



MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

National Conference

on

**Recent Trends in Space Technology
(RTST - 2024)**

under

**Diamond Jubilee Celebrations of MNIT Jaipur
(Hybrid Mode)**

March 20-21, 2024



Patron:

Prof. N.P. Padhy

Director, MNIT Jaipur

Co-Patron:

Prof. Murari Lal Mittal

Dean of Research & Consultancy

Conference Chair:

Prof. D. Boolchandani

Chair, Regional Coordination Council

Professor, Dept. of ECE

Dr. Ritu Sharma

Regional Coordinator, ISRO RAC-S

Associate Professor, Dept. of ECE

Organizing Secretary:

Dr. Tarun Varma

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Dr. Prerna Jain

Associate Professor, Dept. of EE

Dr. Santosh Chaudhary

Associate Professor, Dept. of Mathematics

Dr. Anirban Dutta

Assistant Professor, Dept. of Physics

Dr. Sarthak Singhal

Assistant Professor, Dept. of ECE

Dr. Shridev Devji

Assistant Professor, Dept. of Management Studies

Keynote Speakers:

Shri. N Sudhreeer Kumar

Scientist/Engineer G Director, CBPO, ISRO Hqs, Bengaluru & Member, JPMC RAC-S MNIT Jaipur

Shri. Narayanan Appu

Outstanding Scientist, IPRC, Mahendragiri

Co-Chair, JPMC RAC-S MNIT Jaipur

Shri. H S Jattana

Former Scientist G/Group Head – Design & process Group at SCL, Dept of Space

Dr. Saeed Hamood Alsamhi,

University of Galway

Technical Program Committee:

Dr. Namita Mittal

Associate Professor, Dept. of CSE

Dr. Pilli Emmanuel Shubhakar

Associate Professor, Dept. of CSE

Dr. Kuldeep Singh

Associate Professor, Dept. of ECE

Dr. Amit Mahesh Joshi

Associate Professor, Dept. of ECE

Dr. Priyanka Harjule

Assistant Professor, Dept. of Mathematics

Local Coordination Committee:

Mr. Ramesh Babu Mutluri

Mr. Sonu Jain

Mrs. Mamta Devi Sharma

Ms. Ananta

Mr. Vipin

Important Dates:

Abstract Submission Deadline : 40 13 March 2024

Decision : 43 15 March 2024

Registration Deadline : 45 17 March 2024

About the Conference:

The National Conference on Recent Trends in Space Technology (RTST - 2024) will be organized by ISRO REGIONAL ACADEMIC CENTRE FOR SPACE (RAC-S), Malaviya National Institute of Technology Jaipur, India at its campus from 20-21 March, 2024. The purpose of the conference is to bring together researchers, academicians, and students from the academic sector to exchange their ideas on cutting-edge topics in the streams of science, engineering and their applications in areas of relevance to space science technology. The program consists of key note speeches by eminent scientists and contributed paper presentations on various latest technical aspects of research areas of space science technology. The conference leads to the dissemination of trends, new ideas and techniques among the young researchers in various fields of sciences and engineering for the continued development of research may be carried out in areas of relevance to future needs of ISRO.

The following are the major objectives of this conference:

1. Bring together professionals in the field of science and engineering with the purpose of encouraging innovative ideas and sharing diversified knowledge and national experiences.
2. Provide critical exposure to the audience on history & activity of ISRO.
3. Poster and model presentation by ongoing research projects granted by ISRO RAC-S, MNIT Jaipur.
4. Models making competition for students.
5. Paper/poster/model presentations/demonstrations of research papers.

The conference will be conducted by the ISRO Regional Academic Center for Space (RAC-S), MNIT Jaipur, for 2 days duration. There will be keynote addresses by experts from ISRO and paper presentations by researchers in the field of science and engineering in areas of relevance to future needs of ISRO. The proposed dates of the conference are 20 and 21 March, 2024.

Call for Papers:

Prospective authors are encouraged to submit abstract(s)/paper(s) for review under one of the following areas (But not limited). Only original research/ review papers which have not been published or submitted elsewhere will be considered. Submissions should not exceed six A4 size pages in length, should use font size : no smaller than 10 points , Times New Roman and have margins on all four sides as per the IEEE conference format. The abstract introducing the article, should not exceed 300 words. Authors can submit their abstracts at: <https://forms.gle/N2qTfzrpbYKUIAuH7>. Accepted abstracts / full length paper will be published in the book of abstract/ souvenir.

