



# INDIAN SPACE SCIENCE OLYMPIAD (ISSO) - 2024

## FINAL LEVEL OFFLINE WORKSHOP & EXAMINATION INSTRUCTIONS

The final level of Indian Space Science Olympiad (ISSO) will comprise a 3-day offline workshop and examination. Candidates who are eligible to attend the final level offline examination can register through [www.spaceolympiad.com](http://www.spaceolympiad.com).

**Event Dates: 27, 28 & 29 DECEMBER 2024**

**Reporting time: 08.45 AM on 27<sup>th</sup> December 2024**

### **Venue of final event and exam:**

Day 1 and Day 2 (27<sup>th</sup> & 28<sup>th</sup> December 2024): **A V Rama Rao Auditorium, New Chemical Sciences Building, IISc Bangalore**

Day 3 (29<sup>th</sup> December 2024): **JN Tata Auditorium, IISc Bangalore**

### **Overview of the Venue:**

The **Indian Institute of Science (IISc)** is a premier public research university located in Bengaluru, Karnataka. Established in 1909, IISc is renowned for its contributions to science and engineering research and education. The institute offers a range of undergraduate, postgraduate, and doctoral programs across various scientific disciplines.

**Location:** IISc is situated in the heart of Bengaluru, on a sprawling 400-acre campus. The institute's address is:

### **Indian Institute of Science (IISc)**

**C.V. Raman Avenue,  
Bengaluru - 560 012,  
Karnataka, India**

### **Reachability to the Venue:**

#### **By Air:**

The Kempegowda International Airport (BLR) is approximately 35 kilometers from the IISc campus. Travel time by taxi or airport shuttle is typically 45 minutes to 1 hour, depending on traffic conditions.

**By Train:**

- **Bengaluru City Railway Station (SBC):** About 7 kilometers from IISc. You can reach the campus via taxi, auto-rickshaw, or local bus services.
- **Yesvantpur Jn Railway Station (YPR):** Located less than 2 kilometers from the IISc campus. It is a convenient option for those traveling from this station, with taxis and auto-rickshaws readily available.

**By Bus:**

Bengaluru's BMTC (Bangalore Metropolitan Transport Corporation) bus network offers extensive connectivity throughout the city. Several bus routes service the IISc area. The nearest BMTC bus stop is located on the IISc campus or nearby on C.V. Raman Avenue.

**Accessibility:**

The IISc campus is accessible to visitors with proper identification. For ISSO events, edumithra will issue invitation and gate pass for candidates and parents.

**GENERAL INSTRUCTION**

- This program is structured with a defined schedule, rules, and decorum. It is not a luxury camping holiday.
- All candidates must report to the venue on time.
- Candidates must carry their original school ID card, Aadhaar card, or a Bona Fide certificate with a photograph.
- Candidates are not allowed to leave the venue without prior permission from the Camp Director. Any violation will result in immediate expulsion.
- Gadgets such as mobile phones and laptops are permitted at the venue but must be left in designated areas during examinations. This includes smartwatches.
- Candidates must remain in the exam hall until the end of the session.
- **The examination will be OMR-based with 50 multiple-choice questions.** Use a black or blue ballpoint pen to mark answers, and ensure the OMR sheet is undamaged and properly filled out.
- Any form of malpractice will result in disqualification.
- Parents must inform the registration desk if their child is on any medication. All medicines should be in their original containers.
- Parents must provide two contact numbers at the registration desk.
- On the 27th, parents should drop off their child at 8:30 AM and pick them up at 7:30 PM at the A V Rama Rao Auditorium, New Chemical Sciences Building, IISc Bengaluru.
- On the 28th, parents should drop off their child at 8:30 AM and pick them up at 8:00 PM at the A V Rama Rao Auditorium, New Chemical Sciences Building, IISc Bengaluru.
- On the 29th, parents should drop off their child at 8:30 AM and pick them up at 6:00 PM at the JN Tata Auditorium, IISc Bengaluru. Parents are also welcome to join the prize

distribution and closing ceremony from 2:00 PM to 6:00 PM.

- Unauthorized photography is prohibited during competition hours.
- Edu Mithra is not responsible for any costly belongings of the candidates.
- Participants must wear the ID cards provided to them throughout the Olympiad.
- Dress Code: Formal attire is required.
- Participants under the influence of drugs, alcohol, or other inappropriate substances will be expelled immediately.
- Candidates must maintain decorum and discipline on campus.
- Edu Mithra or IISc staff will not request any additional fees beyond the registration fee. Report any such incidents to the event director immediately.
- The organizers reserve the right to use photographs and videos taken during the competition for advertising, promotion, trade, or artistic purposes. If you do not consent to the use of your photos, please refrain from participating when Edu Mithra is taking photographs.
- Lunch (vegetarian/non-vegetarian) and snacks will be provided to candidates only.
- A water bottle will be included in the welcome kit.

#### **Safety at the Camp**

- Campers are supervised throughout the day to ensure safety.
- Staff continuously monitor the campsite for potential hazards. Safety is our top priority, and all activities are conducted with safety in mind.
- Each camper will receive an ID card with emergency contact information, including the Camp Director's number and the local sub-inspector's number.
- Our experienced team maintains an excellent safety record. First-aid and common medications are available on site. Hospitals are within a 10-15 minute distance.

