



ASTRONAUTICAL
SOCIETY OF INDIA



International Conference on
Space for Sustainability: Science, Technology, Education and Policy (S² : STEP2025)
&
6th Indian Planetary Science Conference (IPSC-2025)

Scientific Program [Oral Presentations]

Space Technology Advancements (STA)

Venue: APJAKB-103

“Institute Lecture Hall and Conference Complex”

Day – 1 (04th March 2025, Tuesday)

Time	Session/Event	Speaker
12:00 – 13:30	Technical Session – 1T, 1E & 1P Session Chair: Prof. Anil Kumar Gourishetty, IIT Roorkee	
12:00-12:30	Invited Speaker (Talk-I)	Dr. Anupam Sharma, DRDO
12:30-13:00	Invited Speaker (Talk-II)	Prof. Kuruvilla Joseph, IIST
13:00-13:30	Invited Speaker (Talk-III)	Prof. R. K. Pant, IIT Bombay



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Time	Session/Event	Speaker
14:30 – 16:10	Technical Session – 2T “Space Applications” Session Chair: Prof. Rajib Kumar Panigrahi, IIT Roorkee	
14:30-14:40	An Event-Driven Microservices-Based System For Automatic Failover of NAVIC Operations	Koushik Nag, ISRO
14:40-14:50	Geoai for Civic Administration Using Geospatial Technique	Shrinivas Khandare, RTMNU
14:50-15:00	A Deep Learning Framework For Precision Deblurring: Vit Psf Estimation And Gan Deconvolution With Applications In Large-Scale Sky Surveys And Celestial Object Detection	Lakshya Singh; Arjun Basandrai; Akshanth Sai K; Aditi Kora VIT Vellore
15:00-15:10	Flood Mapping of Jayakwadi Dam, Paithan Tehsil Town, Aurangabad District, Maharashtra, Using Sentinel-1 Sar Data	Harshal Narayan Dandgavhal K K Wagh Arts Commerce Science & Computer Science College Nashik
15:10-15:20	Preliminary Performance Evaluation of Navic Receiver in Urban Environment on A Moving Vehicle	Vishwadeep Gowlikar, JNTUH University, Hyderabad
15:20-15:30	Automation of Spectrum Analyzer Operations for Satellite Communication Link Characterization	Sahal Mohammed M N, ISTRAC-ISRO
15:30-15:40	Advancing Satellite Operations and Disaster Management Through Navic: An Overview of India’s Indigenous Navigation System for Leo, Meo, And Geo Satellites	Shivani K L, ISTRAC-ISRO
15:40-15:50	Suitability of Speckle Filters for Urban Change Detection Due To Earthquakes Using Pulsar Data	G Devendhar, NIT Hamirpur
15:50-16:00	Comparative Evaluation of Satellite-Derived Bathymetry Using Sentinel-2 Imagery and Icesat-2 Lidar Data in Coastal Dwarka, Gujarat, India	Komal Rani, CSIR-NIO
16:00-16:10	Harnessing the Physics of Light: Advancing Photonic Integrated Circuits for Sustainable Space Exploration	Gayathri Aishwarya E, ISRO



