

IIT Kanpur, Rocketry and Space Exploration Team

Indian Institute of Technology, IIT Kanpur

2024-25



Marketing Proposal

Design. Build. Launch.
Innovate. Reiterate



Proposal Date
December, 2024

Proposed by :

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Proposed to :

Table of Contents

Introduction	01
Project Overview	02
Significance of IN-SPACe Competitions	03
Current Progress and Future Plans	04
Outreach Activities	08
Budget Breakdown	10
Sponsorship Tiers	11
Existing Sponsors	12
Getting Involved	13

Introduction

Respected Sir/Ma'am,

IIT Kanpur stands as a beacon of excellence in engineering and technology education in India. Established in 1959, this prestigious institution has consistently demonstrated a commitment to fostering innovation, research, and academic leadership. With a rich heritage of producing accomplished engineers, scientists, and entrepreneurs, IIT Kanpur is renowned for its world-class faculty, cutting-edge research facilities, and a culture of academic rigor. The institute continually strives to push the boundaries of knowledge and inspire the next generation of thought leaders. IIT Kanpur's unwavering dedication to quality education and groundbreaking research makes it a cornerstone of India's technological advancement and a hub for budding engineers and innovators.

Taking this legacy forward, **IITK-RaSET** is the rocketry chapter of IITK. We are a group of highly motivated and dedicated students who are passionately driven towards working in the field of **experimental sounding rocket**. Our aim is to gain hands-on engineering knowledge via complete in-house design, fabrication and launching of custom experimental rockets and to learn from and compete with the best student-rocketry teams around the globe. We are dedicated to the design, construction, and launch of high-powered rockets, pushing the boundaries of technology and innovation.

IIT Kanpur Rocketry and Space Exploration Team is pleased to present this sponsorship proposal for your kind consideration. The team is currently gearing up to participate in the highly regarded **IN-SPACe CANSAT India Student competition 2024-25** and **IN-SPACe Model Rocketry India Student Competition 2024 – 2025**, a collegiate competition that attracts student rocketry and space exploration teams from around the country. Additionally, we are working on best research projects in the field of rocketry like building SRAD Solid rocket motor, SRAD Liquid rocket engine, designing an active fin control system, our custom flight computer and manufacturing sounding rocket airframe and structures.

Our team provides a unique platform for students to apply their theoretical knowledge in aerospace engineering to real-world projects, fostering innovation, teamwork, and STEM education.

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Project Overview

For the 2025 IN-SPACe competitions, the team has set the following ambitious goals:

1. Mission Objective

IN-SPACe model rocketry competition-The team is committed to designing and launching a high-powered rocket with the capacity to reach an altitude of **3280 feet** while carrying a sophisticated payload (**CANSAT**) dedicated to scientific atmospheric experiments.

IN-SPACe CANSAT competition- The problem statement of the competition is to design a **CANSAT** which once released at an altitude of 1 km descends using two stage recovery mechanism all the while transmitting live data to the ground station using telemetry system. Our design incorporates an actively stabilised descent system using reaction wheels and provision of live video footage of the descent.

- *Our long term ambition for the team is for our future team members to be able to launch a rocket past the Karman Line into space and more.*
- *We see our mission as for what started as a student team for collegiate competitions to evolve into a fully dedicated group for cutting edge innovation and research in the fields of rocketry and space technology.*

3. Innovation

3.1 Propulsion

The competition calls for the use of a **COTS motor** for the launch at IN-SPACe 2025. However, it is noteworthy that the team has also achieved a significant milestone by successfully developing a comprehensive student-researched and manufactured rocket motor. The team has completed a test firing of this motor, utilizing KNSB propellant as part of its ongoing research and development efforts.

3.2 Aerodynamics and Structures

Guided by one of their esteemed faculty advisors, the team has undertaken an innovative project focused on the production of novel composite body components. These components are meticulously crafted using a blend of **fiberglass** and epoxy composites, with a primary goal of creating lightweight, high-performance body parts. The team's dedication to this endeavor underscores their commitment to pushing the boundaries of aerospace engineering and advancing the field.

3.3 Avionics and Recovery

The team has undertaken the design of its **flight computer**, incorporating innovative techniques for data logging and transmission from a range of sensors, including IMU, pressure sensors, and GPS devices. With a strong commitment to redundancy and safety, the team is also developing a custom recovery system, which includes parachute deployments, to ensure the safe return of their rocket.