## **FEE DETAILS**

**ISSO Final Level Workshop and Exam Registration Fee: INR 10000 (Exclude Lunch and Snacks)**

**Lunch and Snacks: INR 750 (can be paid at the venue)**

## **IMPORTANT NOTE**

### **Registration Process for Final Examination**

**1. Registration Closure:**

- The registration process will be permanently closed once the number of registered students in each category reaches 150.

**2. Eligibility for Final Examination:**

- Candidates who are in the TOP 150 are eligible to register for the Final Examination.
- Candidates not in the TOP 150 but who have cleared the examination will be placed on Waiting List 1 or Waiting List 2.

**3. Top 150 Registration Deadline:**

- TOP 150 candidates must register for the Final Examination by 5:00 PM on September 30, 2024.
- Candidates who fail to register by this deadline will have their candidature cancelled without prior notice and the top scorer from Waiting List 1 will then be moved into the TOP 150 list.

**4. Waiting List Registration:**

○ **Waiting List 1:**

- If any of the TOP 150 candidates do not register for the Final Examination by the deadline, the top scorer from Waiting List 1 will be moved into the TOP 150.
- Waiting List 1 candidates will have the opportunity to register from October 1 to October 10, 2024, if they are moved into the TOP 150.

○ **Waiting List 2:**

- After October 10, any remaining slots will be filled with candidates from Waiting List 2.
- Waiting List 2 candidates will be considered for registration from October 11 to October 20, 2024.

**Last Date of registration: 30<sup>TH</sup> SEPTEMBER 2024** visit [www.spaceolympiad.com](http://www.spaceolympiad.com) for registration



## **INDIAN SPACE SCIENCE OLYMPIAD 2024**

### **PROGRAM SCHEDULE**

#### **Day 1 – 27.12.2024**

**Venue:** A V Rama Rao Auditorium, New Chemical Sciences Building, IISc Bangalore

<b>Time</b>	<b>Activity</b>	<b>Details</b>
8:30 AM - 10:00 AM	Reporting Time and Registration	
10:00 AM - 10:30 AM	Ice Breaking	
10:30 AM - 11:00 AM	Tea Break	
11:00 AM - 1:00 PM	<b>Session 1:</b> Based on syllabus	<b>Speaker:</b> Mr. Sarath Prabhavu <i>Science Communicator and Astrophotographer</i>
1:00 PM - 2:00 PM	Lunch Break	
2:00 PM - 4:00 PM	<b>Session 2:</b> Based on syllabus	<b>Speaker:</b> Mr. Manosh TM <i>Science Communicator and PhD Scholar at Cochin University of Science and Technology (CUSAT)</i>
4:00 PM - 4:30 PM	Tea Break	
4:30 PM - 6:00 PM	<b>Invited Talk</b>	<b>Speaker:</b> Dr. Umamaheswaran <i>Distinguished Scientist &amp; Former Director of HSFC, ISRO</i>
6:00 PM - 7:30 PM	Astro Photography Workshop	<b>Speaker:</b> Mr. Sarath Prabhavu <i>Science Communicator and Astrophotographer</i>

## Day 2 – 28.12.2024

Venue: A V Rama Rao Auditorium, New Chemical Sciences Building, IISc Bangalore

Time	Activity	Details
8:30 AM	Reporting Time	
9:00 AM - 11:00 AM	Session 3: Based on syllabus	<b>Speaker:</b> Mr. Athul R T, Data Scientist & Researcher
11:00 AM - 12:00 PM	Tea Break and Preparation Time	
12:00 PM - 1:30 PM	OMR Exam 50 MCQ	Duration: 1 Hour
1:30 PM - 2:30 PM	Lunch Break	
2:30 PM - 4:30 PM	Hands-On Workshop and Activities:	On Space Science and Technology
4:30 PM - 5:00 PM	Tea Break	
5:00 PM - 6:30 PM	Invited Talk	<b>Speaker:</b> Dr. Lalithambika, Distinguished Scientist & Former Director of IHSP, ISRO
6:30 PM - 8:00 PM	Sky Watching and Star Hunting	

## Day 3 – 29.12.2024

Venue: JN Tata Auditorium, IISc Bangalore

Time	Activity	Details
9:00 AM - 11:00 AM	<b>Career in Space Science &amp; Technology</b>	Discussion
11:00 AM - 11:30 AM	Tea Break	
11:30 AM - 1:00 PM	<b>Invited Talk:</b>	<b>Speaker:</b> Dr. T K Anuradha <i>Distinguished Scientist &amp; Former Director of SATCOM Project, ISRO</i>
1:00 PM - 2:00 PM	Lunch Break	
2:00 PM - 6:00 PM	<b>Prize Distribution and Closing Ceremony</b>	<b>Chief Guest:</b> Padmabhushan Dr. B N Suresh <i>Distinguished Scientist and Professor at ISRO, Chancellor of Indian Institute of Space Science and Technology (IIST), Former Director of Vikram Sarabhai Space Centre (VSSC)</i>
6:00 PM	National Anthem	

**CODE OF BEHAVIOUR**

All participants are required to maintain acceptable behavior at all times during Edu Mithra's Indian Space Science Olympiad, including outside official event hours. This includes respectful interactions with other members, trainers, guests, faculty, and staff. Unacceptable behavior, such as verbal or physical abuse, deliberate damage or danger to others, will result in immediate removal from the program without any refund.