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16:30 – 17:10	Technical Session – 3Ta “Space Applications” Session Chair: Prof. Rajib Kumar Panigrahi, IIT Roorkee	
16:30-16:40	Assessment And Characterization of Landslide Sites in Satara and Pune Districts, Maharashtra, India Using Uav and Remote Sensing Techniques.	Hrishikesh Umakant Mulay; Komal M Kamble
16:40-16:50	Automated Detection of Wind Turbines Using Satellite Imagery: Case Study of Indian Territory	Pooja Sarin, UPES, Dehradun
16:50-17:00	Sustainable Development And Resource Conservation of Hastinapur Wildlife Sanctuary in the Indo-Gangetic Plains Using Geospatial Technology	Akash Goyal, ISRO
17:00-17:10	Development Of Compact Laser Communications Terminal for Point-To-Point Data Transmission in Space Applications	Rajat Kumar; Yaagyanika Gehlot, Astrogate Labs
Time	Session/Event	Speaker
17:10 – 18:30	Technical Session – 3Tb “Space Applications” Session Chair: Prof. Amalendu Patnaik, IIT Roorkee	
17:10-17:20	Numerical and Experimental Investigation on Parabolic Reflector Surface Supported by Coilable Tape Spring Truss	Priyank Kumar Patel, IIT Roorkee
17:20-17:30	Polarimetric SAR-Based Above-Ground Biomass Estimation Using Machine Learning Algorithm	Shatakshi Verma, IIT Roorkee
17:30-17:40	Experimental and Finite Element Analysis of Deployment Behavior of Air Inflatable Fabric Structure	Kuldeep Singh, IIT Roorkee
17:40-17:50	Design of Compliant Mechanisms And Their Application in Space: A Review	Anurag Verma, ISRO
17:50-18:00	Non-Destructive Detection of Polyimide Foam Defects Using Sub-Terahertz Antennas for Spacecraft Applications	Piyush Kumar Singh, IIT Roorkee
18:00-18:10	Satellite-Based Landslide Detection and Monitoring in the Himalayan Region: A Hybrid Approach Using SAR Amplitude and Phase Data	Praveen Sharma, IIT Roorkee
18:10-18:20	Advances in uses of Space technology for societal applications	Murali Kunde, SDSC-SHAR, ISRO
18:20-18:30	Estimation of critical buckling load on tubular column using frequency measurement technique	B. Karthikeyan, VSSC, ISRO



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Time	Session/Event	Speaker
18:30 – 19:00	Technical Session – 3T, E & P	
	Session Chair: Prof. Amalendu Patnaik, IIT Roorkee	
18:30-19:00	Invited Speaker (Talk-IV)	Dr. Prakash Chauhan NRSC, ISRO



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Venue: APJAKB-004 [Parallel Session]

“Institute Lecture Hall and Conference Complex”

Day – 1 (04th March 2025, Tuesday)

Time	Session/Event	Speaker
16:30 – 18:30	Technical Session – 3T “Space Technology” Session Chair: Prof. Satish Kumar, MNNIT Allahabad	
16:30-16:40	Inflated Torus in Contact With Elastic Plates	Satyajit Sahu, IIT Bhubaneswar
16:40-16:50	Advance AI Architecture for Satellite Mission Management: Integrating NER, Llama and Stt Models	Akash Vishwakarma; Shaik Mohammed Muzammil Ali, Central Uni. of Karnataka and ISRO
16:50-17:00	Near Real-Time Orbit Prediction through Deep Learning Techniques from Satellites Telemetry	Ravi Kumar, ISTRAC-ISRO
17:00-17:10	A System for Long Term and ShortTerm Observation Planning for XPOSAT	Sachin Narang, ISTRAC, ISRO
17:10-17:20	Autonomous End-of-Mission Protocol for Satellite Re-Entry: A Sustainable Solution to Mitigate Space Debris	Harman Singh Modi, VIT, Vellore
17:20 -17:30	Evaluation Strategy of High-Power RF Circulators for Critical Satellite Missions	Sushant Kumar, SAC, ISRO
17:30 -17:40	Satellite Navigation and Control Using Physics-Informed Artificial Potential Field and Sliding Mode Controller	Paridhi D Choudhary, IIT Kharagpur
17:40-17:50	A Compact 140 GHz D-Band Power Amplifier with 11 dBm output power and 34.5 dB Gain in SiGe BiCMOS for High-Frequency Communication Application	Mohit Kumar, IIT Roorkee
17:50-18:00	Advancements in Nanosatellite Technology: Revolutionizing Space Access and Applications	Agrawal Manoj Kumar, IIT Roorkee
18:00-18:10	In-Situ Extra-Terrestrial Processing on Moon and beyond	A Tarakajyothi, SDSC-SHAR, ISRO
18:10-18:20	Contours of Latest Global Research in Space Sciences	Subhradip Ghosh, SDSC-SHAR, ISRO
18:20-18:30	Deep Learning-based Pose Estimation for Evaluating Astronaut Movements in Microgravity	Shantanu Saha, HSFC, ISRO



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Day – 2 (05th March 2025, Wednesday)

