreach. We encourage participants to explore the universe. We focus on making astrophotography practical and achievable by guiding students through a structured progression, starting with simple mobile cameras before introducing more complex DSLR setups. This engagement follows a clear pathway, beginning with accessible targets like solar photography (using filters) and lunar imaging, then deep-sky objects such as the Orion Nebula. These hands-on sessions not only teach technical skills, also instill critical thinking about data acquisition. Our outreach emphasizes scientifically factual presentations by documenting the entire learning process, including problems encountered and solutions developed. We actively address real-world challenges, such as difficulty of finding dark skies due to urban light pollution, and discuss technical solutions, like the past use of specific sodium filters to counteract sodium-based street lamps. By combining science communication with creative, hands-on imaging, our club aims to foster a sense of community and demonstrate how collective learning can nurture scientific awareness and a appreciation for observational astronomy. We believe this methodology is key to inspiring the next generation of scientists.

From Deepfakes to Deep Space: Restoring Trust in Astronomical Information

Bhakti Mithagri
Mount Abu Observatory (PRL), Fergusson College Pune
Kshitij Pawar
Kshitij Pawar (Fergusson College Pune)

Theme: Using digital tools and AI for communicating astronomy

The rise of artificial intelligence has transformed how astronomy is communicated online, but it has also amplified the spread of misinformation. Recent incidents like the viral 'alien mothership' claims during Comet Atlas 3I highlight how unverified visuals and pseudoscientific interpretations can overshadow real science. In an era where misinformation travels faster than facts, rebuilding trust requires both technological and human intervention.

This study explores how AI and digital tools can be harnessed to counter misinformation in astronomy. By boosting algorithms of social handles of organizations like the ASI, IIA, authentic science content can be made more discoverable. Partnerships with science communicators and researchers can help translate complex phenomena into engaging, fact-based visuals. AL-based detection tools can flag manipulated media through pixel-level inconsistencies, deepfake probabilities, and metadata watermarking, thus enabling rapid debunking.

Additionally, promoting media literacy and encouraging audiences to verify sources are vital to

making science communication participatory rather than didactic. Different social media platforms have policies on AI-generated media, ranging from labelling to de-boosting, thus offering leverage points for collaboration. Ultimately, the solution lies in hijacking the algorithm for truth: creating trustworthy, shareable, and visually captivating content that spreads faster than hoaxes.

Vibe-Coding Astronomy: Generating Engaging Quizzes and Games using Google AI Studio to Inspire School Students

Boobesh IR

Sri Sivasubramaniya Nadar College of Engineering

Theme: Teacher training and student engagement in schools

Traditional astronomy teaching often lacks interactive engagement. We have developed a novel approach of using AI-driven ""vibe coding"" to rapidly develop high-quality, engaging educational tools for school outreach in an accessible manner. This work uses Google AI Studio, in particular the Gemini API, to allow teachers and non-programmers to create complex gamified quizzes and interactive teaching aids by inputting natural language. This dramatically lowers the barrier to entry in developing digital outreach content. The astronomy games and quizzes that come out of this have been crafted to encourage scientific inquiry and inspire students to pursue the subject further. We demonstrate the practical steps for replicating this approach, offering a scaling model for outreach practitioners across India to deploy modern, personalized learning experiences more quickly. This work highlights the potential of using AI for revolutionizing the creation of content in astronomy communication and science education.

SCIENTIFIC EXPERIMENTS USING A SMALL TELESCOPE AT HOME

Gopal Mandal

Galileo Astronomical Observatory

Theme: Teacher training and student engagement in schools

Generally we, the person working on scientific outreach with astronomy, mainly arrange sky watching workshop through a telescope. But a small telescope can be helpful to do some experiments at home. My talk is on this topic and students, teachers and astronomy communicators will be helpful with this talk. This presentation includes tension plus scientific experiments that can be done by a class 8 th students.

Playing With the Stars

Hafsa Shaikh

The KET's VG Vaze College of Arts, Science and Commerce

Theme: Novel hands-on activities and demonstrations

Modern astronomy education faces a critical pedagogical deficit, struggling to deliver tactile, intuitive experience amidst pervasive light pollution and the abstract nature of exoplanetary data. This research proposes and validates a multi-modal framework that redefines ""hands-on"" learning through three integrated pillars: 1) physical manipulation via simple materials (e.g., origami, orrery modeling); 2) exposure to high-fidelity instrumentation (telescopy, spectrometry); and 3) the cultivation of computational fluency using astronomical datasets (SDSS, Python/MATLAB) and problem design tailored to recent phenomena. This includes, developing quantitative high-school level Olympiad problems for example: problems based on the Betelgeuse dimming event, utilizing simplified models constrained by high-school physics (stellar pulsation, exoplanet transit, mass loss). To bridge the core observational gap, this presentation outlines the conceptual design of a data-driven, audio-visual interactive product. This novel tool is specifically engineered for public outreach in comparative planetology, allowing users to actively model and manipulate complex, non-linear planetary feedback loops. By visualizing system coupling——product equips learners with the essential conceptual framework necessary for differentiating genuine biosignatures from false positives and interpreting systemic disequilibrium in remotely sensed data. This integrative approach provides a vital digital complement to traditional tactile methods, preparing students for the computational and analytical demands of 21st-century planetary science.

Astronomy Without Visual Perception

Harsh Tekawade

Fergusson college

Raka Dabhade Raka v Dabhade

Raka Dabhade Raka v Dabhade (Fergusson college pune)

Theme: Any other

In the present work we demonstrate the different models used and tested among our own college visually impaired group of students from "Saathi group" during the annual exhibition. As visually impaired people basically use tactile receptors, Plaster of Paris models are commonly used by all, but we have used alternative low-cost materials to depict the following concepts: Solar System Sensation:Utilizing various textures like small pebbles, beads and sand

for rocky planets, threads and wool for gaseous planets and cotton for the Sun. Galactic Feel: Employing textured beads representations to help grasp the shapes of galaxies, be it elliptical, irregular, or spiral made of different sizes of beads. The constellation umbrella: This gave them the idea of dome shaped sky therefore we chose the inner part of the umbrella. The constellations were marked inside on different sectors of the umbrella to give them some idea of shape and significance of the particular constellation using buttons and woollen threads were used to trace – join the stars to feel the constellation, here the size of stars determined its luminosity.One of the visually impaired student smiled and remarked 'Whenever I think of astronomy now my mind won't go blank!' in the local language.

Amateur Astronomers, Organizations, and Public Outreach

Himanshu Desai

Science Centre Surat

Theme: Amateur astronomers and organisations, and public engagement

Public outreach in astronomy plays a crucial role in fostering scientific awareness and inspiring curiosity about the universe. As a Planetarium Guide at Science Centre Surat, Gujarat, I have developed several practical and engaging approaches to bring astronomy closer to the public. I designed a piggyback-mounted telescope setup in a way that enables large groups of visitors to observe celestial objects directly and also view them through a live projection display. This technique proved especially successful during major events such as the Venus and Mercury transits and solar eclipses, attracting over 3,000 visitors.

To enhance visitor engagement, I created a WhatsApp group and QR code system allowing participants to access information while waiting in line. Following telescope observations, our team conducts night sky orientation sessions, identifying constellations and visible Messier objects. Despite transportation limitations restricting off site activities, we regularly organize in-house outreach programs in the Science Centre's large open eastern campus. Public events are promoted through free newspaper announcements and social media outreach, ensuring accessibility for all.

These efforts demonstrate how grassroots initiatives by amateur astronomers can make astronomy more interactive, inclusive, and inspiring for diverse audience

"Bridging Skies: Institutional Pathways for Sustainable Astronomy Communication in India"

Infant Carmel Reju Patrick

Loyola College, Chennai

Theme: Institutional astronomy communication

In a country where the night sky often goes unnoticed amidst urban lights, institutional astronomy communication has emerged as a powerful medium for rekindling public curiosity. This poster presents a model for institutional collaboration and creative outreach developed through three complementary initiatives in Chennai — the Loyola Astro Club (Loyola College), Kalam's Sky Observers, and Expressions Astronomy (APL Global School). Together, these institutions demonstrate how structured engagement, grassroots participation, and interdisciplinary learning can nurture sustained interest in astronomy among students and communities.

Through curated night-sky observation camps, inter-school astro festivals, digital sky literacy sessions, and cross-age mentorship programs, our model integrates formal education with informal curiosity-driven exploration. The study also reflects on the challenges of maintaining engagement in urban academic environments, the need for culturally adaptive communication, and the importance of institutional synergy in building astronomy awareness beyond curriculum boundaries.

By documenting outcomes from collaborative events and outreach programs between 2021–2025, this work highlights how educational institutions can serve as local "sky hubs," linking students, educators, amateur astronomers, and the general public through participatory science. The poster aims to inspire a national framework where institutional astronomy communication becomes a cornerstone for democratizing access to the cosmos.

Astro-Tourism as a Tool for Outreach: JVP's Study Tour Model

Amit Kadlaskar

JVP

Aniruddha Deshpande; Sagar Gokhale; Deepak Joshee; Atharva Pathak

Aniruddha Deshpande (JVP); Sagar Gokhale (JVP); Deepak Joshee (JVP); Atharva Pathak (JVP)

Theme: Using dark and quiet skies, astro-tourism, for public engagement

Jyotirvidya Parisanstha (JVP), Pune, India's oldest amateur astronomy association with an 81-year legacy, significantly enhances its outreach beyond traditional lectures and star parties through extensive astronomical study tours. For decades, JVP has utilized this robust program to connect the public with India's rich scientific heritage and cutting-edge research facilities.