Significance of IN-SPACe Competitions



IN-SPACe Model Rockery and CANSAT India Student Competitions 2024-25 being organized by **Astronautical Society of India** in association with **ISRO** are national Intercollegiate Competitions which invite participation from student teams pan India.

The participants are expected to learn basics of Rocketry, along with soft skills like Team building, co-operation, project Management, and Interpersonal communication, among others. Over a period of several months, the participants shall experience the engineering processes for realizing a launch vehicle, and compete with peers from all across the country, with an opportunity to participate in a national level final expected to happen between **March – June 2025**.

This competition is being organized by Astronautical Society of India, to inculcate the space science and technology temperament among the student community. This competition involves the design, development & launch of a **CAN sized satellite of 1 Kg** mass to an altitude of **3280 feet** above the launch site. The competition will also help to create a wide scale ecosystem for Swadeshi Space activities in the country and bridge the industry academia skillset gap thereby enabling the future space force creation for the AatmaNirbhar Bharat.

The whole event scheduled to take place at Bengaluru, India will be covered by **national media** and rocketry forums, hence presenting itself as a great marketing opportunity for ***INSERT COMPANY NAME***

Current Progress and Future Plans

1. We have designed our most powerful rocket motor yet, capable of producing a **thrust of 2700 N** which has been manufactured and fired.
2. We have gained mastery in manufacturing rocket body tubes using **fibre-glass and carbon-fibre**.
3. We are working on avionics projects like developing our own **custom flight computer** which is in later stages of its design. We are designing an active roll control mechanism as well for our rockets.
4. We are about to launch our first high-altitude rocket, named **Prometheus** under Project June. It is designed to reach an altitude of **13,000 feet**, reaching a top speed of **Mach 1.5**. It will be powered by our self-designed solid rocket motor.
5. Our future plans include a very ambitious **liquid rocket engine** project and an **all-axis active stabilization system** which will require the expertise of all our team members from different subsystems and domains.

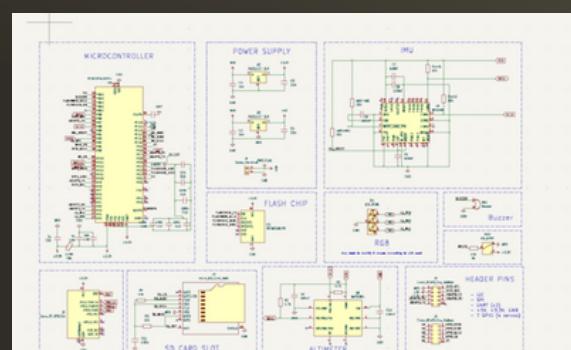
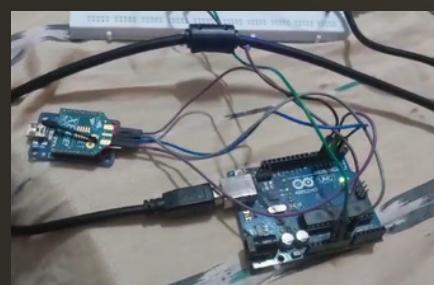


Rocket '**PROMETHEUS**'



Airframe

Avionics



Expression	Type	Value
decimalLong	float	1
northsouth	char	'N'
decimalLat	float	12.966666666666667
eastwest	char	'E'
+ Add new expression		



Propulsion



First Launch

We launched our first rocket in July, which reached an apogee of **600 feet** and was recovered successfully with the help of a custom designed and manufactured parachute.



DORAHACKS

This hackathon was aimed at revolutionizing **On-orbit services** through an Innovative Satellite constellation and improving on-orbit refueling, repairing capabilities as well as space debris cleanup for better prospects of space exploration in future.

Our team stood first in the hackathon, receiving a cash prize of **INR 40,000**.

IN-SPACe Competitions 2025

We have already cleared the Preliminary Design Review (PDR) Stage of the IN-SPACe Model Rocketry Competition 2025 and are gearing up towards our submission for the Critical Design Review (CDR) phase. The results for PDR stage of IN-SPACe CANSAT Competition 2025 are awaited.