Time	Session/Event	Speaker
14:30 – 16:00	Technical Session – 4T, 4E & 4P Session Chair: Prof. B. V. Manoj Kumar, IIT Roorkee	
14:30-15:00	Invited Speaker (Talk-V)	Dr. Vikas Kumar, ARDB
15:00-15:30	Invited Speaker (Talk-VI)	Dr. B. R. Uma, URSC, ISRO
15:30-16:00	Discussion	



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Day – 2 (05th March 2025, Wednesday)

Time	Session/Event	Speaker
17:00 – 18:00	Technical Session – 5Ta “Space Technology Emerging Trends” Session Chair: Prof. Bulbul Mukherjee, ISRO	
17:00-17:10	Numerical Modeling of Regolith Dispersion During Lunar Landing Using a Two-Way Coupled Dsmc-Dem Approach	Rakesh Kumar, IIT Kanpur
17:10-17:20	Enhancing Power Output Using Auxetic Metamaterial Energy Harvester	Amit Pandey, IIT Mandi
17:20-17:30	Space Sustainability: Advances And Challenges In Space Debris Detection And Mitigation	Tejas Sharma, DTU
17:30-17:40	Real-Time-Plasma-Thruster Trajectory Optimization Using Deep Learning	Harsh Choudhary, KIIT
17:40 -17:50	Cybersecurity In Space Missions: Policy Implications and Technological Solutions	Monami Som Saha; Adwitiya Paul, VIT, Vellore
17:50 -18:00	A Fully Push-Pull Based Fast & Fine Steering Mirror Using Piezo Actuators	Cho Jung, Researcher
18:00-19:00	Technical Session – 5Tb “Space Technology Emerging Trends” Session Chair: Prof. Rakesh Kumar, IIT Kanpur	
18:00 -18:10	Best Practices for Large Constellations: Paving the Way for Space Traffic Management	Bulbul Mukherjee, ISRO
18:10 -18:20	Orbital Collision: An Indigenously Developed Web-Based Space Situational Awareness Platform	Partha Chowdhury; Harsha M, IIIT, Delhi
18:20 -18:30	Developing Modular Construction Block for Lunar and Martian Habitats Using 3d Printing Through Analogue Studies	Adarsh, IIST, Trivandrum
18:30 -18:40	An Explorative Analysis of Wind and Geothermal Energy Generation Mechanisms for A Self-Sustaining Colony on Mars	Shreya Trivedi; Harshitha Saradhi, VIT, Vellore,
18:40-18:50	Jibreelian Theory of Time Frame Matrix, Sun's Trajectory with Reference to Absolute Time Frame Reference and Alternative Techniques For Teleportation Other Than Wormholes.	Mohammad Farhan, IIT Gandhinagar
18:50-19:00	Design and implementation of Post Quantum Cryptography in hardware for quantum secure spacecraft applications	Sumedha Goyal, SAC, ISRO



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Venue: APJAKB-004 [Parallel Session]

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Time	Session/Event	Speaker
17:00 – 19:00	Technical Session – 5T “Satellite Technology” Session Chair: Dr. Ravi Kumar, ISTRAC- ISRO	
17:00-17:10	Microwave Machining of Difficult-to-Machine Aerospace Materials	Anurag Singh, IIT Roorkee
17:10-17:20	State of the Art Review of Inflation Methodologies For Spaceborne Gossamer Structure	Km.Vishakha Singh, NIT Rourkela
17:20-17:30	Tuning Modal Frequencies and Mode Shapes of FEA Model Using Self-Adaptive Genetic Algorithm Optimization	M Mollick, IIT Roorkee
17:30-17:40	Potential Use Cases for Graphene-Filled Sma-Frp In Eva Gloves	Rajat Shubhra Basu; Hrithik Pandian Muthukumaran, VIT Vellore
17:40 -17:50	Numerical Simulation and Dynamic Stability During Inflation of Membrane Based Torus Structures.	Amrendra Kumar Singh, MNNIT Allahabad
17:50 -18:00	Bending and Torsion Analysis of an Inflatable Boom	Sagar, LAAMS, IIT Kanpur
18:00 -18:10	Design of Lightweight Honeycomb Based Multifunctional Mechanical Metamaterials For Space Application.	Mohit Awasthi, IIT Kanpur
18:10 -18:20	Wrinkling Analysis of Adaptive Membrane Structures at on-Orbit Conditions	Satish Kumar, MNNIT Allahabad
18:20 -18:30	Dynamics Analysis of Circular Torus Membrane Based Inflatable Antenna	Pradeep Singh, MNNIT Allahabad
18:30 -18:40	A Novel Architecture of on-Board Reconfigurable Data Handling System for Earth Observation Satellite	Ankit Agarwal, ISRO
18:40-18:50	Novel Methodology for the Design Optimization of Drag Sails.	Priyesh Kumar Jain, HSFC, ISRO
18:50-19:00	Design, Development and Qualification of Solar Panel Substrates for powering the Service Module of Indian Manned Mission	Manisha Verma, ISRO