**FORCE MAJEURE**

Edu Mithra will not be liable for any failure to perform any program due to unforeseen circumstances beyond its reasonable control. This includes, but is not limited to, acts of God, war, riots, embargoes, civil or military authorities' actions, natural disasters, accidents, labor disputes, service interruptions, communication failures, or shortages of critical materials.

**CAMP VISITOR POLICY**

Visitors are strictly prohibited during camp days. Candidates may bring smartphones to contact their parents during designated free times as outlined in the program schedule.

**COMPLAINTS**

Complaints that cannot be resolved between the student and instructor or Edu Mithra staff during the event should be mailed to:

**Edu Mithra Intellectual Services Pvt. Ltd**

Chengamanad P O, Aluva, Kerala, India 683 578

All disputes related to this event will be subject to the exclusive jurisdiction of the courts of Ernakulam, Kerala, India.

For further assistance, please call +919446321098 between 9 AM and 5 PM or email [info@edumithra.com](mailto:info@edumithra.com).





# Indian Space Science Olympiad 2024

Meet the leading experts in space science  
and technology who are shaping the  
future of India's space exploration.





# Dr. B N Suresh

Distinguished Scientist and Professor at ISRO Headquarters,  
Chancellor, Indian Institute of Space Science and Technology (IIST) &  
Former Director of Vikram Sarabhai Space Centre (VSSC)





Byrana Nagappa Suresh (Dr. B N Suresh) assumed charge as Chancellor, Indian Institute of Space Science and Technology (IIST) on 6th November 2017. Dr. B N Suresh, an aerospace scientist, served as the founder Director of IIST. He was the Director of Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram during the period 2003-2007. He is known for his contribution to Space Capsule Recovery Experiments (SRE). He retired from IIST in November 2010. Presently he is serving as Vikram Sarabhai Distinguished Professor at ISRO Headquarters since November 2010. He was also distinguished Professor at IIT, Mumbai and MIT, Maniplal.

He has been honoured with several awards for his significant contributions in the field of Space Technology.

- Padma Bhushan (2013)
- Padma Shri (2002)
- Distinguished Alumni Award - IIT Madras (2004).
- Dr.Biren Roy Space Science and/or Design Award, 1993 by the Aeronautical Society of India.
- ASI Award 1996, for Rocket & Related Technologies, by Astronautical Society of India, 1996
- "AGNI" Award for excellence in Self Reliance by Defence Research & Development Laboratory, Ministry Of Defence in 1999.
- "Ramanujam Memorial Award" PSG Coimbatore at National System Conference, 2005
- "Technical Excellence award' by Lions International, Trivandrum, Jan 2006
- "Outstanding Achievement Award" by Indian Space Research Organisation in June 2007.
- "Lifetime Achievement Award" by Indian National Academy of Engineering, INAE) Delhi, in Dec 2007
- "National Systems Gold Medal" for lifetime contributions for large Systems by System Society of India in Dec 2007.
- "Aryabhata Award" for excellent contributions in space technology by Astronautical society of India,for 2009

**An esteemed aerospace scientist, he was the founding Director of IIST and later led the Vikram Sarabhai Space Centre (VSSC) as Director.**





# TK Anuradha

Distinguished Scientist & Former Director SATCOM Program, ISRO





K Anuradha was born in 1960 in Tumkur, Karnataka. Her parents were TS Krishnamurthy, a Professor in Sanskrit and T K Sulochana Devi, a homemaker. Her spouse V Kiran is Retd. General Manager, Bharat Electronics and her daughters Shruthi K Harve and Sindhu K Harve are engineering Post Graduates. She has spent her childhood in Shivamogga and Bengaluru. She grew up with three sisters. She was brought up in an atmosphere emphasizing education and values; parents encouraging them to be independent and think freely.

Her primary schooling was in Kannada Medium at Sarodiya Elementary School, Shivamogga. Her secondary schooling was at Malleswaram Ladies Association, Bengaluru. She received the National Merit Scholarship and was active in extracurricular activities. She pursued Bachelor of Engineering, Electronics & Communication at University Visvesvaraya College of Engineering, Bengaluru with distinction and was a University topper.