These tours vary in duration—from one-day trips near Pune to week-long excursions across North and South India—and attract a diverse, pan-Indian audience. JVP systematically organizes visits to major observatories operating across multiple wavelengths, including the Vainu Bappu

Observatory, Hanle Observatory, ARIES, and the Ooty Radio Telescope, Alibaug Magnetic Observatory. The program also includes culturally and scientifically significant sites like the Lonar Meteoritic Crater, Jantar Mantar, and ISRO's Thumba center.
By integrating event-specific tours for solar eclipses and meteor showers, JVP not only advances scientific knowledge and awareness but also effectively fosters a culture of astro-tourism in India. This model provides participants with an unparalleled, experiential understanding of national scientific achievements and encourages broader interest in astronomy.

Beyond the Textbook: JVP's Annual Exhibitions as a Tool for Scientific Awareness and Growth

Amit Kadlaskar

JVP

Aniruddha Deshpande; Sagar Gokhale; Atharva Pathak; Sarang Sahasrabudhe

Aniruddha Deshpande (JVP); Sagar Gokhale (JVP); Atharva Pathak (JVP); Sarang Sahasrabudhe (JVP)

Theme: Amateur astronomers and organisations, and public engagement

Exhibitions are a powerful tool for mass science outreach, serving to educate the lay public with a purely scientific temperament and, crucially, to whet curiosity that can lead to career pursuit. Jyotirvidya Parisanstha (JVP), a non-profit organization, has developed significant expertise in organizing large-scale astronomical exhibitions annually, making them accessible and largely free to the public from all walks of life. JVP's exhibitions feature detailed scale and working models, charts, and audio-visual presentations. A unique aspect is the annual selection of a central theme, such as 'Moon Exploration (Chandrayaan)', 'Multi-wavelength Astronomy', or 'Frontiers of Indian Astronomy'. JVP volunteers utilize the off-season to construct these materials, gaining deep thematic knowledge in the process, which they then convey to visitors. Experience shows that these focused exhibitions successfully ignite a ""spark"" in students, encouraging them to pursue basic sciences like astronomy. Given India's upcoming astronomical projects, this awareness generation is vital for cultivating the necessary trained and enthusiastic manpower, thereby driving future employment and economic growth. This presentation will detail JVP's effective, theme-based exhibition model and its measurable impact on science education and career inspiration across India.

Beyond Stargazing: Integrating Practical, Theoretical, and Historical Astronomy in Public Courses

Aniruddha Deshpande

JVP

Aniruddha Deshpande; Sagar Gokhale; Atharva Pathak; Sarang Sahasrabudhe

Aniruddha Deshpande (JVP); Sagar Gokhale (JVP); Atharva Pathak (JVP); Sarang Sahasrabudhe (JVP)

Theme: Novel hands-on activities and demonstrations

Jyotirvidya Parisanstha (JVP), India's oldest association of amateur astronomers, leverages its 81-year legacy by providing a comprehensive, structured educational framework to complement its traditional outreach. For the past three decades, JVP has formalized a diverse curriculum designed to serve all ages and interest levels, moving beyond casual star-gazing and lectures. JVP's flagship offering is the month-long Basic Course in Practical Astronomy, covering topics from positional astronomy to modern cosmology across 50 lecture hours. Since the COVID-19 pandemic, this course's shift to an online format has successfully expanded its reach to participants nationwide, building a strong foundation for aspiring enthusiasts. The annual curriculum is further diversified by specialized workshops, including a residential Astronomy workshop for kids that emphasizes hands-on learning, and a five-day Astrophotography workshop covering everything from wide-field techniques to post-processing. Additionally, JVP offers a unique course on Ancient Indian Astronomy, exploring fundamental concepts, Indian astronomical instruments, and archaeo-astronomy. This layered educational approach ensures continuous skill development, demonstrating an effective model for sustained, high-quality public science education within an amateur framework.

Inspiring Young minds Through Astronomy : Aryabhat Astronomy Quiz

Kartikey M Dixit

Kartikey M Dixit , Aryabhat Foundation; Pranshu Kurel , Aryabhat Foundation; Akash Verma , Aryabhat Foundation

Pranshu Kurel; Akash Verma

Pranshu Kurel (St. Xavier's College, Mumbai); Akash Verma (Aryabhat Foundation)

Theme: Amateur astronomers and organisations, and public engagement

For over three decades, the Aryabhat Foundation has been inspiring young minds to explore astronomy and the sciences through its flagship Astronomy Quiz program. Designed for students in classes 6–9, the initiative goes beyond testing knowledge, it aims to spark curiosity, encourage

critical thinking and make science learning accessible to all, whether they come from urban or rural schools. The program blends guided learning, mentorship, and hands-on experience to help students see science as an exciting process of asking questions and making discoveries. Its two-stage format, which includes an online quiz followed by an immersive training camp and ending with a practical assessment, which gives participants opportunities to learn about solar astronomy, telescope usage, astrophotography and star identification, while also strengthening their problem-solving and communication skills. The top performers are rewarded with visits to India's leading observatories and research institutes, where they interact with scientists and experience scientific research firsthand. The impact of the program extends well beyond astronomy, participants carry forward the curiosity, analytical thinking, and confidence they gain into whichever paths they choose. By linking classroom learning with real-world observation, the Aryabhat Foundation's Astronomy Quiz nurtures curiosity, builds confidence, and inspires lifelong learning across disciplines.

Using Citizen Science to Evaluate Pseudo scientific Beliefs Surrounding Solar Eclipses in India

Mayuresh Prabhune

Khagol Vishwa- Center for Citizen Science

Prasad Bhagat; Mitali Inamdar; Yashodhan Panse

Prasad Bhagat (Khagol Vishwa- Center for Citizen Science); Mitali Inamdar (Khagol Vishwa-Center for Citizen Science); Yashodhan Panse (Khagol Vishwa)

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

Solar eclipses, while scientifically captivating, are widely associated with deeply rooted superstitions in India. Practices such as avoiding food during an eclipse or discarding previously cooked meals continue to persist, often supported by pseudoscientific claims- notably, that reduced sunlight during an eclipse causes a surge in airborne microbial growth. To critically examine this belief, Khagol Vishwa – Centre for Citizen Science (CCS) conducted field-based microbiological experiments during the annular solar eclipses of 26 December 2019 and 21 June 2020. Sampling was performed within the central path of totality using standard air-microbe collection methods. Preliminary results revealed no significant difference in the concentration of airborne microorganisms between eclipse and non-eclipse days. Although further microbial identification was hindered by COVID-19 restrictions, the findings strongly contradict popular misconceptions. Building on this initiative, CCS plans a nationwide citizen-science programme during upcoming annular and total solar eclipses to promote scientific awareness and effectively challenge eclipse-related pseudoscience among the public.

Science, Belief, and the Sky: Insights from a Public Survey

Moupiya Maji

IUCAA, now Independent

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

As astronomy outreach expands across India, it becomes important to understand what audiences already know and believe. To explore this, the Office of Astronomy for Education (OAE) – India Centre conducted a public survey during the National Science Day events at the Inter-University Centre for Astronomy and Astrophysics (IUCAA) in 2023 and 2024. The questionnaire included ten items that probed visitors' interest in astronomy, conceptual understanding, and attitudes toward astrology.

Our findings show that the public's astronomy knowledge is mixed. For instance, among 299 respondents, 81% correctly arranged celestial objects by size and 60% by distance, while only 25% explained the cause of seasons accurately. About 40% reported that astrology never influences their daily or major life decisions. When responses were grouped by education level, astronomy knowledge rose modestly from secondary (51%) to bachelor's (58%) level, while astrological beliefs remained largely unchanged.

These results show that even among motivated science day visitors, conceptual gaps persist and astrological beliefs coexist with scientific understanding. This duality may stem from the fact that astrology-related ideas are rarely discussed critically in educational settings. Addressing such topics explicitly through outreach could strengthen scientific temper alongside astronomy learning.

When Culture Meets Cosmos: Bridging Belief and Science in India's Skies

Nandini Madhukar

Independent Researcher, Independent Researcher

Anmol Gandhi

Nandini Madhukar (Independent Researcher)

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

In a country like India far more diverse than often realized, astronomy has long been interwoven with culture, folklore, and faith. This deep connection, while fascinating, sometimes gives rise to pseudo-scientific beliefs that overshadow scientific reasoning. From avoiding food during eclipses, fearing planetary influences, and seeing comets as omens of misfortune, to believing that a person becomes a star after death, such traditions reflect humanity's emotional link with the cosmos. Another widely held belief, observed through surveys, suggests that pregnant women

should avoid using sharp objects like scissors during eclipses to prevent birth deformities, an idea unsupported by any scientific evidence.

India's rich astronomical legacy, from Aryabhata's rational observations to the architectural precision of Jantar Mantar, provides a strong foundation to re-examine such beliefs scientifically without dismissing their cultural roots.

This study explores how regional language communication, when combined with local storytelling, folk art, and modern outreach tools, can bridge traditional beliefs with real astronomical understanding. Surveys across multiple Indian regions reveal that most misconceptions stem from traditional interpretations or limited scientific literacy. By reinforcing accurate science, this approach transforms the night sky from a source of superstition into one of curiosity and learning.

Keywords: Astronomy Communication, Cultural Beliefs, Pseudo-science.

Travelling Telescope: Leveraging Ladakh's Dark Skies for Mobile Astro-Tourism and Community Engagement

Nayan Telrandhe

Travelling Telescope

Theme: Using dark and quiet skies, astro-tourism, for public engagement

Travelling Telescope is a mobile astronomy outreach initiative that leverages the pristine, dark skies of Ladakh for community engagement, education, and responsible tourism. Operating for over a year, the project's core mission is to democratize astronomy by taking telescopes and hands-on learning experiences directly to people—including tourists, schools, and remote local communities.