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Day – 3 (06th March 2025, Thursday)

Time	Session/Event	Speaker
14:00–15:30	Technical Session – 6T “Space Technology Emerging Trends” Session Chair: Prof. Swapnil Shinde, NIT Rourkela	
14:00-14:10	Numerical Investigation on Effect of Convergence Angle in Swirl Injector	Pranjit Sharma, LPSC, Valiamala
14:10-14:20	Optimization and Performance Analysis of Non-Coherent Detectors for Space-Based Ads-B Systems	Pawan Barnwal, SAC, ISRO
14:20-14:30	Challenges in Designing Tier-4 Control Center For Supporting Human Mission	Alok Kumar Gupta, ISRO
14:30-14:40	Development Of Finite Element Model Of 95th Percentile Indian Male For Potential Use In Manned Space Missions	Vaibhav Kulkarni, IIT Roorkee
14:40-14:50	Resource Prospects on The Moon – Contributions from Chandrayaan Missions	Megala S, ISRO
14:50-15:00	Multibeam System Hub Location Optimisation	Ekta, ISRO
15:00-15:10	Compliant Mechanisms in Space: A Maple Leaf Inspired 3-DOF Hinge For Joint Free Applications	Avadhoot Hole, IIT Roorkee
15:10-15:20	Kinematic And Static Modelling of A Six-Wheeled Rover For Navigating Uneven Terrain	Dhruv Patel, BVM Engineering College
15:20-15:30	Predictive Remote Sensing for Indian Subcontinent Monsoon Anomalies (PRISM) using Small Satellites	Aniket Kumar, IIST, Thiruvananthapuram



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Venue: APJAKB-004 [Parallel Session]

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Day – 3 (06th March 2025, Thursday)

Time	Session/Event	Speaker
14:00–15:30	Technical Session – 6T “Launch Vehicle” Session Chair: Dr. Bhanu Pant, IIT Roorkee	
14:00-14:10	Numerical Study of Hypervelocity Impact on Whipple Shield Using L S-Dyna	Vidhi Baiwar; Catherina R HITS, Chennai
14:10-14:20	Analytical Design and Structural Validation of Plenum Bottle for Electronic Pressure Regulator (EPR) System	Jarpula Dharma Naik, LPSC-B/ISRO
14:20-14:30	Innovative Technologies in Thermal Insulation for Cryogenic Applications: Advancements and Trends	Parul Soni; Sanjana Dabral, LPU
14:30-14:40	Design Development and Sea Level Validation of 1-N Class Green Monopropellant Thrusters for Space Application	Nandan Kumar Jha; Hari Krishnan Kj, CU and IIT Kanpur
14:40-14:50	Computational Study of Re-Entry Module with Geometric Variation	Soham Santosh Ghorpade, Amity University Mumbai
14:50-15:30	Discussion	



