# MIT Rocket Team

# Sponsorship Packet

# Who We Are

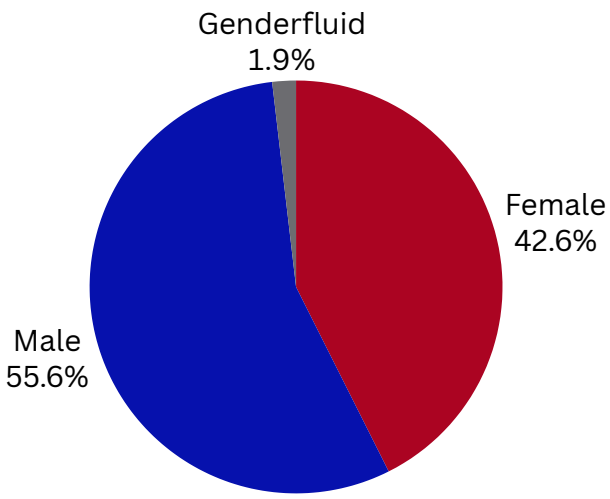
MIT Rocket Team is on the cutting edge of collegiate sounding rocket development. We believe in pushing the frontiers of space exploration and learning the skills necessary to succeed as professional engineers. Comprised of about 80 undergraduate students, we build rockets with the goal of reaching space, learning as much as we can during the process, and sharing our rocketry experience with the greater MIT community.

The team has been entirely self-driven since its inception; we pursue projects that students are passionate about and are invested in translating concepts learned in the classroom to the real world. Alongside experimental projects and liquid propulsion development, the team has returned to competition rocketry. Our two-stage rocket, Project Prometheus, will be ready for launch at the 2024 Spaceport America Cup this upcoming June.

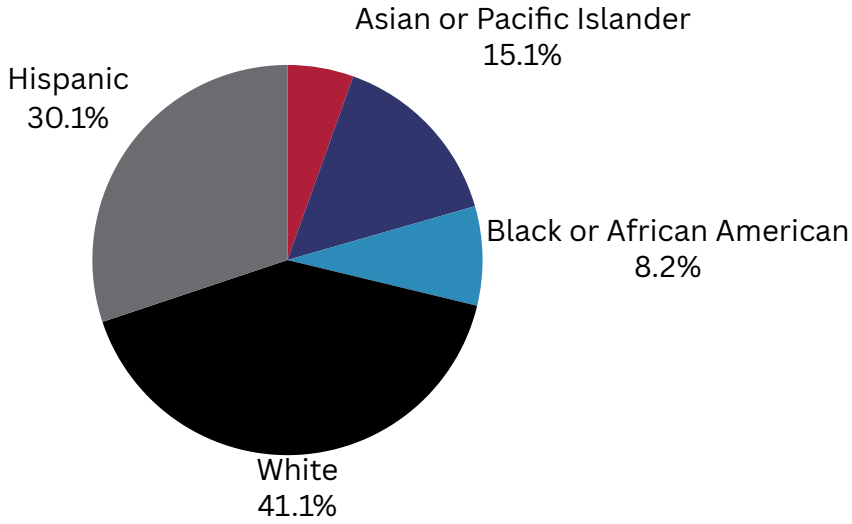
# Team Demographics

MIT Rocket Team places an emphasis on diversity and inclusion to provide an open space for all interested individuals to join the team. We especially want Rocket Team to be a space for traditionally underrepresented groups to become involved in and develop their passions for engineering.