To date, the project has connected over 4000 individuals to the Cosmos, traveling more than 5000 km across the UT. Our activities focus on high-impact astro-tourism events at public places and festivals, and comprehensive astro-education sessions in schools and winter tuitions. These sessions are pivotal in introducing younger generations to the astronomy, sky's cultural significance and the emerging threat of light pollution.

A key innovation is Project Namkha, dedicated to documenting and revitalizing indigenous Ladakhi sky knowledge, including folk tales-songs, celestial names, and traditions. By blending modern astronomical concepts with these indigenous narratives, the project highlights the cultural value of dark skies and directly addresses the need for dark sky preservation amidst rapid infrastructure development. This approach creates a sustainable model by partnering with local

communities-NGOs to translate collected stories into outputs like illustration books and textiles and other products from communities to bring benifits back to them.

A Big 14"" f4.3 Travelscope - Compact and light weight telescope design to fit in a Bag

Niharika Gaikwad
Wonders of Universe
Niharika Gaikwad
Niharika Gaikwad (Wonders of Universe)
Theme: Novel hands-on activities and demonstrations

Design and Making of a 14-inch, Ultra-Portable Truss-type Travelscope- Telescope
First of its king in India
Background: Big-aperture telescope offer superior deep-sky observation but pose challenges for storage & transport in conventional design. This project addresses need for a highly portable, large-aperture solution.
Methods: We developed a novel, **custom-built 14""f/4.3 truss type Travelscope** - **1st of its kind in India for its specific compact size & portability features**. The entire scope: primary mirror grinding, lightweight mirror cell, Trusses & all other parts suitable for compact packaging were engineered by us. The design allows for easy assembly into a **compact transport box (~480 x 480 x 250 mm)**,total weight of ~22kg. Packaging of 2"" eyepiece will provide wide-angle, immersive views of deep-sky objects.
WOW Results: **A compact, lightweight, Big Travelscope**- 1st in India that can be carried in a Bag. This significantly enhances accessibility to dark-sky sites compared to bulky Dobs. This provides a better option for amateur astronomers in India.
Conclusion: This project demonstrates the Indian ATM capability to make a large aperture scope with high portability through innovative design. Travelscope enhances accessibility to high-quality observation from dark-sky sites.
Keywords: Telescope Design, Truss Telescope, Dobsonian, Amateur Telescope making in India.

To propagate astronomy need to concentrate on students and teachers of school

Nityendra Oke
Kutuhal Sanskar Kendra
Theme: Teacher training and student engagement in schools

This study provides guidelines for a systematic process to nurture future talent in the field of astronomical science in Indian context. Author performed a comparative assessment of astronomical content in Maharashtra State Board (MSB) and CBSE curriculum based on interactions with prominent teachers and students in a Tier-II city in Maharashtra. Both the considered schools were equipped with telescopes and astronomy enthusiasts ready to experiment with novel educational content delivery.

The MSB curriculum, discuss about solar system, satellites, Mangalyaan, Earth's tilt of axis, life of a star without any prerequisite student knowledge. Complex concepts of observational astronomy are covered without sufficient background of basic physics. Thus, though equipped with sufficient astronomical content, MSB syllabus was found to be largely disorganized and lacked continuity.

Whereas, CBSE curriculum first introduce observational Astronomy with introduction to constellation and Nakshtra. It introduces Earth's motion along with credit to Aryabata. Further, it explains why Earth was habitable and the interesting concept of astronomical time keeping. Unfortunately, it lacked required range of topics and comprehensiveness in imparting astronomical content.

Harnessing the positives from both these curriculums, reshuffling the content and introducing elementary interactive project work well recognized by eminent institutes will boost Astronomy movement in India.

From Tail to Tale: Comet Photography as a Catalyst for Astronomy Outreach

Pramod Khati

Kumaun University Nainital

Kirti Singh

Kirti Singh (Kumaun University)

Theme: Using dark and quiet skies, astro-tourism, for public engagement

Comets are rare disruptions in the familiar pattern of the night sky—objects bright enough, dynamic enough, and unexpected enough to draw immediate human attention. Our journey into visual astronomy began with such a disruption. In 2021, during the monsoon, we attempted to capture Comet NEOWISE (C/2020 F3). We had never seen a comet before, yet this "pattern-breaker" sparked both observation and curiosity. That moment transformed stargazing from a distant interest into an immersive experience, showing us how astrophotography can turn cosmic events into personal discovery.

As we continued photographing the night sky, comets became our gateway to public engagement. Our image of Comet C/2024 G3 (ATLAS) was featured on NASA's APOD Story, but the breakthrough came with Comet Tsuchinshan–ATLAS in 2024. Easily visible to the unaided eye, it ignited excitement across our community. Social media responses, questions from neighbours, and participation from viewers across states—and even other hemispheres—revealed how powerful comet imagery can be for outreach.

strong text

These experiences shaped KOSMIKAI, our emerging initiative dedicated to making astronomy accessible. Through comet chases, visual storytelling, community stargazing, and beginner-friendly astrophotography, we aim to show how rare celestial events can inspire curiosity, learning, and a deeper connection with the night sky.

Constellation of Cards

Prasad Adekar

Inter-University Centre for Astronomy and Astrophysics, Pune, India

Theme: Using digital tools and AI for communicating astronomy

Background & Purpose

A newbie to astronomy may usually begin their journey in astronomy through night sky observation sessions and observing through a telescope. In this naked-eye sky observation, knowing the constellations and their shapes is important at the beginning of the journey. Later on, knowing important stars (bright stars in constellations) and observing deep sky (Messier objects) becomes an important task with the handling of the telescope.

To aid this learning process, I have designed a game of cards that will effectively help in learning and remembering the sky (shapes of constellations, names of bright stars related to constellations, and deep-sky objects).

Method

This game of cards helps in step-by-step learning of the night sky. This game is designed to aid learning and is not a substitute for teaching. The game has 5 main levels, and each level has sub-levels, which makes it a 23-level step-by-step learning aid.

I will be demonstrating both online and offline modes of play with the participants, and participants can even play among themselves just after the presentation.

Track an Exoplanet in the Classroom: A Student-Friendly Interactive Model to Demonstrate Exoplanet Detection Using the Transit Method

Rahul Bar

Vainu Bappu Observatory, Indian Institute of Astrophysics, Kavalur, TN, India, Vainu Bappu Observatory, Indian Institute of Astrophysics, Kavalur, TN, India

Pandiyarajan B; Venkatesh S

Pandiyarajan B; Venkatesh S (Indian Institute of Astrophysics (IIA), the Vainu Bappu Observatory (VBO), Kavalur,)

Theme: Novel hands-on activities and demonstrations

Astronomy outreach plays a crucial role in translating advanced astronomical research into accessible knowledge, fostering scientific curiosity among students and the general public. As part of the outreach activities of the Indian Institute of Astrophysics (IIA), the Vainu Bappu Observatory (VBO), Kavalur, has developed several interactive models aimed at simplifying complex celestial concepts through engaging demonstrations. One such initiative, **"Track an Exoplanet,"** is a compact, student-friendly setup that demonstrates how astronomers detect exoplanets using the transit method. The model comprises **an illuminated artificial star and two orbiting planets** of varying sizes, whose light variations are monitored using a webcam. A custom **Python-based software, developed in-house** with OpenCV and NumPy, processes the live video feed, converts frames into grayscale intensity maps, and **generates real-time light curves** showing characteristic dips during planetary transits. The software further analyzes repeated transits to estimate orbital periods and transit depths, replicating the photometric techniques employed by missions such as TESS. Drawing inspiration from exoplanet observations carried out with **the 1.3-m J.C. Bhattacharyya Telescope (JCBT)** at VBO, this outreach model effectively bridges professional astronomical methods with public engagement, **promoting experiential learning** and inspiring future generations of scientists.

The Impact of Scientific Misconceptions on Business and Commerce

Rajaabirami R

Bishop Heber College (Autonomous), Trichy, Tamil Nadu, India

A Josephine Prabha

A Josephine Prabha (Bishop Heber College, Trichy)

Theme: Countering pseudo-science, misinformation, and promoting scientific temper

Scientific misconceptions, often rooted in cultural beliefs, have significant economic implications. One such example is the impact of myths surrounding astronomical events like solar and lunar

eclipses. Across various cultures, these celestial events are considered inauspicious, leading to business closures, cancellations of travel plans, and a decline in commercial activities. Many restaurants shut down due to fears of food contamination, airlines experience booking drops, and retail businesses see decreased foot traffic. This results in substantial economic losses, especially in industries reliant on daily consumer interactions. This study examines the commercial impact of scientific myths and explores how science-driven demonstrations and clarifications can mitigate financial setbacks. Through a service-learning initiative, educational workshops, a Survey questionnaire, followed by demonstrations and proofs based on scientific publications, the public were sensitised. This study aims to bridge scientific knowledge with traditional beliefs. Pre-intervention surveys revealed that over 66.7% of participants avoided purchasing food or stepping out during eclipses due to myths and superstitions passed down over generations. However, post-intervention results showed that more than 80% of participants were open to reevaluating their perceptions, indicating a potential positive shift in consumer behaviour.The findings highlight the necessity for science-driven awareness campaigns to support businesses affected by misconceptions.