She joined ISRO Satellite centre in 1982 as Engineer 'SB' and superannuated in 2020 as Distinguished Scientist holding the post as Director, SATCOM Programme at ISRO Head Quarters. She started her career as a Satellite Test Engineer with the responsibility of designing test systems and interfaces to satellites and carrying out tests for the operational effectiveness of the integrated satellites in various mission environments. Over the years, she has executed the responsibilities of project manager, deputy and associate project director and design team leader for several series of ISRO satellites with responsibilities overlapping in the timeframe. She was the Project Director for indigenous communication satellites of the GSAT series, the first woman to hold the post of Project Director at ISRO. She was Programme Director for Satellites in Geosynchronous orbit. She also acquired expertise in the design and realisation of embedded system, Automation, interface protocol development, digital and power electronics systems. She is experienced in system management of satellites for Remote sensing, Communication and Navigation and the related ground systems and in the launch interfaces and launch base operations, management of SATCOM systems.

Her major engineering contributions were designing and launching the indigenous GSAT-12 as the first ISRO I1K bus-based communication satellite compatible for launching on Indian soil, with PSLV. She designed extended Bus configurations for advanced communication satellites with All-electric propulsion systems and advanced interfaces for verifying the functional effectiveness of indigenously developed onboard systems of TES satellites. She contributed to the automation of Ground test systems using indigenous interface standards and protocols. She also played a role in the design & realisation of interface protection systems and Fault-tolerant systems for satellite interfaces and launch vehicle interfaces of the satellite.

She has been conferred with several awards and recognitions including the Space Gold Medal award by the Astronautical Society of India; ISRO Merit Award; ISRO Team Award as team leader for GSAT-12; Smt Triveni Devi Gupta Memorial Award by IETE; "Space Systems Management award" by Astronautical Society of India; Honorary Doctorate by Akkamahadevi University, Vijayapura, and ISRO Performance Excellence Award. •

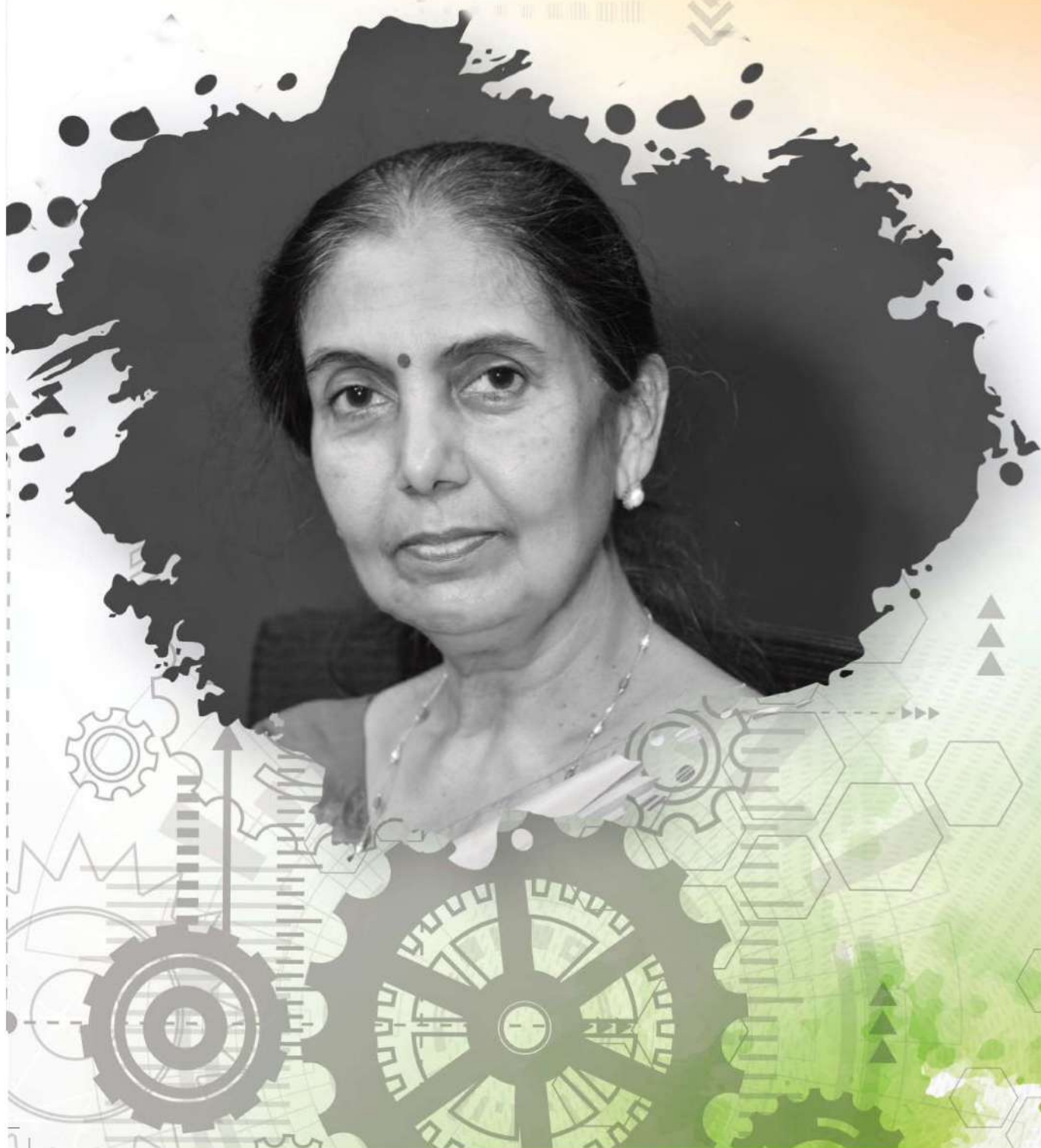
**As Project Director for indigenous communication satellites of the GSAT series, the first woman to hold the post of Project Director at ISRO, she contributed to designing and launching the indigenous GSAT-12.**