Areas:

The domains of ISRO are explained in a detailed document titled "Research Areas in Space-2023" as given on ISRO's website(<https://www.isro.gov.in/SupportedAreasofResearch.html>)

Conference Venue:

Vivekananda Lecture Theatre Complex (VLTC) & Neeti Sabhaghar
Malaviya National Institute of Technology Jaipur
Jawahar Lal Nehru Marg, Jaipur-302017 (Rajasthan), India



Registration Details:

Registration fees (₹) for all categories (UG/PG Students, PhD Scholar, Faculty & Industry person) including @ 18% GST

Paper presentation ₹1,000 /-

Poster presentation ₹5,00 /-

Paper Submission Link:

<https://forms.gle/N2qTfzrpbYKUIAuH7>



Registration Link:

<https://forms.gle/d63MqRNUdxT2RbLX9>



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Recent Trends in Space Technology (RTST-2024)

Conference Topics

The conference aims to bring together researchers, academicians, and students from the academic sector to exchange their ideas on cutting-edge topics in science, engineering, and their applications in areas relevant to space science technology. In light of this, ISRO RAC-S, MNIT Jaipur invite you to actively participate and contribute to the conference's objectives:

Track: 1 Launch Vehicle

- Robotics
- Artificial Intelligence & Machine Learning
- Composites/Launch Vehicle Structures
- Materials & Metallurgy
- Transducers and Sensors
- Mechanical Design & Analysis

Track: 2 Satellite Communications

- Thermal Systems
- Systems Integration
- NavIC Ground
- Spacecraft Operations
- Satellite Ground Systems
- Satcom & Navigation Payload
- Antenna Systems
- Electro-Optical Sensor Technology
- Microwave Sensor Technology
- Power Electronics
- Quantum Technology
- Signal & Image Processing and Data Product
- Mechanical Engineering Systems

Track:3 Earth Observations

- Cryospheric Sciences
- Geological Hazards
- Hyperspectral Remote Sensing in Geosciences
- Earth, Weather and Climate Sciences

- Microwave Remote Sensing Applications in Agriculture, Soil Moisture, Forestry & Wetland Ecosystem
- Remote Sensing Applications in Agriculture & Land Use / Land Cover
- Water Resources
- Aerial Remote Sensing UAV
- Data Processing
- Satellite Data Reception & Ingest Systems Area (SDRISA)
- Remote Sensing, Signal and Image Processing and Software Development
- Satellite Data Reception and Ground Station

Track:4 Space Sciences

- Space and Atmospheric Sciences
- Planetary Sciences and Geology
- Solar Physics
- Astronomy & Astrophysics
- Space Instrumentation
- Astromaterials
- Atomic, Molecular and Optical Physics
- Emerging Areas In Theoretical Physics
- Radar System for Orbital Debris Detection
- Space Physics

Track: 5 Energy Management Systems

- RF Energy Harvesting
- Electrical Energy Management
- Fuel Management
- Energy Management Systems (Distributed Energy Management System, Community Energy Management System) and Energy Audit
- Energy Efficiency in Industrial Processes, Heating, Cooling and Lighting

Track:6 Renewable Energy Systems

- Distributed Energy Resources and Network Integration
- Forecasting Problems and Virtual Power Plant
- Electric Vehicles, Charging System and Energy Storage
- Green Energy

Track: 7 Wireless Communication

- Next Generation Cellular (LTE-A-Pro, 5G New Radio (NR))
- Next-Generation Wi-Fi (IEEE 802.11ax/ay)

- Next-Generation non-RF communications systems (Visible light (Li-Fi), molecular, acoustic systems)
- Millimeter Wave access, fronthaul, backhaul and self-backhauling
- Massive MIMO communications
- Green and energy efficient wireless networks
- 5G operation and coexistence in unlicensed and shared spectrum bands

Track: 8 Nanosensors, Nanodevices & Applications

- Micro/nano electromechanical systems and sensors;
- Piezoelectric sensors;
- Field-effect transistors;
- Plasmonic and surface-enhanced Raman spectroscopy nanosensors;
- Magnetoelectronic or spintronic nanodevices;
- RF, microwave, IR, UV-VIS and X-ray sensors and single photon detectors.
- Thin Film synthesis & self-assembly

Category A: Guidelines for Paper Submission

Authors Guidelines: Authors are being invited to submit their Original research work abstract/ papers previously unpublished, not currently under review by another conference or Journal. All submissions will be subjected to at least two blind reviews. Acceptance will be based entirely on quality, relevance and originality. The topics of the conference include, but are not limited to above mentioned tracks.