Resolution of 21 Cm Hydrogen Line & 18 Cms OH Line using Bi-Quad Antenna with Cylindrical Parabolic Reflectors Design with Home Built SDR based Radio Telescope

Ram Mohan
Independent Researchers, Association of Bangalore Amatuer Astronomers (ABAA)

Theme: Any other

Hydrogen atoms emit at 1420 MHz (a wavelength of 21 cm), neutral hydrogen.
Hydroxyl molecules, composed of one atom of hydrogen and one atom of oxygen (OH), emit at four specific radio frequencies ranging from 1612 MHz to 1720 MHz (18 cms wavelength).
Thus, the range of frequencies from 1420 to 1720 MHz is called the Water Hole. It has been a popular frequency range for many SETI programs.
We as students of Post-Graduate program in Astronomy & Astrophysics at M P Birla Institute of Fundamental Research, Bangalore in 2019 and chose a dissertation topic on 21 Cms Hydrogen Line Resolution to fulfil course, and in parallel started working on building a home built Radio Telescope on a small scale to resolve the same.
Idea was to Design a Radio Telescope to Resolve 21 Cms Hydrogen Line and 18 Cms mostly from the Milky Way Interstellar Matter with following Design Parameters;
It needs to be portable (able to carry in a shopping bag) and from easily sourced household materials

Should be able to mount on GOTO Equatorial Mounts used for Astrophotography for easy tracking and guiding

Currently we have a working portable radio telescope resolving

Determining Celestial / Cardinal Directions by using Science of Katyayana's Sulba Sutra (Ancient Indian Geometry Text)

Ram Mohan

Independent Researcher, Association of Bangalore Amatuer Astronomers (ABAA)

Theme: Outreach based on history of astronomy in India

Determination of Celestial North, is of utmost importance in any Astronomical Observatory or Astrophotography Setup, for the modern GOTO Equatorial Mounts to accurately Polar Align (in sync with the Pole Star).

There are recent Equatorial Mounts which have built in GPS or Polar Scope with integrated cameras which try to use plate solving algorithms to determine the Pole Star. But, many of the times these fail as cities like Bangalore are at very low latitude to visually see Pole Star (12.59° N), and it's mostly blocked by Tree lines, Buildings, Light Pollution, Haze and Low Clouds.

Find out an alternate method, which is easy and accurate to determine celestial North and overcome the above mentioned limitations and challenges.

Katyayana's Sulba Sutra Text mentions a very detailed description of exact cardinal direction determination by using a Gnomon method. This technique, inspired me to solve above challenges and limitations to resolve Celestial North.

Taking astronomy from classroom to community

Ramanaa k S

BISHOP HEBER COLLEGE,BISHOP HEBER COLLEGE

MANO P

MANO P (BISHOP HEBER COLLEGE, TIRUCHIRAPPALLI.)

Theme: Amateur astronomers and organisations, and public engagement

- ""Heber Astro Club Brings the Universe Closer to Home in Trichy""

The Heber Astro Club of Bishop Heber College, Tiruchirappalli, is a vibrant hub for exploring and sharing the wonders of the night sky. With a mission to make astronomy accessible to all, the club conducts exciting outreach programmes such as night sky observations and lunar eclipse watching in collaboration with the Trichy Astro Club. Workshops on teaching astronomy, organised with the Tamil Nadu Astronomy and Science Society (TASS), help students and

teachers develop creative ways to communicate complex cosmic ideas. National Space Day was celebrated with great enthusiasm on campus through talks, exhibits, and interactive activities that highlighted India's space achievements. To spark curiosity through art and imagination, the club also screened space-themed films like Interstellar in collaboration with the college movie club. Altogether, over 700+ students, faculty members, and astronomy enthusiasts from the public participated in these initiatives. By combining science, creativity, and collaboration, the Heber Astro Club continues to ignite a passion for the universe—proving that even at the campus level, astronomy can bring people together under one sky.

Redesigning ancient astrolabe for astronomy education

Ravindra Godbole
Bhandarkar Oriental Research Institute, Pune
Sudheer Vaishampayan
Sudheer Vaishampayan (Bhandarkar Oriental Research Institute)

Theme: Outreach based on history of astronomy in India

The astrolabe is a highly sophisticated astronomical instrument of the Middle Ages. It is the representation of the three-dimensional celestial sphere on a two-dimensional plane by stereographic projection. It was widely used all over the world for observation and computation.
Ancient astrolabe and manuscript as well as related books, available at the Bhandarkar Oriental Research Institute were studied bo build astrolabes which can be used by high school students.
Key features of the developed astorlabes are as follows:
Use of Transperent Rete
Gregorian Calendar instead of Zodiac for Ecliptic
Integrated climate plate and Mater for specific location
Star names in English as well as Devnagari
Limited number of stars on Rete
Limited mathematical functions on the back side
Ruler for time and Declination measurement
Process of design, construction will be shared as a part of this talk.

Design and Development of Transparent Nasmyth Segmented Mirror Telescope at IIA

Remya BS
Indian Institute of Astrophysics

Theme: Novel hands-on activities and demonstrations

A Nasmyth telescope combines the advantages of the Cassegrain and Newtonian configurations by directing the final focus to a stationary platform located at the side of the telescope. This arrangement enables convenient instrument mounting without disturbing the telescope's balance or alignment. In this in-house project, a transparent Nasmyth telescope model was designed and fabricated at the IIA Optics Laboratory to demonstrate the optical beam path and working principles. The primary mirror consists of seven hexagonal segments forming a 250 mm spherical aperture, which reflects light toward a convex secondary mirror. The secondary directs the converging beam onto a flat tertiary mirror positioned in front of the primary, delivering the beam to the Nasmyth focus. All mirrors are mounted inside a transparent tube and aligned along the optical axis. A collimated white light beam generated using six LEDs with microlenses, arranged above the secondary, simulates celestial light entering the telescope. The reflected light converges onto the secondary, is redirected by the tertiary, and focused at the Nasmyth port. A compact spectrograph attached at the focus displays the white light spectrum. This transparent telescope model effectively demonstrates the light path, mirror functions, and spectrograph operation for astronomical education.

Modern Challenges in Astronomy Outreach in and near cities and way forward

Renuka Khanvilkar

Proxinova Education

Theme: Amateur astronomers and organisations, and public engagement

Astronomy outreach in and around city like Mumbai has changed rapidly over the past decade.We began our sky observation program in year 2011near Mahuli village(90 km from Mumbai) where we had amazing dark sky. Except Covid pandemic we have been consistently doing program from more than 10 years.

Over the year, due to increase in light pollution we have to move further away from the city which leads to significant travel time. With Session priced at just Rs120 and travel cost very low due to local train connectivity, astronomy was accessible to all, but travel distance and cost has been increasing for both of us.

Post-COVID, Astronomy outreach has faced a significant challenge, as we saw a drastic change in peoples mindset as they no longer preferred full night sky observation, rather a party style events and some viewing through telescope was included as a side activity.

Though we have not changed our core approach to astronomy which remains an fun and experiential learning activity. We have started to approach educational institutes so that we can reach more students.

ASTRO Payyanur: Two Decades of Grassroots Astronomy Outreach and Scientific Temper Building in North Kerala

Rohith K A

ASTRO Payyanur, ASTRO Payyanur

Muraleedharan R, KTN Bhaskaran

Theme: Amateur astronomers and organisations, and public engagement

ASTRO Payyanur (Astronomical Studies, Training and Research Organization) is a volunteer-driven amateur astronomy society founded in 2006 by teacher-astronomer K. Gangadharan, affectionately known as Gangadharan Master.

From a small classroom experiment, it has grown into a unique hill-top centre in Payyanur, Kerala, equipped with a 10-inch, 8-inch, and 6-inch telescope, a self-built 12-metre-diameter model planetarium, and a compact space-science exhibit hall.

For nearly two decades, ASTRO Payyanur has offered free, community-based science education, conducting over a thousand sky-watching sessions, planetarium demonstrations, and science awareness programmes across Kannur and Kasaragod districts.

Its outreach model combines storytelling in the local language (Malayalam), live telescope observation, and inclusive access through schools, libraries, and rural clubs.

The initiative has reached thousands of students and community members, countering celestial superstitions and fostering curiosity about the universe.

The poster will present evolution of ASTRO Payyanur, challenges, and sustainability as a fully volunteer-run institution, our unique outreach model, and outline of future plans.

By documenting the journey of ASTRO Payyanur, this Poster aims to illustrate how small, locally rooted efforts can play a transformative role in nurturing scientific temper and bridging the gap between professional astronomy and the general public in India.

Khagol Goshti: A Collaborative Vernacular Resource for Strengthening Astronomy Education

Sai Shetye

Homi Bhabha Centre for Science Education, IUCAA

Durgesh Gaikwad; Surhud More; Pritesh Ranadive; Aniket Sule

Durgesh Gaikwad (Homi Bhabha Centre for Science Education (HBCSE-TIFR)); Surhud More (IUCAA); Pritesh Ranadive (HBCSE-TIFR); Aniket Sule (HOMI BHABHA CENTRE FOR SCIENCE EDUCATION)

Theme: Astronomy communication in regional languages: strengths and challenges

Khagol Goshti (“ ”) is a compilation booklet of astronomy articles developed by HBCSE-TIFR and OAE Centre India, covering various topics from the Classes 6-8 NCERT curriculum. Originally written in Marathi for the Anandi newsletter (Redij & Sule, 2022) - a paper-based educational intervention by HBCSE-TIFR following a Design-Based Research methodology (Wang & Hannafin, 2005) these articles are written in a simple, engaging, and personal style that helps rekindle students' curiosity and connection with learning. The booklet serves as an authentic and reliable supplementary resource for educators, teachers, outreach professionals, and students alike. The talk will highlight the process and challenges involved in developing the articles. Currently available in Marathi and English, the talk will present opportunities to collaborate and get the material translated and typeset in other Indian languages, strategies adopted for compilation, and the educational need for such a resource. Currently available in Marathi, future plans include collaboration with astronomy educators across India to translate the booklet into other regional languages.

Hands-On Day time Astronomy Education: Sunspot Tracking, Solar Positioning, and Low-Cost Instrumentation in a Science Centre Workshop

Sajal Sharma

National Council of Science Museums, Kolkata and Jawaharlal Nehru University, New Delhi

Theme: Novel hands-on activities and demonstrations

This submission presents the methods, implementation, and observation of a five-day *solar astronomy workshop* conducted during the Vacation Creative Science Workshop at the Regional Science Centre Bhopal (NCSM). The programme introduced participants to observational solar science using safe, low-cost, and highly interactive tools designed for public engagement and student learning.