# Lalithambika V.R.

Distinguished Scientist and  
Former Director of IHSP, ISRO





alithambika V.R. was born in Thiruvananthapuram, Kerala, in 1962 to V. S. Ramachandran Nair, a civil engineer, and Vijayalekshmi Amma, a homemaker. She is married to Pradeep Kumar (Chairman, Kerala State Pollution Control Board). She has two children, Poornima, a postgraduate doctor, and Aravind, a postgraduate engineer, and three grandchildren, Sidharth, Souparnika, and Parvathy.

During her childhood, she used to watch the regular-sounding rocket launches from Thumba near her hometown with her grandfather, M.N. Ramakrishna Pillai, a mathematician, and that made her interested in space program. Her education took place in Providence Convent, Kozhikode, Chovva High School, Kannur, and Holy Angels Convent, Thiruvananthapuram. She passed the SSLC examination as the South Kerala topper. She graduated with an Electrical engineering degree from the College of Engineering, Trivandrum, with the best outgoing student award and second rank (University of Kerala). Her MTech degree is from the same college, and her Ph.D. in Electrical Engineering from the University of Kerala (2009).

She joined the Vikram Sarabhai Space Centre in 1988 as a launch vehicle autopilot design engineer. She subsequently expanded her sphere of activity and responsibility to include the entire gamut of design and validation activities and flight telemetry data management for ISRO launch vehicle missions. Over the years, she has held various positions such as Division Head, Group Director, and Deputy Director of the Vikram Sarabhai Space Centre. She took over as the first Director of the Directorate of Human Space Programme, ISRO in 2018 and was later designated as Distinguished Scientist. Her efforts were instrumental in the way forward for India's human spaceflight endeavour, Gaganyaan and in establishment of a Human Spaceflight Centre. Her contributions include evolving crew selection criteria, training curriculum, and enabling the selection of Indian Astronaut trainees.

She has designed the autopilot for PSLV, GSLV, and GSLV MkIII and later led the team in developing guidance and autopilot systems, flight software, and validation of Navigation, Guidance and Control systems for all ascent and re-entry missions. She has played a significant role in the conceptualization and operationalization of day of launch wind biasing, enabling all-season launch. She has also been instrumental in devising innovative mission management strategy and robust guidance system design of India's first winged re-entry vehicle RLV-TD with a unique ascent/descent configuration. For ISRO's prestigious Mars Orbiter Mission, she has steered the team to manage mission design challenges while optimizing the design and validation cycle. For long-duration missions with an upper stage in orbit, innovative design strategies have culminated in versatile missions injecting multiple satellites in different orbits. Under her leadership, the integrated simulation facility of VSSC was expanded into a world-class facility with new testbeds, including the iron bird for actuator-in-loop simulation.

She has been conferred with several awards and recognitions, such as the Space gold medal by the Astronautical Society of India; ISRO merit award; ISRO performance excellence award; Doctor of Science (Honoris Causa), Satyabhama University; Marie Curie Mahila Vijnana Puraskara by Karnataka Swadeshi Vijnana Andolana and INAE Woman Engineer of the Year Award. •

**Her efforts have been instrumental in the way forward for India's human spaceflight endeavour, Gaganyaan. She has also designed the autopilot for PSLV, GSLV, and GSLV MkIII.**





# Umamaheswaran R

Distinguished Scientist and  
Former Director of HSFC, ISRO





Umamaheswaran R, born on May 20, 1963, completed his B-Tech in Electronics & Communication Engineering from College of Engineering, Trivandrum, a Master's in Software Systems from BITS, Pilani, and a Ph.D. in Electronics & Communication from the National Institute of Technology, Tiruchirapalli. He also holds a Master's degree in Russian Language from Kerala University. His professional interests include launch vehicle technology, program management, science and technology policies, and space policy planning.

Dr. Umamaheswaran has been with the Indian Space Research Organisation (ISRO) for nearly 35 years. At Vikram Sarabhai Space Centre (VSSC), he served for 31 years in various roles, including Project Director of GSLV from July 2014 and Deputy Director of VSSC Avionics from May 2017. He was Associate Scientific Secretary of ISRO from May to August 2018 and subsequently became the Scientific Secretary of ISRO. He assumed the role of Director of the Human Space Flight Centre in Bangalore on March 3, 2022.

Significant contributions include drafting the Space Activities Bill and sectoral reforms toward the Atmanirbhar Bharat vision. He chaired the High-Level Interim Committee to implement space sector reforms, enhancing private sector participation. His efforts facilitated private industry access to ISRO facilities, introduced a national registration mechanism for Indian space objects, and enabled the launch of four student satellites in PSLV.