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Time	Session/Event	Speaker
16:30 – 17:10	Technical Session – 7Ta “Space Technology Emerging Trends” Session Chair: Prof. Narendra Nath Patra, IIT Indore	
16:30-16:40	Artificial Intelligence in Space: The Next Frontier	Krishna Dev Kumar, Toronto Metropolitan Uni.
16:40-16:50	Predicting Nonlinear Bending Behavior of Ultra-Thin Woven Fiber Composites	Sumudu Herath Mudiyanselage, University Of Moratuwa
16:50-17:00	Geometric Design and Deployment Analysis of Kresling Origami-Based Space Composite Boom	Abhilash Chaudhary, IIT Roorkee
17:00-17:10	Repair & Replacement strategies of Avionics for Long Duration Crewed Missions and Space Station: An Overview	Patil Gokarna, HSFC, ISRO
Time	Session/Event	Speaker
17:10-18:30	Technical Session – 7Tb “Space Science” Session Chair: Prof. A. C. Mathur, IIT Roorkee	
17:10-17:20	Seams: A Space Mission Dedicated to Ultra-Low Frequency Radio Observations	Narendra Nath Patra, IIT Indore
17:20-17:30	Enhancing Supercluster Detection Algorithms for Improved Accuracy in Astronomical Survey Data	Darshan Bharat Mohan; Sri Renganathan S, VIT Vellore
17:30-17:40	Custom Vision AI Application in Astrophysics	Dr Malathi S, Graphic Era University
17:40 -17:50	Experimental and Numerical Investigation on the Lightweight Origami Metamaterials	A K Tiwari, IIT Roorkee
17:50 -18:00	Investigation on Supporting Ribs Configuration of Spaceborne Foldable Solid Reflector Antenna	Indu Priya M, NIT Rourkela
18:00 -18:10	Anchor Point Analysis for Inflatable Paraboloid Reflector Antenna	Dhananjay Somnath Aher, NIT Rourkela
18:10 -18:20	Numerical Performance Estimation of Serrated Naca-4412 Airfoil	Harshal S Salame, LPU
18:20-18:30	Analyzing Space Debris Evolution: A Monte Carlo Approach to Fengyun 1C Fragmentation	Peeyush Choudhary, IIST, Thiruvananthapuram



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18:30 – 19:00	Technical Session – 7T, E & P Session Chair: Prof. A. C. Mathur, IIT Roorkee	
18:30-19:00	Invited Speaker (Talk-VII)	Dr. Sudrashana Ramaraju, Advisor to LG Delhi



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16:30 – 18:30	Technical Session – 7T “Launch Vehicle” Session Chair: Dr. Bhanu Pant, IIT Roorkee	
16:30-16:40	Advancing Supersonic Aircraft Design for Optimized Flight Across Envelopes	Prem Sunder Vasudevan, Bhavan's Rajaji Vidyashram
16:40-16:50	Surface Ablation Phenomena of Thermal Protection System In Re-Entry Vehicle	Surojit Maji, IIST, Thiruvananthapuram
16:50-17:00	Sustainable Pyrolysis of Polystyrene for Rocket Fuel Production: Mechanisms and Environmental Impact	Anagha Ramesh, VIT, Vellore
17:00-17:10	Neutral Angle Characterization in Single-Creased Membranes: An Experimental Approach	Paras Nath Rai, MNIIIT, Prayagraj
17:10-17:20	An Energy-Based Unified Framework for Electro-Mechanical Programmability in Honeycomb Lattice Metamaterials	Amal M S, IIT Kanpur
17:20-17:30	In-Situ Synthesis of Hydroxyl Ammonium Peroxide (Hap) from Lunar Resources for Deep Space Propulsion	D Sai Prakash Navdeep, HITS Chennai
17:30-17:40	Developments Leading to Cost Effectiveness in Launch Vehicle and Satellite Related Technologies	Vaibhav Joshi, SDSC-SHAR, ISRO
17:40-17:50	Solid propellant end trimming and 20 degree chamfer machining on new solid rocket motor with CNC machine for Small Satellite Launch Vehicle (SSLV)	Kuldeep Kumar Tomar, SDSC-SHAR, ISRO
17:50-18:00	Fail safe operations in Cryogenic rocket fuelling: Role of level sensors in preventing mission abort	P Manasa, SDSC-SHAR, ISRO
18:00-18:10	A Framework to Forecast Automated Process in Real-Time using Neural Networks and Deep Learning	K Bharadwaj, SDSC-SHAR, ISRO
18:10-18:30	Discussion	