Participants carried out daily sunspot observations using filtered telescopes, pinhole projection, and self-built pinhole theatres. These observations were used to document sunspot motion, estimate the Sun's rotation period, and explore differential rotation. The workshop also included an inclinometer with azimuthal angles, which let students measure the altitude and declination of a celestial body at certain times.

Complementary activities included construction of a paper Samrat Yantra, optics demonstrations, and heliocentric–geocentric comparison models inspired by Galileo's methods. Participant responses indicate notable improvement in conceptual understanding and confidence in using observational instruments.

This contribution will present the workshop's approach, educational outcomes, and recommendations for scaling similar low-cost solar astronomy activities in science centres, classrooms, and public outreach programmes.

Connecting Heritage and Science: A Public Engagement Model for Astronomy through Indigenous Stories.

Sanjana Anand

Visvesvaraya Industrial and Technological Museum NCSM Govt. of India , Indian Institute of Astrophysics (retd.); International Centre for Radio Astronomy Research

Prajval Shastri

Prajval Shastri (Indian Institute of Astrophysics (retd.); International Centre for Radio Astronomy Research)

Theme: Integrating astronomy with the arts and humanities

Anecdotal evidence from our public engagement efforts in astronomy and also the literature on the subject strongly suggests that real scientific explanations of everyday astronomical phenomena are more readily engaged with when interwoven with heritage sky stories. This approach piques the audience interest as to how people of generations before thought about cosmic phenomena, and triggers curiosity about the real scientific explanation. It may also be that prefacing our science communication with such sky stories dismantles the idea that astrophysics concepts are somehow beyond the grasp of lay persons, and opens the door for true dialogue and scientific understanding. This framework of using cultural astronomy stories that have been passed down through generations is not to encourage those stories as truth. Instead, when a diversity of sky stories from varied cultures and geographies are presented, they enable an understanding of these stories as imaginary constructs and can impel evidence-based thinking and understanding of the scientific explanations about the cosmos. We aim to gather sky stories from different communities and resources world-wide towards the above purpose. This collection will be made available for use by communicators and educators towards our broader goal of making astrophysics accessible to all.

Astro gamers: Understanding the Universe One Level at a Time.

Sanjana Anand

Visvesvaraya Industrial and Technological Museum NCSM Govt. of India , Independent

Renjithmon A A

Renjithmon A A (Independent)

Theme: Using digital tools and AI for communicating astronomy

This project presents the development of an innovative astronomy learning game designed to captivate and educate young children through immersive, level-based game. Players advance by mastering fundamental astronomy concepts embedded within engaging challenges, missions, and interactive scenarios that require real comprehension rather than just memorization. As players progress through increasingly challenging stages, they earn status titles such as "" Cadet"",“Astronomer” and “Pro Astronomer,” etc., motivating continued engagement and rewarding conceptual growth. Unlike conventional quiz-based learning, this game integrates narrative and problem-solving elements that contextualize astronomical phenomena, promoting deeper understanding. Recognizing the prevalence of gaming culture among youth today, this approach harnesses the motivational power of gamification to foster scientific curiosity and sustained learning in an accessible and entertaining format. The design emphasizes educational rigor alongside enjoyable gameplay, balancing challenge and reward to maintain player motivation. Planned user testing and iterative refinement aim to optimize engagement and knowledge outcomes. Once launched, this game promises to serve as a scalable and effective tool for informal science education and outreach, helping bridge the gap between entertainment and meaningful learning in astronomy.

Innovating Astronomy Outreach through Institutional Collaboration: The ISRO-Certified Space Workshop Experience

Sheetal Chopde
1. Nehru Science Centre, Mumbai
2. Anant Vega
3. Nehru Science Centre, Mumbai
Umesh Kumar Rustagi
Umesh Kumar Rustagi (Nehru Science Centre, Mumbai)

Theme: Institutional astronomy communication

Institutional Astronomy Initiatives plays a crucial role in fostering scientific literacy, stimulating sustained public interest, and building a culture of inquiry.
This paper presents an **ISRO-certified Space Workshop** conducted at the **Nehru Science Centre, Mumbai**, in collaboration with **Anant Vega**, as an effective model for institutional engagement in **experiential astronomy** education. The workshop employs a structured, **hands-on approach** to communicate complex space science concepts, covering topics such as rovers, drones, rockets, telescopes, periscopes, and cube satellites, culminating with immersive

overnight sky observation sessions that translate theoretical understanding of Astronomy into practical experience.
A notable feature of this initiative is the **Astro birthday** of a student celebrated under the night sky, blending emotional engagement with educational enrichment. By leveraging **institutional credibility and formal certification**, combined with **interactive experimentation and innovative engagement strategies**, the program deepens conceptual understanding, fosters curiosity, and encourages long-term enthusiasm for astronomy.
This initiative exemplifies how institutions can act as catalysts and trusted communicators in space science education, bridging the gap between academic content and outreach. The workshop offers a replicable framework that enhances learning outcomes and models best practices for combining **certification, hands-on learning, and creative engagement** to advance astronomy communication within formal and informal settings.

Astronomical Insights from the Rāmāyaṇa

Shubha BS
Indian Institute Of Astrophysics
Theme: Outreach based on history of astronomy in India

The Rāmāyaṇa is one of the greatest Indian epics, valued not only for its moral and cultural depth but also for its numerous references to astronomical phenomena. While comparisons such as a woman's face with the moon are common, the text also contains verses that reflect a sophisticated awareness of celestial concepts. For instance, the term khamadhya in one verse corresponds to the modern concept of the zenith, providing a link to observational astronomy and night-sky studies. Similarly, descriptions of eclipses and planetary movements reveal an understanding of astronomical events as observed from Earth.
These poetic expressions can be used as engaging educational tools to introduce basic astronomy to learners familiar with the epic but lacking formal scientific background. By connecting cultural and literary knowledge with scientific ideas, educators can make astronomy more accessible and meaningful. The talk will focus on a few select verses from the Valmiki Rāmāyaṇa that contain clear astronomical interpretations and illustrate how such verses can inspire curiosity and deepen understanding of celestial phenomena among students and the general public.

Hanle Dark Sky Reserve

Sonam Jorphail

Indian Institute of Astrophysics, Indian Institute of Astrophysics, TIFR, Indian Institute of Astrophysics, TIFR, Indian Institute of Astrophysics, Formerly at IIA, BARC, Indian Institute of Astrophysics, BARC, Indian Institute of Astrophysics, Indian Institute of Astrophysics, Indian Institute of Astrophysics, Indian Institute of Astrophysics, Indian Institute of Astrophysics

Dorje Angchuk; Stanzin Disket; Dawa Dolkar; Tsewang Dorjai; Phunchok Dorjey; Nawang Dorji; Tsewang Gyalson; Mohd Maqbool; Niruj Mohan Ramanujam; Stanzin Norlha; Vikranth Pulamathi; Thubstan Rinchen; Tsewang Stanzin; Tashi Thsering Mahey; Skarma Thubstan; Tsewang Yangdol

Dorje Angchuk (IIA, IAO); Stanzin Disket (IIA, IAO); Dawa Dolkar (IIA, IAO); Tsewang Dorjai (IIA, IAO); Phunchok Dorjey (TIFR); Nawang Dorji (TIFR); Tsewang Gyalson (IIA, IAO); Mohd Maqbool (IIA, IAO); Niruj Mohan Ramanujam (IIA); Stanzin Norlha (BARC); Vikranth Pulamathi (IIA); Thubstan Rinchen (BARC); Tsewang Stanzin (IIA, IAO); Tashi Thsering Mahey (IIA, IAO); Skarma Thubstan (IIA, IAO); Tsewang Yangdol (IIA, IAO)

Theme: Using dark and quiet skies, astro-tourism, for public engagement

Hanle, located within the Changthang Wildlife Sanctuary in Ladakh, offers one of the world's darkest night skies, largely free from artificial light pollution. Recognizing this advantage, IIA established the Indian Astronomical Observatory (IAO) in Hanle. However, to mitigate the effects of recent developmental activities and resulting rise in light pollution, and motivated by successful Dark Sky Reserves worldwide, our team considered a similar conservation model for Hanle in 2020.

Community participation and ownership proved central to this effort. By emphasizing the ecological importance of natural darkness and the economic potential of astro-tourism, the villagers in the region became enthusiastic supporters of the initiative. With strong local collaboration, the proposal for the Hanle Dark Sky Reserve (HDSR) was submitted to the UT Administration of Ladakh, leading to its official notification in December 2022 as India's first Dark Sky Reserve. HDSR operates under a comprehensive Light Management Plan, which controls light pollution and safeguards scientific research. Concomitantly, its astro-tourism project directly supports local socio-economic development through trained villagers as Astronomy Ambassadors with telescopes, and increasing number of homestays. With upcoming plans for a mini-planetarium and Visitor Centre, HDSR fosters a model where science, community, and conservation progress together under Hanle's exceptional skies.

Astronomy Outreaches and Hands-on Demonstrations in Schools of Chandigarh

Soumadip Rabindranath Bhowmick
Indian Institute of Science Education and Research, Mohali

Theme: Novel hands-on activities and demonstrations

As part of the IISER Mohali Astronomy Club, we have conducted a series of astronomy outreach programs across schools in Chandigarh. These activities not only introduced children to astronomy but also provided interactive activities to the audience. Using a simple amateur telescope, we introduced students and teachers to the observation of sunspots, which was often their first exposure to solar activity. We had a hands-on demonstration on the history of telescopes, exposing students to each stage of development from Galileo's refractors to JWST. Additionally, we displayed solar absorption lines using a simple palmtop spectroscope. These sessions were aimed at sparking scientific curiosity among students and teachers in the government schools. I believe such activities will benefit the general public to create awareness about astrophysical phenomena and develop scientific temper in the next generation.