Dr. Umamaheswaran has been a key player in ISRO's international cooperation, co-chairing Joint Working Groups with space agencies such as ROSCOSMOS (Russia), JAXA (Japan), ESA (Europe), NSSA (Bahrain), CRTS & CRERS (Morocco), ASAL (Algeria), CONAE (Argentina), MDAI (Kazakhstan), and EgSA (Egypt). He represented India in the UNCOPUOS meeting (June 2019) and led the ISRO delegation at APRSAF 2020. As Chair of the Working Group on Long-Term Sustainability of Space Activities in UNCOPUOS, he is working with UN member countries on international guidelines for the sustainability of outer space activities.

During his tenure at VSSC, Dr. Umamaheswaran played a crucial role in system integration, checkout, and avionics for ISRO's PSLV, GSLV, and GSLV-Mk III launch vehicles. Notably, he was Chief Designer (Integration) for major subassemblies and mission-critical circuits. He achieved success as Mission Director for three successive GSLV missions and as Vehicle Director for the GSLV D5/GSAT-14 Mission with the indigenous cryo stage. As Deputy Director of the Avionics Entity, he led the development of miniaturized avionics and Electro Mechanical Actuation Systems.

He is a member of several national and international bodies, including the Board of Trustees of the International Academy of Astronautics (IAA) and the IN-SPACe Board. He has held roles such as Chair of the Programme Review and Advisory Committee (PRAC) at the Centre for Nano Science and Engineering (CeNSE), IISc, and Co-Chair of the Joint Policy Committee of ISRO-IIT-B Space Technology Cell.

Dr. Umamaheswaran's accolades include the ISRO Individual Merit Award (2013), ISRO Team Awards (2006, 2014), ISRO Outstanding Achievement Award (2018), ASI-ISRO Award (2016), and honorary degrees from Sathyabama Institute of Science and Technology (2019). He also received the Dr. Biren Roy Space Science and Design Award from the Aeronautical Society of India (2019).

**On March 3,  
2022, he  
took charge  
as the  
Director of  
the Human  
Space Flight  
Centre in  
Bangalore**





# Athul R T

Data Scientist & Researcher





thul R. T. is a highly accomplished researcher and data scientist with extensive expertise in data processing, visualization, and analysis, utilizing advanced deep learning and machine learning techniques. With a strong foundation in physics and data science, Athul has made significant contributions across various projects and domains.

From 2022 to 2024, Athul served as a Project Manager (R&D) at Msigma Gokulam, where he led research initiatives in artificial intelligence and machine learning, focusing on areas such as computer vision, deep learning, embedded systems, and the Internet of Things (IoT). Prior to this role, he worked as a Researcher and Developer at Zackriya Solutions from 2020 to 2021, contributing to a range of projects in data science, machine learning, and software testing automation.

Athul's technical skills include operating specialized equipment, such as the Field Emission Scanning Electron Microscope at CUSAT during 2020-2021, and telescopes for astronomical observations from 2019 to 2020.

He has also conducted theoretical research on neutron star equations of state using Relativistic Mean Field theory.

He holds an MPhil in Physics from CUSAT (2017-2018), where his research focused on the orientation effects of disk galaxies through Monte Carlo simulations. Athul completed his MSc in Physics at the University of Kerala (2013-2015), where he reviewed the Lambda-CDM model of the universe, and earned a BSc in Physics from VTM NSS College (2010-2013), analyzing methods that advocate for the presence of dark matter.

Athul has been actively involved in astronomy-related activities since 2012. As a member of AASTRO Kerala, he has conducted various sessions on astronomy topics throughout the state. He is also engaged in citizen science projects, including those on the Zooniverse platform. Notably, he co-authored research related to Astrosat data analysis, which was published in "The Astrophysical Journal."