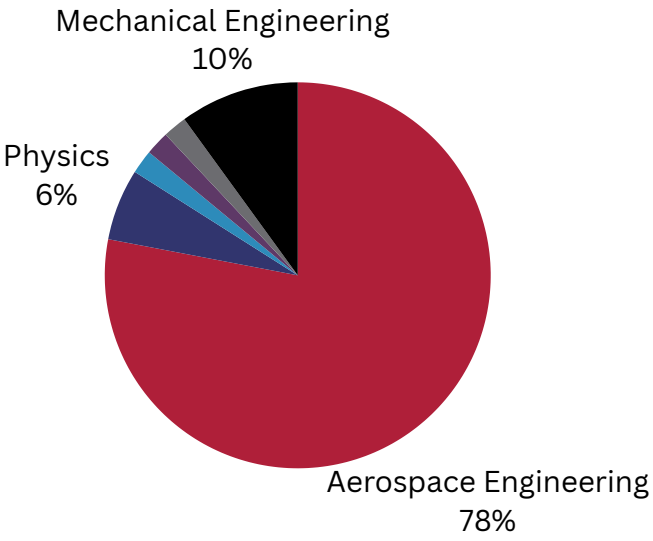
## Gender



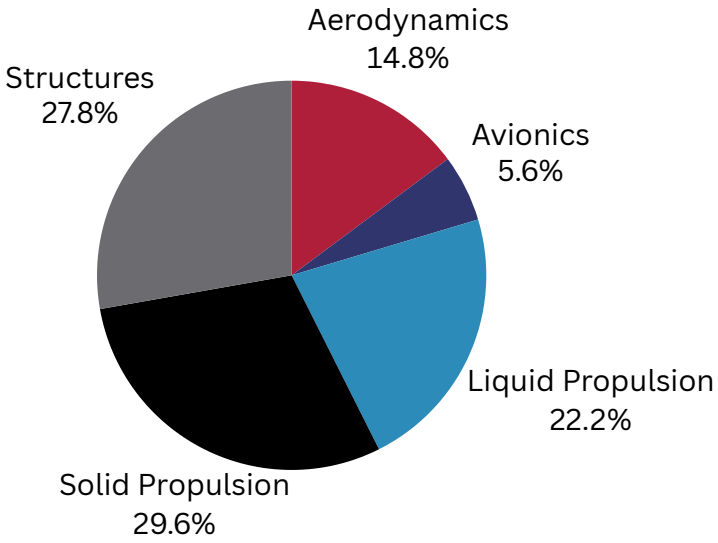

## Race/Ethnicity




## Major




## Subteam



# Meet our Executive Board

Alex Meier
President

Elizabeth Romero
Vice President

Kareena Shah
Treasurer

# Meet our Team Leads

Jack Ansley
Chief Engineer

Ezra Eyre
Structures

Nigel Barnett
Liquid Propulsion

Bronwyn Busby
Avionics

Derek Chan
Solid Propulsion

Abraheim Ahmed
Experimental Propulsion

# Team History

## 2010-2014: Early Years

Rocket Team was founded in 2010 by a group of students who wanted to be the first collegiate team to launch to 100,000 ft. Another team beat them to this in 2013 and Rocket Team then switched to rocketry competitions.

## 2014-2017: Competitions

With the structure provided by a competition, Rocket Team was able to expand its operations and rapidly improve. Our team placed 1st in the 2015 Intercollegiate Rocket Engineering Competition Basic Category and placed 2nd in the 2016 Spaceport America 10k COTS category.

## 2018-2021: Spaceshot

Rocket Team shifted its focus to pursue a passion project of the students: launching a rocket to space. The team rapidly increased the number of custom parts including developing custom avionics, fin cans, and solid propellant.

## 2021-2022: High Altitude & Liquid Propulsion

Post-COVID, the team came back strong, breaking the team's altitude record with a launch to 32,000 ft in January 2023. A liquid propulsion subteam was also formed to begin engine development for hybrid rockets.

## 2022-Present: Experimental Projects and Return to Competitions

Rocket Team designed the next high altitude rocket, but decided to divide into experimental projects to safely develop improvements. We are currently testing liquid propulsion engines and building a two-stage rocket to compete in the Spaceport 30k category.

# Our Process

## Design

We select design requirements based on target altitude and areas of improvement of the previous rocket. Students research, simulate, and design systems. Iterations are made in CAD and are refined throughout the entire project.

## Manufacture

Nearly every part that we fly is manufactured in house. Team members mix propellant, sew parachutes, solder PCBs, machine fins and so much more!

## Test

Rocket Team has extensive testing campaigns that are repeated as designs are refined. We only have one shot at launch and we can't be seriously questioning our design on the pad. Our testing ensures that when we fly, we have eliminated as much uncertainty as possible.

## Launch

We launch at least one rocket a year, with additional test flights as necessary. For main launch, a small group of students takes a cross-country road trip with the rocket to the Friends of Amateur Rocketry site in California. The rest of the team meets them there for integration, launch, and recovery.

# The Future

The team is currently developing a two-stage solid-fueled rocket, Project Prometheus, to compete in the 2024 Spaceport America Cup 30k category. The team also plans to have a liquid engine flight ready by fall 2024.