Two and a Half Decades of Meteor Shower Observations and Citizen Science Outreach by Khagol Vishwa

Spandan Waghmare
Khagol Vishwa - Center for Citizen Science
Yashodhan Panse; Mayuresh Prabhune; Sonal Thorve; Mandar Wajge
Yashodhan Panse (Khagol Vishwa); Mayuresh Prabhune (Khagol Vishwa); Sonal Thorve (Khagol Vishwa); Mandar Wajge (Khagol Vishwa)

Theme: Amateur astronomers and organisations, and public engagement

Meteor showers are among the most spectacular celestial events visible to the naked eye, requiring no special instruments for observation. Their accessibility makes them an excellent way to engage students and citizens in astronomy. Khagol Vishwa began organized meteor shower observations with the remarkable 1999 Leonid shower and continued active observation campaigns from 1999 to 2002, primarily through naked-eye observations.

Over the past 25 years, Khagol Vishwa has conducted scientific observations and large-scale public outreach programs for several major meteor showers, including Quadrantids, Lyrids, -Aquarids, Perseids, Leonids, and Geminids. These initiatives have not only generated valuable scientific data but also provided training opportunities for students and fostered public enthusiasm for sky-watching.

A major objective of this ongoing effort is to train amateur astronomers and expand citizen participation in astronomy. Many Khagol Vishwa members have submitted their observations to scientists and international organizations such as the International Meteor Organization (IMO), with several contributions acknowledged in research papers and publications worldwide.
Using visual, photographic, and radio observation techniques, Khagol Vishwa continues to inspire people to explore the universe, nurturing curiosity, scientific thinking, and a lifelong passion for the night sky.
Keywords: Meteor Shower Observations, Citizen Science, Amateur Astronomy, Public Outreach in Astronomy.

Role of Planetarium in popularisation of Astronomy.

Sunil Pote
Pimpri Chinchwad Science Park
Theme: Institutional astronomy communication

Pimpri Chinchwad Science Park and Planetariums play a crucial role in popularizing astronomy by providing unique, immersive, and educational experiences that bridge the gap between complex scientific concepts and the general public. They serve as vital non-formal education centres, inspiring curiosity and fostering a deeper appreciation for the universe. Star Gazing experience in inflatable Dome with simple projector has been called one of the most popular single device for popularizing Astronomy.
Key Roles of Planetarium and inflatable Taramandal dome

- Immersive Learning Environment:
- Effective Demonstration of Concepts:
- Accessible to a Wide Audience:
- Integration of Multimedia and Technology:
- Inspiration for STEM Careers:
- Community Hubs for Science Communication: Planetariums often collaborate with professional astronomical organizations and researchers to offer public events, workshops, and lectures.

We have been promoting astronomy for the last 12 years through the Dome Show and the newly launched Digital Planetarium. In the last 12 years, about 16 lakh students and citizens have been shown basic astronomy information on the show. While free sky viewing programs have been organized for more than 1 lakh citizens and students. Therefore, Pimpri Chinchwad Science Park and Planetarium is making a significant contribution to the promotion of astronomy

Between Algorithms and the Stars: Exploring the Psychological Impact of Astronomy

Tulika Dey

Calcutta University (formerly at)

Theme: Integrating astronomy with the arts and humanities

In a world increasingly shaped **by algorithms and artificial intelligence**, our connection with the natural universe often feels distant. Yet, **astronomy offers something deeply human- a chance to pause, look up, and rediscover wonder.** This poster examines **the psychological benefits of engaging with astronomy, whether through stargazing, planetarium visits, or learning about celestial phenomena, and explores how these experiences can have a profound impact on individuals.** Experiences of the night sky have been found to reduce stress, promote mindfulness, and evoke feelings of awe and curiosity that nurture emotional balance and creativity.

In the age of artificial intelligence, where much of our interaction happens through screens, astronomy provides a rare opportunity to reconnect-with nature, with knowledge, and with ourselves. It reminds us that **science communication is not only about data and discoveries but also about emotion, imagination, and human connection.**

By combining insights from psychology and astronomy outreach, this work highlights how the cosmos can become a bridge between technology and emotion-encouraging curiosity, promoting well-being, and restoring a sense of shared wonder that transcends digital boundaries. Ultimately, it suggests that reconnecting with the universe may be one of the most meaningful ways to stay human in an increasingly algorithmic world.

A pedagogical approach of integrating astronomy using digital tools to encompass the goal of NCF-2023 to value Indian Knowledge Systems in school curriculum

Usha Kalive

SUMSKRUTA VAHINI FOUNDATION

Lalitha Ramesh; Malathi Latha Y L

Lalitha Ramesh (SUMSKRUTA VAHINI FOUNDATION); Malathi Latha Y L (Stanley College of Engineering and Technology for Women (A))

Theme: Astronomy in school education

National Curriculum Framework (NCF) 2023 for secondary and higher secondary education emphasizes inclusion of Astronomy as part of Indian Knowledge Systems in school science, urging schools to explore Indian observational techniques, calendars and celestial calculations to enrich modern scientific understanding. The framework suggests use of contextual and indigenous examples to make the subject relevant to the student's local and cultural setting. We intend to

demonstrate through activity how the readily available digital tools in Astronomy which project real time sky on mobile screens can be used to induce scientific temper among young minds. The DIY environment developed in line with the school curriculum will not only drive innovation in interdisciplinary projects in Mathematics, Physics, Chemistry and Computer Science for secondary and higher secondary science education but also nurture curiosity in Astronomy. The paper will also present a comparative study of Astronomical Education through hands-on activities at grade 6 to 12 in other countries and how we can become a pioneer in steering observational Astronomy in the middle to higher secondary levels with the changing policies in Education. The significance of support and collaboration of Astronomical Outreach practitioners with Astronomical Institutes to bring out novel methods will be outlined.

ClearSkies.club Observation Planner

Vadiraj Deshpande

Founder, WearTheCosmos.in

Theme: Using digital tools and AI for communicating astronomy

Astronomers, whether beginners or pros, often juggle too many tools — Heavens-Above for passes, Stellarium for maps, weather apps for clouds, and notebooks for planning. It's confusing, time-consuming, and honestly breaks the flow of observing. That's exactly what inspired ClearSkies.club Observational Planner, a single AI-driven tool that unifies the entire night-sky planning process.

Hosted on clearskies.club, it assists both visual observers and astrophotographers. For visual users, it helps identify what's visible and when. For imagers, it acts like an astrophotography preparation assistant, calculating ideal imaging windows, target visibility, framing suitability, and best observing times based on gear and conditions. All results are processed by AI that learns from the user's preferences and past observing history to suggest personalised, ready-to-use plans.

Users can explore the live sky map, export their plans to carry offline, or use the tool live in the field if connected. Built in India by an independent astronomy-driven team, ClearSkies.club's mission is simple — to bring joy, simplicity, and a touch of intelligence back into every night of stargazing and imaging.

Hands-on Learning as a Lens to Experience Astronomy

Vikrant Londhe

IISER Pune, IISER Pune, IISER Pune

Theme: Teacher training and student engagement in schools

IISER Pune extends science education beyond its campus through outreach, making its expertise accessible to the wider community. The Science Activity Centre develops low-cost hands-on science activities and trains teachers and students through workshops and campus visits. This article highlights recent astronomy-based activities designed for school students and teachers.
Activity 1: A bead is used to represent the Moon, and Earth's size is calculated to scale. A thread of proportional length shows the Earth–Moon distance. The same scaling method is applied to make the Earth–Sun Model.
Activity 2: Lunar gravity is one-sixth of Earth's. A mechanical weighing scale's dial is rescaled to show comparative weights as they would appear on Earth and on the Moon.
Activity 3: A coordination-based game simulates the challenge of lunar landing. A cubic frame supports four cables attached to a model of the Vikram Lander. Four participants work together to lower the lander onto a selected spot.
Activity 4: An image by NASA's LRO highlighting the Vikram Lander site is printed on a 9×9 ft canvas. It allows participants to explore craters, replicate their shadows using a sandbox model, calculate scale, and use a magnet-sensing stick to locate the hidden lander
![Activities][1]
: https://drive.google.com/file/d/1AvAOni2PAl2j0sKdBErKeQotg79GK8KW/view?usp=sharing

Lumora: A Portable Stargazing System

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Theme: Astronomy communication in regional languages: strengths and challenges

The Lumora system presents an intelligent Internet of Things (IoT)-based solution for automated celestial tracking and real-time astronomical information delivery. It integrates Stellarium's astronomical API with a hardware control unit driven by a microcontroller. Using motor-driven azimuth-altitude alignment and multilingual text-to-speech (TTS) functionality, Lumora allows users to accurately locate celestial objects and receive contextual information in multiple regional languages. The system fetches live celestial data, synchronizes laser-based positioning hardware,

and provides extended object descriptions from Wikipedia and translation APIs. This work focuses on the scientific and technical architecture of Lumora, emphasizing real-time coordinate mapping, communication between software and hardware modules, and intelligent multimodal accessibility in astronomy education. Lumora's framework combines IoT-based hardware, data communication modules, and a multi-language software interface. The Stellarium Desktop Application serves as the primary astronomical data source, providing object metadata, azimuth, and altitude coordinates through its API. The controller fetches the data and transmits it to a microcontroller, which governs mechanical actuation. The interface visualizes real-time object data, descriptions, and visual representations while supporting multilingual TTS and translation. A database stores previously fetched celestial data to ensure efficient retrieval and offline accessibility

Astro-Night Sky Tourism Initiative' at The Heritage & Monumental Sites of Rajasthan for Popularization of Astronomy.