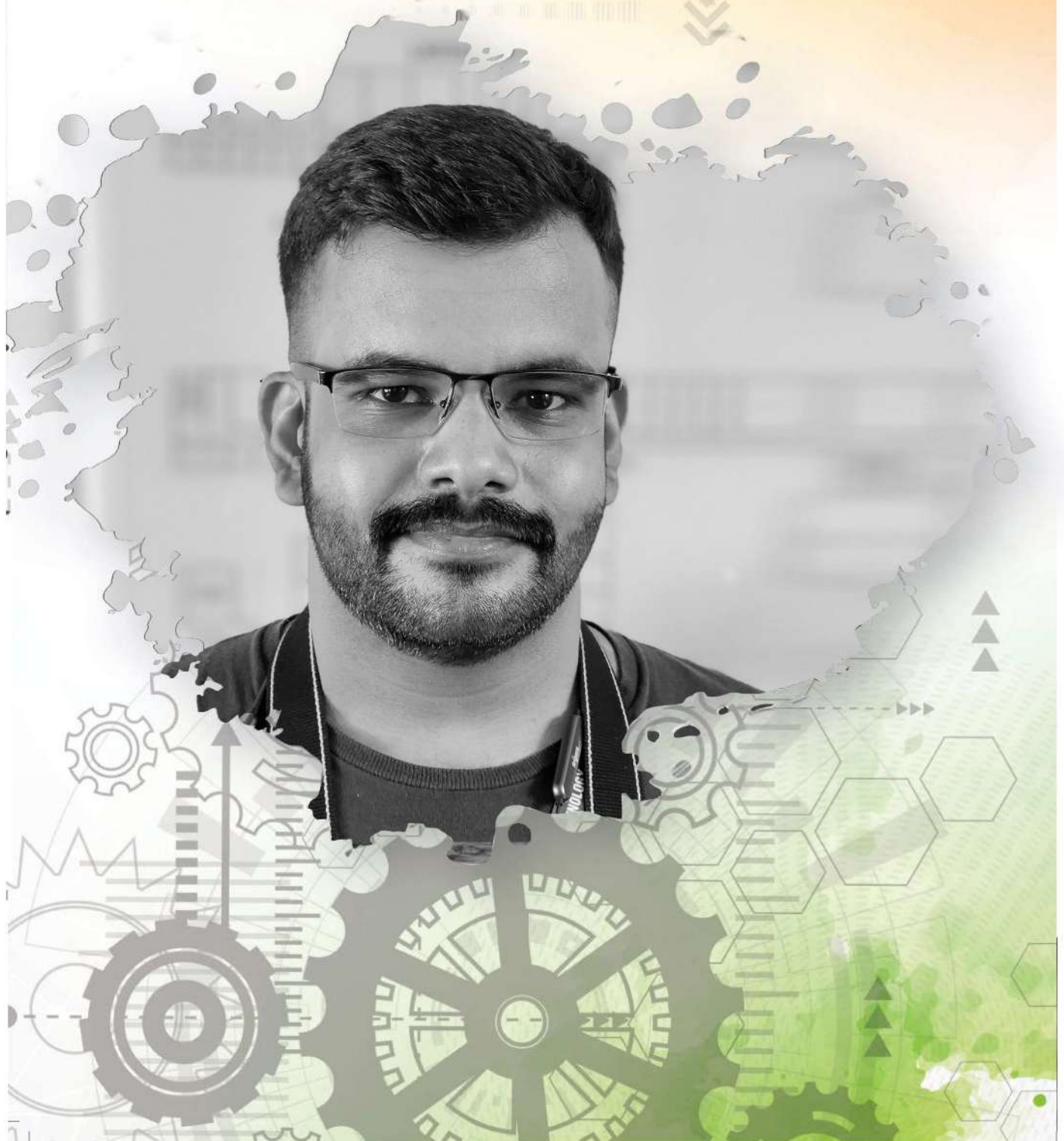
**An active  
researcher and  
contributor of  
open science,  
open data and  
free and open  
source Software.**





# Manosh T M

Science Communicator &  
Phd Scholar at Cochin University of Science and Technology (CUSAT)





Manosh T. M. (Manosh Tharayilparambil Manoharan) is a passionate researcher and Ph.D. student at the Department of Physics, Cochin University of Science and Technology (CUSAT), Kerala, India. His academic journey began at Maharajas College, Ernakulam, where he developed a deep interest in physics, later pursuing advanced studies in cosmology and theoretical physics. Currently, his Ph.D. research is centered on understanding the universe's late-time accelerated expansion, with a focus on constructing a dark energy model that adheres to thermodynamic principles and the holographic framework. Manosh's work is innovative in its approach, exploring entropic models such as Rényi entropy to provide new perspectives on dark energy, and addressing critical challenges like cosmic tensions in observational data.

Beyond cosmology, Manosh has also delved into neutrino physics through his involvement with the NOvA experiment at Fermilab, USA. His research in this area has provided significant insights into the geometric phases of neutrino mixing, examining their dependence on mass ordering and CP-violating phases. His work explores both vacuum conditions and matter effects, offering a nuanced understanding of how neutrinos interact and oscillate.

Manosh's academic rigor is complemented by his experience as a project fellow and intern, where he honed his skills in high-energy physics and quantum optics. His contributions to research are widely recognized, with several published papers and conference presentations that showcase his commitment to advancing knowledge in cosmology and particle physics. Driven by a curiosity for the fundamental laws of the universe, Manosh continues to explore the intersection of quantum theory, cosmology, and high energy particle physics, making significant strides in his field.