**Fall 2023**

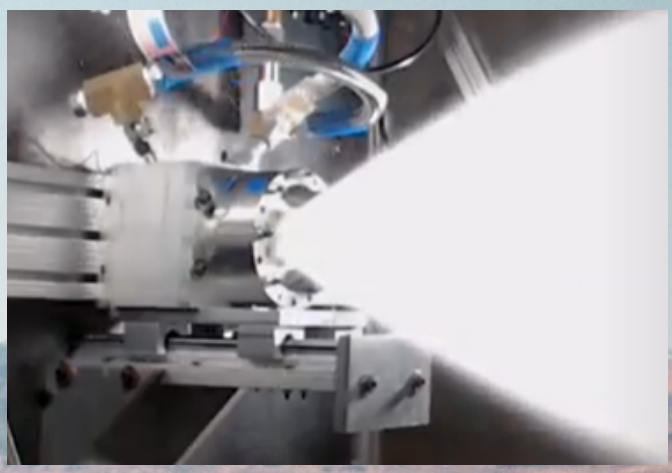
Prometheus and Experimental Design

**Spring 2024**

Prometheus Manufacturing, Testing, Launching

**Fall 2024**

Begin new competition rocket, finish testing liquid engines



The liquid propulsion team plans to hot fire their engine in Spring 2024. Their next engine is already being manufactured and will be fired next year.

# Expanding operations

As a large team, we are working on multiple projects to ensure all members meaningfully contribute and learn.

## Competition Rocket

The team competes in the Spaceport America Cup. It is currently used as an onboarding project for new members, teaching them the full design, manufacture, and launch schedule of engineering projects. We envision competing in Spaceport with a hybrid rocket to allow our Liquid team to start flying their new engines.

## Experimental Projects

Many members want to improve rocket components, such as creating a carbon fiber winder to manufacture custom motor cases and designing a P-class solid motor to increase altitude.

## L1 Program

RT supports students earning their High-Power Rocketry Level 1 (L1) certification through funds and a structured program. However, students often wait multiple semesters to launch because of travel and materials costs. We would like members to design, build, and launch within one semester.

## L2 & L3 Programs

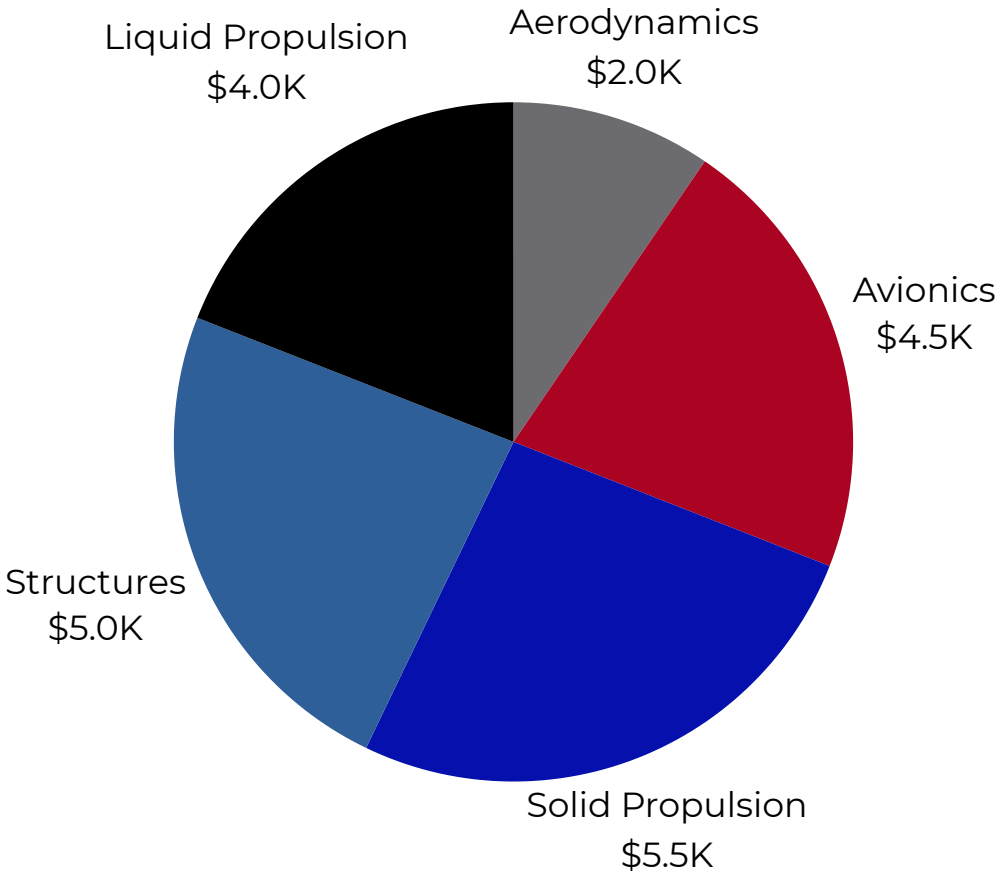
We have recently begun our L2 programs with recent funding we have received. We hope to further expand this program to encourage L3 developement to further equip team members with relevant rocketry skills for their future careers.