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Department of Science and Technology Government of Rajasthan, Jawaharlal Nehru University New Delhi

Kailash Mishra; Mugdha Sinha

Kailash Mishra (Regional Science Centre and Science Park, Jaipur); Mugdha Sinha (ITDC, Ministry of Tourism, Govt. of India)

Theme: Using dark and quiet skies, astro-tourism, for public engagement

Department of Science & Technology, Government of Rajasthan has come up with an Initiative of "Astro-Night Sky Tourism"" at the Heritage and Monumental Sites of Rajasthan for Popularization of Astronomy based Tourism.

This has been done in collaboration with the Department of Art and Culture, Government of Rajasthan, to bring science from the silos of labs to public, to generate both awareness and interest in science among students and citizens, by hands on activities in a multidisciplinary manner, as part of citizen science initiative.

The Objective is to generate interest in astronomy by using the telescope to show case the cosmic activities in the night sky to Tourists, Visitors and Citizens once in a month by rotating the activity at various Heritage Monuments where they can watch the Planets, Stars, Meteors, Comets nearby galaxies, and many more cosmic activities free of cost. Every month, a new tourist destination is chosen for the Telescope Setup and advance intimation through banners, newspaper advertisements and social media is used to make an outreach to people. Voluntary

Astronomy Clubs and Photographers who specialize in astro-night sky photography have also been roped for allied hands on activities.

IASC's Asteroid Search Project as a Citizen Science Educational Outreach Program through Zooniverse

Yogeshkumar Dileepkumar Joshi
International Astronomical Search Collaboration (IASC)
Cassidy Davis; Rose Horst; James Martin
Cassidy Davis (International Astronomical Search Collaboration (IASC)); Rose Horst (International Astronomical Search Collaboration (IASC)); James Martin (International Astronomical Search Collaboration (IASC))
Theme: Using digital tools and AI for communicating astronomy

International Astronomical Search Collaboration (IASC) is a Citizen-Science Educational-Outreach program which provides high-quality astronomical data to citizen scientists around the world. By analyzing the data, these citizen scientists are able to make original astronomical discoveries and participate in hands-on astronomy sitting at their home, free of cost. As the manual analysis is little technical and rigorous. Therefore, IASC has launched Asteroid Search Project on Zooniverse, which is world's largest web-based platform to make it compatible and easily accessible for enthusiasts across-globe to hunt for asteroids. These images are taken by Pan-STARRS observatory, Institute for Astronomy, University of Hawaii. We receive four images from Pan-STARRS taken over a one-hour time period. These images are aligned and merged into a single image showing the asteroid as four moving dots in a line. A machine-learning tool has been developed that can identify these four dots and flag them for review. The flagged-objects are then sent to Zooniverse to be further analyzed by the citizen scientists, making it much more convenient for them to analyze.
A comparative study has been performed and we present the step wise procedure and analysis to search for Moving Objects with Astrometrica Software and then at Zooniverse Platform.

From the Paper to Space : Cost-Effective Hands-on Astronomy

Zeel Patel
Programme Officer Science B, Vikram A Sarabhai Community Science Center, Ahmedabad
Theme: Novel hands-on activities and demonstrations

Astronomy offers a powerful way to spark curiosity and connect students with science. At the Vikram A. Sarabhai Community Science Centre (VASCSC), Ahmedabad, the Space Science Lab

promotes astronomy and rocketry through hands-on, low-cost, and engaging activities for school and college students. Emphasizing "learning by doing," it uses simple materials and creative models to make complex concepts accessible and enjoyable. Students build box telescopes, sundials, circumpolar clocks, eclipse models, and star charts using inexpensive materials like paper and cardboard. These models form the core of 1–2 day workshops that blend theory with practical sessions, often followed by night sky observations. They are also part of summer camps, lab sessions, and investigatory projects, giving multiple opportunities to explore astronomy. Implemented across both rural and urban schools in Gujarat, the programme remains inclusive and affordable, costing under 250 per student. The models are further used in teacher training and public outreach. This experiential approach deepens scientific understanding and nurtures curiosity, creativity, and confidence helping learners build a connection with astronomy and science.

SCAI 26

SYMPOSIUM FOR COMMUNICATING ASTRONOMY IN INDIA

ASI SYMPOSIUM 006

DEMONSTRATIONS

Seeing Space in Motion: Using Digital Tools to Communicate India's Mars and Moon Missions

Sankaranarayanan Viswanathan

Independent

Theme: Using digital tools and AI for communicating astronomy

"When India reached Mars and the Moon, the world watched with wonder — yet for many, those triumphs remained distant dots in space. The official ISRO visuals for the Mars Orbiter Mission (2013), Chandrayaan-2 (2019), and Chandrayaan-3 (2023) showed elegant but schematic orbits, leaving students and enthusiasts curious: How do these paths really look? How does a spacecraft climb from Earth to another world?

To answer that, I built browser-based, interactive 3D visualizations using real trajectory data released through NASA's JPL Horizons system. These digital tools combine accurate orbital computation with intuitive design, allowing viewers to explore complex spaceflight geometry directly in their web browsers. They transform static diagrams into living, data-driven narratives — showing celestial mechanics in motion and scale.

In outreach sessions, these models acted as living classrooms, letting audiences see how gravity guides motion and how careful design turns trajectories into missions.This talk shares the journey behind creating and using these tools — the communication challenges that inspired them, the design choices that made them engaging, and how such open, interactive digital approaches can transform how Indian space missions and astronomy are taught, understood, and felt."

Basic astronomy concepts with physical models

Ravindra Godbole

Independent science communicator

Theme: Astronomy in school education

"High school students explore basic concepts in astronomy as a part of their carriculum.

These concepts are difficult to visualize without the proper use of physical models.

I have designed and developed models to clarify key concepts related to Sun, Earth and Moon and other celestial bodies.

I have been visiting schools to demonstrate the same and interact with students as well as teacher community.

Models cover areas related to seasons, new moon and full moon, lunar month, phases of moon, eclipses. With the help of gears, these models can show 99 percent accuracy in terms of duration.

Some areas related to Indian astronomy such as Adhik Maas, Sankranti, Tithi and Nakshatra are also covrered as a part of this exercise. I would like to share my experiences and future plans for the same."

Colours in Astronomy

Margarita Safonova
M. P. Birla Institute of Fundamental Research, Bangalore

Theme: Novel hands-on activities and demonstrations

"There is more in the Universe than we see! In astronomy, we look at stars, planets, distant galaxies, studying the light that reaches our eyes. But our eyes see only a tiny part of the EM spectrum. We get a better understanding of the Universe using detectors for energy invisible to our eyes. But how can we see, or show, the invisible Universe? Visual representation involves use of representative color techniques, where colours are assigned to depict intensity, energy, temperature, or another property of the data. So, the science informs the colors used. We explain how the pretty colourful images from ranges invisible to the human eye are made visible and scientifically meaningful as well.

But even for the visible range, the images telescopes send us are black and white. Colors are added to black and white images while post-processing – why does the most advanced telescopes that can capture galaxies that millions of light-years away, take black and white shots? In our program we explain why and teach how to combine telescope images to create the 'true' colour images of various astronomical objects. In parallel, we teach how to align FITS images, both astrometrically calibrated and uncalibrated."

Hands-on Radio Astronomy Using Horn Antenna

Jameer Manur
IUCAA, Pune

Theme: Amateur astronomers and organisations, and public engagement

"Radio astronomy provides a powerful platform for introducing students and educators to observational techniques and the unseen universe revealed through radio waves. To make this field more accessible, we have developed a series of educational initiatives centered around the horn antenna—a cost-effective and versatile tool for demonstrating the fundamentals of radio detection and analysis.

Our work includes the design and fabrication of horn antennas for use in M.Sc. practicals (SPPU

and IUCAA), teacher training workshops, and undergraduate projects. These lab-based experiments enable students to observe the 21 cm hydrogen line and explore concepts such as signal amplification, noise reduction, and spectral analysis. The Horn Antenna Workshops have helped teachers replicate these experiments in their institutions, broadening the reach of hands-on radio astronomy education.

Beyond academics, the horn antenna has served as an effective medium for public outreach through activities such as Refresher Courses, the Radio Astronomy Winter School, and introductory astronomy courses and talks. These programs engage students, teachers, and amateur enthusiasts alike, fostering curiosity and participation in scientific discovery.

By integrating horn antenna experiments into curricula and outreach programs, this initiative illustrates how low-cost instrumentation can bridge the gap between classroom learning and real-world radio astronomy."

Bringing Astronomy and Science to the public using "The Velogyaneshwari" Bicycle

Rupesh Labade

IUCAA, Pune

Theme: Astronomy in school education

"The Velogyaneshwari Bicycle consists of about 40 experiments on it.

Its main objective was to reconnect students with basic concepts of Astronomy and Science, showing that it is possible to locate yourself spatially. Everything is achieved through just observing nature, basic geometric concepts and some low-cost experiments attached to this bicycle. One can simply take this Bicycle outside to school, playground, gardens, etc., and teach them using experiments attached to it. Also, students were enjoying this kind of science and Astronomy learning using their own bicycles.

These low-cost experiments helped students to understand science as a whole process while reconnecting them with the observation of natural phenomena. They used knowledge of different areas and approached Astronomy and basic science. The students involved in it improved both their performance in the Math and Science classes and their vision of the scientific method and a healthier lifestyle.

The approach involving students also creates an even deeper understanding of astronomy itself. Moreover, the fact that the students not only understand the topic, but also build their own materials attached to their own bicycle and make it the Velogyaneshwari, which fosters creativity, resourcefulness, experience and gratification, is empowering."