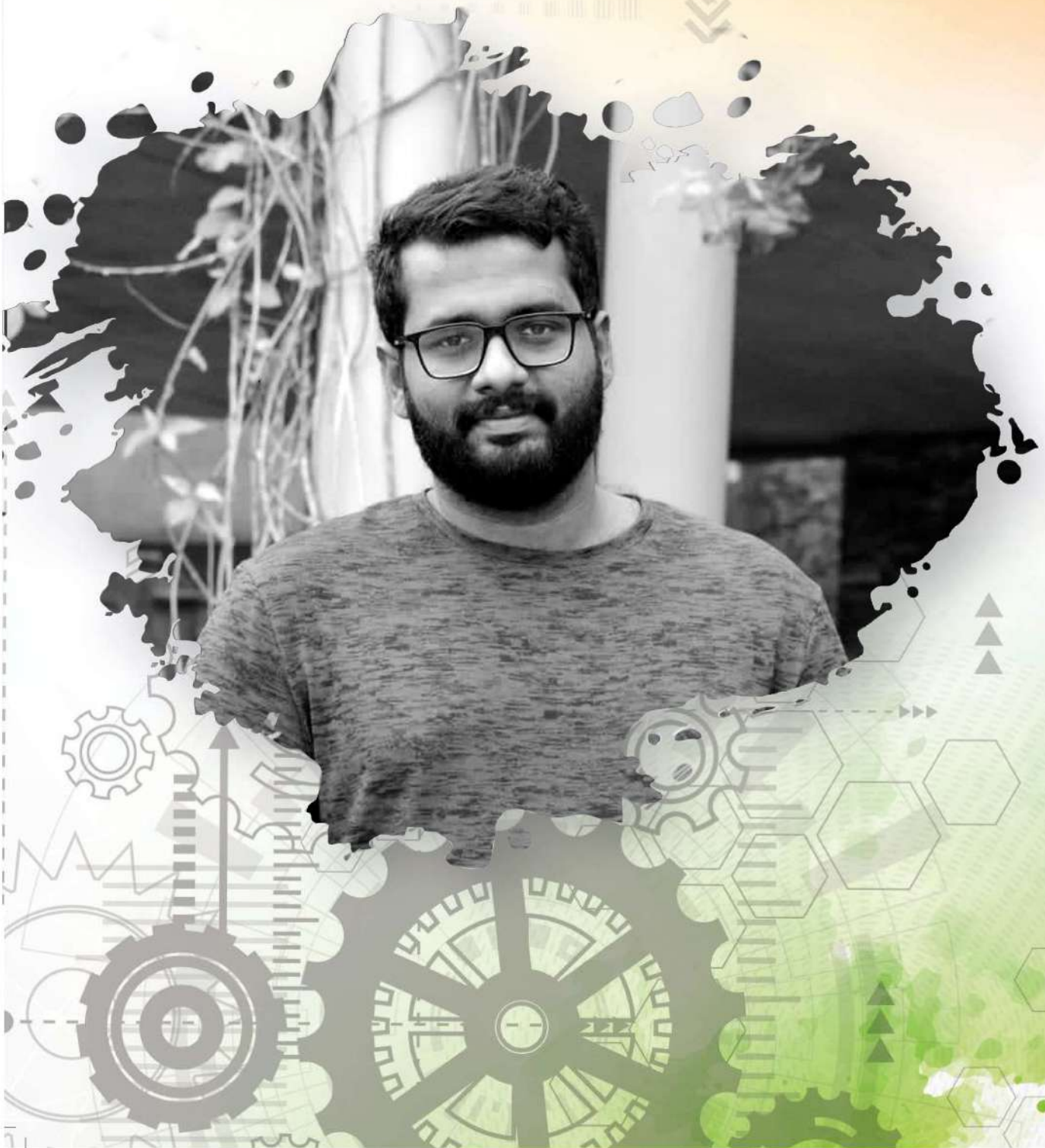
**Active researcher who doesn't settle until the puzzle is better understood. Tries to bridge the gap between observations and theories.**





# Sarath Prabhavu

Science Communicator, Writer and Astrophotographer





With over a decade of experience, Sarath Prabhavu is a passionate science communicator, writer, researcher, and astrophotographer, specializing in astronomy. His dedication to making space science accessible has touched audiences ranging from school children to the general public. As a coordinator of national and international astronomy classes and workshops, Sarath brings the wonders of the cosmos to people of all ages.

An avid stargazer, he has traveled across India, capturing the beauty of the night sky and organizing stargazing sessions. Sarath also hosts an astronomy show on Kerala Government's educational channel, Victors, inspiring young minds to look up to the stars.

He holds an MPhil in Physics with a specialization in Astrophysics, focusing on Gamma Ray Bursts (GRBs) in his research. Sarath has worked at the International Liquid Mirror Telescope (ILMT), the largest of its kind in Asia, at the Devasthal Observatory. His experience extends to working with the Devasthal Optical Telescope (DOT), India's largest solid mirror optical telescope, further enriching his deep engagement with observational astronomy.

Sarath is associated with numerous prestigious organizations and institutions, including Edu Mithra, AASTRO Kerala, Kerala State Science and Technology Museum and Planetarium, Starvoirs, Space-Up Cusat, IIST Students Camp, IEEE, OutGROW, PRAVAHA Foundation, Discoveralpas, UL Space Club, Sasthrasnehi, Kerala Sasthra Sahithya Parishath, Kerala State Institute for Children's Literature, EMRC (Calicut University), IUCKLAM CUSAT, Malayalam Mission (IGCAR, Kalpakkam), SIET, and ARIES. His collaborations with these groups reflect his deep commitment to fostering a love for astronomy and science education across various platforms and communities.

**a renowned  
astrophotographer  
and science  
communicator,  
inspires others to  
explore the cosmos  
through his  
research, writing,  
and educational  
programs.**





**INDIAN  
SPACE SCIENCE  
OLYMPIAD**