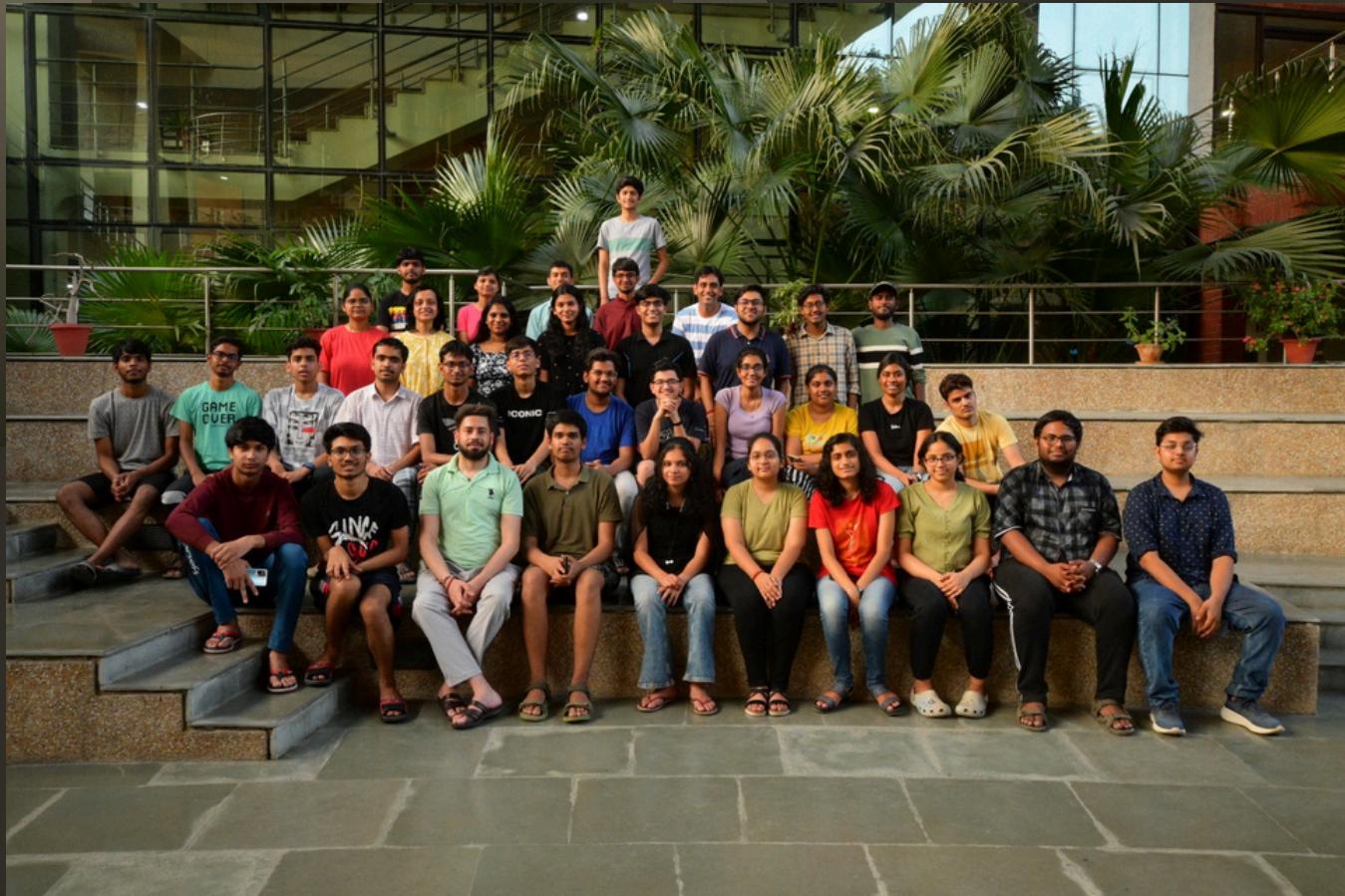


IN-SPACe
MODEL ROCKETRY
INDIA
Student Competition by



IN-SPACe Model Rocketry Workshop 2024, Bengaluru

Outreach Activities



Team Photo



Workshops for knowledge sharing

IIT Kanpur Science and Technology Council's Pavilion:
Showcase for attracting young minds to join our mission



Outreach Activities



National Space Day Event 2024



IIT Kanpur's Samanvay 2024:
Industry Engagement Event

Sponsorship Tiers

BENEFITS	SILVER (Upto 1L INR)	GOLD (Upto 5L INR)	PLATINUM (Upto 8L INR)
Logo Placement		✓	✓
Social Media Shoutout	✓	✓	✓
Website Recognition	✓	✓	✓
Invitation to our outreach events		✓	✓
Access to team members' resumes		✓	✓
Title Sponsorship			✓
Product Integration			✓
Customised Benefits			✓
Participation of team members as ambassadors			✓

Our Sponsors



Aerospace Engineering
IITK

Science and Technology
Council, IITK



Altium®