Redesigning ancient astrolabe for astronomy education

Ravindra Godbole
Bhandarkar Oriental Research Institute, Pune
Sudheer Vaishampayan
Sudheer Vaishampayan (Bhandarkar Oriental Research Institute)

Theme: Outreach based on history of astronomy in India

"The astrolabe is a highly sophisticated astronomical instrument of the Middle Ages. It is the representation of the three-dimensional celestial sphere on a two-dimensional plane by stereographic projection. It was widely used all over the world for observation and computation.
Ancient astrolabe and manuscript as well as related books, available at the Bhandarkar Oriental Research Institute were studied bo build astrolabes which can be used by high school students.
Key features of the developed astorlabes are as follows:
Use of Transperent Rete
Gregorian Calendar instead of Zodiac for Ecliptic
Integrated climate plate and Mater for specific location
Star names in English as well as Devnagari
Limited number of stars on Rete
Limited mathematical functions on the back side
Ruler for time and Declination measurement
Process of design, construction will be shared as a part of this talk."

Narrative Astronomy: Storytelling as a bridge between Science and Wonder

Akash Anandh
Chennai Astronomy, The Astronomical Society of Singapore

Theme: Integrating astronomy with the arts and humanities

"Astronomy outreach may begin with observation, but it truly comes alive through imagination and story. **Narrative Astronomy** is the practice of communicating astronomy through storytelling frameworks that connect scientific ideas to human emotion, curiosity, and wonder. This presentation explores how narrative structure can transform public engagement.
Drawing from my experience in two seemingly unrelated fields - astronomy outreach and writing for ad films, social media campaigns etc., this talk explores how narrative structure (scene-setting, conflict, and resolution) can transform astronomy outreach across formats: from digital content to social media, public talks to classroom sessions, and stargazing sessions.
I will share examples of how celestial events such as eclipses, planetary conjunctions, meteor

showers, etc. can be positioned as shared human experiences that inspire connection and empathy. The talk also introduces narrative tools such as the *And–But–Therefore (ABT)* framework for short-form communication, alongside insights showing that story-driven communication improves comprehension, recall, and emotional engagement.
Ultimately, Narrative Astronomy reframes outreach as more than sharing facts. It becomes an invitation into the shared story of the cosmos. By merging accuracy with empathy, and information with imagination, we help audiences not only understand the Universe, but truly *feel* being a part of it."

The Shadow and the Stick: Bringing Historical Indian Astronomy to Life for Hands-on Exploration

Boobesh IR

Sri Sivasubramaniya Nadar College Of Engineering.

Theme: Novel hands-on activities and demonstrations

"Contemporary astronomy outreach in India often overlooks its own legacy of observational astronomy and geometric instruments; an omission that limits both scientific curiosity and cultural connection. This talk presents an applied model that transforms historical Indian astronomical methods, as described by Aryabhaṭa, Bhaskara II, and Varāhamihira, into affordable experiential learning modules. One module, "Calculating Earth's Shadow Radius Through Siddhantic Methods," guides students through the geometric reasoning used to determine Earth's shadow dimensions from solar and lunar observations. Another, centered on Bhaskara II's Yaṣṭi-Yantra ("measuring stick"), lets students reconstruct the instrument to gauge heights using trigonometric methods. Pilot sessions show that such "historical hands-on" modules effectively demystify abstract astronomical ideas, enhance engagement, and nurture scientific temper by uniting mathematical reasoning with cultural continuity. Reviving classical Indian astronomy through participatory experiments transforms learning from passive reception into active discovery."

Khagol Goshti: A Collaborative Vernacular Resource for Strengthening Astronomy Education

Sai Shetye

Homi Bhabha Centre for Science Education, IUCAA

Durgesh Gaikwad; Surhud More; Pritesh Ranadive; Aniket Sule

Durgesh Gaikwad (Homi Bhabha Centre for Science Education (HBCSE-TIFR)); Surhud More (IUCAA); Pritesh Ranadive (HBCSE-TIFR); Aniket Sule (HOMI BHABHA CENTRE FOR SCIENCE EDUCATION)

Theme: Astronomy communication in regional languages: strengths and challenges

"Khagol Goshti (" ") is a compilation booklet of astronomy articles developed by HBCSE-TIFR and OAE Centre India, covering various topics from the Classes 6-8 NCERT curriculum. Originally written in Marathi for the Anandi newsletter (Redij & Sule, 2022) - a paper-based educational intervention by HBCSE-TIFR following a Design-Based Research methodology (Wang & Hannafin, 2005) these articles are written in a simple, engaging, and personal style that helps rekindle students' curiosity and connection with learning. The booklet serves as an authentic and reliable supplementary resource for educators, teachers, outreach professionals, and students alike. The talk will highlight the process and challenges involved in developing the articles. Currently available in Marathi and English, the talk will present opportunities to collaborate and get the material translated and typeset in other Indian languages, strategies adopted for compilation, and the educational need for such a resource. Currently available in Marathi, future plans include collaboration with astronomy educators across India to translate the booklet into other regional languages."

Vibe-Coding Astronomy: Generating Engaging Quizzes and Games using Google AI Studio to Inspire School Students

Boobesh IR

Sri Sivasubramaniya Nadar College of Engineering

Theme: Teacher training and student engagement in schools

"Traditional astronomy teaching often lacks interactive engagement. We have developed a novel approach of using AI-driven ""vibe coding"" to rapidly develop high-quality, engaging educational tools for school outreach in an accessible manner. This work uses Google AI Studio, in particular the Gemini API, to allow teachers and non-programmers to create complex gamified quizzes and interactive teaching aids by inputting natural language. This dramatically lowers the barrier to entry in developing digital outreach content. The astronomy games and quizzes that come out of this have been crafted to encourage scientific inquiry and inspire students to pursue the subject further. We demonstrate the practical steps for replicating this approach, offering a scaling model for outreach practitioners across India to deploy modern, personalized learning experiences more quickly. This work highlights the potential of using AI for revolutionizing the creation of content in astronomy communication and science education."

"A Big 14"" f4.3 Travelscope - Compact and light weight telescope design to fit in a Bag"

Niharika Gaikwad

Wonders of Universe

Niharika Gaikwad

Niharika Gaikwad (Wonders of Universe)

Theme: Novel hands-on activities and demonstrations

”**Design and Making of a 14-inch, Ultra-Portable Truss-type Travelscope- Telescope**
First of its king in India
Background: Big-aperture telescope offer superior deep-sky observation but pose challenges for storage & transport in conventional design. This project addresses need for a highly portable, large-aperture solution.
Methods: We developed a novel, **custom-built 14””f/4.3 truss type Travelscope** - **1st of its kind in India for its specific compact size & portability features**. The entire scope: primary mirror grinding, lightweight mirror cell, Trusses & all other parts suitable for compact packaging were engineered by us. The design allows for easy assembly into a **compact transport box (~480 x 480 x 250 mm)**,total weight of ~22kg. Packaging of 2”” eyepiece will provide wide-angle, immersive views of deep-sky objects.
WOW Results: **A compact, lightweight, Big Travelscope**- 1st in India that can be carried in a Bag. This significantly enhances accessibility to dark-sky sites compared to bulky Dobs. This provides a better option for amateur astronomers in India.
Conclusion: This project demonstrates the Indian ATM capability to make a large aperture scope with high portability through innovative design. Travelscope enhances accessibility to high-quality observation from dark-sky sites.
Keywords: Telescope Design, Truss Telescope, Dobsonian, Amateur Telescope making in India.”

Hands-on Learning as a Lens to Experience Astronomy

Vikrant Londhe

IISER Pune, IISER Pune, IISER Pune

Ashok Runner, Ankish Tirpude

Theme: Teacher training and student engagement in schools

”IISER Pune extends science education beyond its campus through outreach, making its expertise accessible to the wider community. The Science Activity Centre develops low-cost hands-on science activities and trains teachers and students through workshops and campus visits. This article highlights recent astronomy-based activities designed for school students and teachers.
Activity 1: A bead is used to represent the Moon, and Earth’s size is calculated to scale. A

thread of proportional length shows the Earth–Moon distance. The same scaling method is applied to make the Earth–Sun Model.
Activity 2: Lunar gravity is one-sixth of Earth's. A mechanical weighing scale's dial is rescaled to show comparative weights as they would appear on Earth and on the Moon.
Activity 3: A coordination-based game simulates the challenge of lunar landing. A cubic frame supports four cables attached to a model of the Vikram Lander. Four participants work together to lower the lander onto a selected spot.
Activity 4: An image by NASA's LRO highlighting the Vikram Lander site is printed on a 9×9 ft canvas. It allows participants to explore craters, replicate their shadows using a sandbox model, calculate scale, and use a magnet-sensing stick to locate the hidden lander
![Activities][1]
: https://drive.google.com/file/d/1AvAOni2PAl2j0sKdBErKeQotg79GK8KW/view?usp=sharing"

Venus & Astronomy

Prasad Adekar
"IUCAA, Pune, India,
Times of India (TOI)"
Debashish Sarkar
Debashish Sarkar (TOI)

Theme: Novel hands-on activities and demonstrations

"**Background**
Why a planet like Venus only visible during the evening or early morning and not at midnight from most parts of the earth? This question has been posed to teachers and students alike. Though this is not exactly a difficult question to answer if teachers & students approach the problem in a systematic way by understanding the position of the planet in the solar system and considering its rotation and revolution, but for many years more than 90% students and teachers we encountered have been unable to grasp this idea and reach a proper answer. This can be explained on board and cleared, but we came up with an effective paper activity which was later turned into a hard acrylic model that had a tremendous success rate not only explaining the venue problem but also helping in understanding the terms/concepts of "greatest eastern & western elongation, superior & inferior conjunction, opposition, eastern, western quadrature," and "retrograde motion."
Purpose

I wish to do a proper workshop where all participants will make the paper activity, and while doing this, they can clearly understand the concepts/terms and use this ""working paper model"" as an activity to teach their students."

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