# Why us?

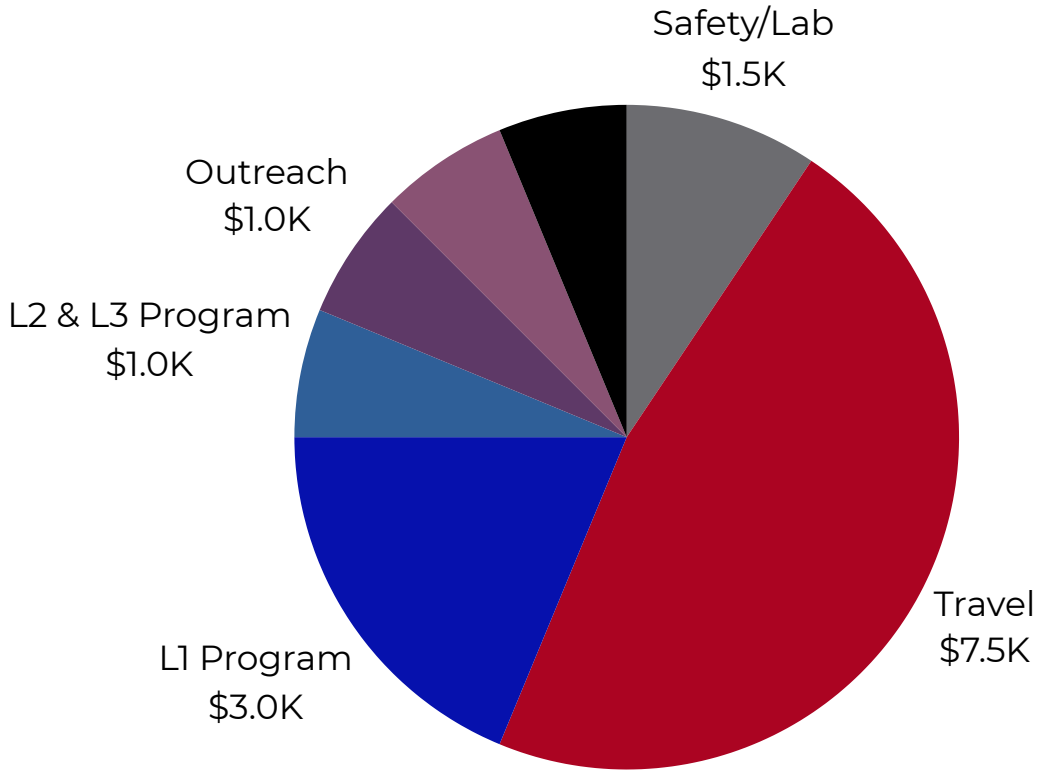
We give students the opportunity to develop essentials skills that they can't learn in a classroom such as creative problem solving, troubleshooting, and soft skills. Our members are not only getting real engineering experience, but they are learning to work as a team and collaborate with people from different backgrounds and experiences.

**Most students join RT with little to no prior engineering experience. They leave with a solid understanding of how rockets work and, more importantly, how to be an effective and productive member of an engineering team.**

# Budget Breakdown




**Main Team Hardware Budget: $21K**




**Team Management Budget: $16.5K**

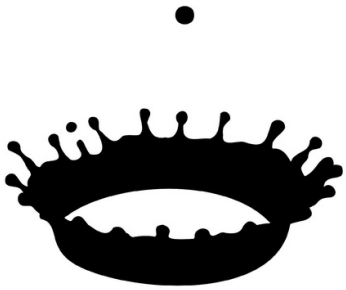
**Total Annual Budget: $37.5K**

# Sponsor Opportunities

Our team relies upon corporate sponsors and individual donors to continue launching. Interested in sponsoring us? Reach out to **rt-exec@mit.edu** about next steps regarding sponsorship. You can also make a tax-deductible donation; however, these do not include the benefits listed below, per federal regulation.

| | Bronze $500+ | Silver $2,500+ | Gold $5,000+ | Platinum $10,000+ |
|---|---|---|---|---|
| Invitation to design reviews | X | X | X | X |
| Honored on website | X | X | X | X |
| Logo on team apparel | X | X | X | X |
| Feature on social media | X | X | X | X |
| Logo on rocket | | X | X | X |
| Access to team resume book | | X | X | X |
| Recruiting Session | | | X | X |
| Invitation to launch | | | | X |

# Thank you to our 2022-2023 sponsors!



MIT Edgerton Center


MIT AEROASTRO