Note: However the research ideas from relevant and related areas are also welcome. At least one author must register for each abstract on Google link: <https://forms.gle/xgZ6PX1VBV2uTyoq5> with co-authors Name , mail ID and affiliation. The abstract introducing the article, should not exceed 300 words. It should briefly mention the techniques/samples used; can also mention if modifications made in the proven methods without detailing the published methods; summarizing the most important results. Please do not include any citations in the abstract and avoid using abbreviations if possible.

The abstract must include the following: Objectives, Methods, Findings, Novelty, and Keywords.

Category B: Guidelines for Poster Presentation

Posters have become an increasingly popular method for presentation at conferences, as they promote greater interaction between researchers and conference participants. The purpose of the Conference poster presentation sessions is to showcase research of researchers, academicians, and students from the academic sector. **The key areas are related to above mentioned Tracks and other fields of Engineering.**

Authors Guidelines: Authors are being invited to submit the abstract of original research work and not currently under review by another conference or Journal. The abstract for the poster presentation and should not exceed 300 words. It should briefly mention the techniques/samples used; mention if modifications made in the proven methods without detailing the published methods; summarizing the most important results. Please do not include any citations in the abstract and avoid using abbreviations if possible. All submissions will be subjected to at least two blind reviews. Acceptance will be based entirely on quality, relevance and originality. The topics of the conference include, but are not limited to:

At least one author must register for each poster presentation on Google link: <https://forms.gle/xgZ6PX1VbV2uTyoq5> with Co-authors Name, mail ID and affiliation.

Specifications for Poster Presentations

- The recommended poster size is 3 feet by 4 feet.
- Be sure to include the abstract title, author and co- author names, and the institution(s) name where research is underway.
- Place your e-mail address, phone, and fax numbers in the upper right-hand corner of the poster board.
- It is suggested that you place multiple copies of a reproduction of the abstract in the upper left-hand side of the poster, written with the headings “Introduction/Background,” “Methods,” “Results,” and “Conclusions”. Include your contact information on these copies for attendees who desire to receive further information.
- It is recommended that the accepted posters should be hand-carry to the conference venue, using tubular packaging or a portfolio case. Costs associated with creating and shipping the poster display will be the responsibility of the authors. Velcro (easiest to use), pushpins, or thumbtacks will be provided by conference team to mount your poster.
- Refer to your acceptance letter and/or the final conference program for the time and location of your poster session and set-up time.
- The designated poster presenter (author or coauthor) must be present at the assigned space during the designated time to discuss the work presented

Tips for Poster Preparation

Posters should stimulate discussion, not give a long presentation. Therefore, keep text to a minimum, emphasize graphics, and make sure every item included in your poster is necessary.

- Utilize handouts to supplement your poster.
- Goal: 20% text, 40% graphics, 40% space.
- Make sure ideas flow logically from one section to the next.
- Use charts and graphs to illustrate data (avoid large tables of raw data).
- Use high resolution photographs (web images often will not work).

Category C: Guidelines for Model Exhibition

Themes: Models can be belonging to above mentioned Tracks and other fields of Engineering, as follows:

- Artificial Intelligence and Neural Networks
- Robotics
- Gesture Controller
- LIDAR Micro Drone With Proximity Sense
- Hydraulic Crane
- IOT based Home Automation
- Car Accident & Alcohol Detector & Recorder Blackbox
- IOT Weather Reporting System using Aduino and Ras Pi

Important Instructions:

Team/Students can submit online application at:

1. The application must contain “Innovation Proposal” of the project / solution along with personal & institutional detail.
2. Each team will have to present an innovative solution of the existing problem which should be complete at the time of exhibiting the prototype.
3. The submitted proposal/ prototype must be in working condition.
4. Each team would comprise maximum of four students and one faculty as a mentor.
5. In case, a student wants to submit his application as a single applicant, he/she is permitted.
6. One of the students from each team should act as a Team Leader.
7. Inter-disciplinary representation in the team is permitted. All team members should be from same college; no inter-college teams are allowed.
8. However, members from different branches of the same college/ institute can form a team.
9. One team can submit ONLY one model/idea.

Evaluation/ Selection criteria: It will include novelty of the idea, complexity, clarity and details in the prescribed format, feasibility, practicability, sustainability, scale of impact, user experience and potential for future work progression.

How to Display the Exhibits and Models in the Exhibition

- A separate stall for each theme/ sub-theme of the exhibits and models should display;
- Names of the student(s) and guiding teacher(s), name of the organization and brief information about the exhibit (may be in two sentences only).

Note: For each category the Best Paper/Best Poster/Best Model award will be given based on the decision of the jury.