



# CARLETON UNIVERSITY ROCKETRY TEAM

Sponsorship package 2022-2023

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## 7 ABOUT US

CU InSpace is Carleton University's rocket engineering design team! We are a team of students who design, build and launch high-powered rockets with a common goal to compete in the Spaceport America Cup and Launch Canada Competitions.

We are proud to say we are Carleton University's largest design team with around 100 members! The team has a range of backgrounds but we all share a passion for rocketry and spaceflight. CU InSpace hopes to introduce the next generation of rocket scientists and engineers to rocketry through hands on experience.

Founded in February 2014, InSpace has successfully launched four rockets at the Spaceport America Cup. All four of CU InSpace's rockets have competed in the 10 000 foot launch category. This year, we are taking on the challenge of launching in the 30 000 foot launch category at the Spaceport America Cup, while continuing to launch to 10 000 feet at the Launch Canada Competition.

This new challenge means we are starting our 2023 rocket from scratch, while continuing development on our innovative 3U cubesat payload that uses computer vision and reaction wheels. In parallel, our team is working toward the goal of developing and testing a student researched and designed hybrid rocket engine that will launch in future iterations of our competition rocket.

*Group photo of all competing organizations and their rockets at the 2022 Spaceport America Cup in Las Cruces, New Mexico.*





## 2 ROCKETS

‘McNominal’ is the most recent rocket developed by CU Inspace. It was launched and recovered at the 2022 Spaceport America Cup in the 10,000ft COTs Solid Category. This was the team’s fifth time competing in this category.

AIRFRAME  
**CR22** FUS

WIDTH  
**6.125** IN

LENGTH  
**11.7** FT

EMPTY WEIGHT  
**27.7** KG

LOADED WEIGHT  
**43.8** KG

BURNOUT WEIGHT  
**37.0** KG

APOGEE  
**10590** FT

MAX. SPEED  
**0.76** MACH

MAX. ACCELERATION  
**7.5** G

ENGINE  
**N2500** CESARONI

IMPULSE  
**13600** NS

AVG. THRUST  
**2562** N





CU InSpace has attended the Spaceport America Cup competition since 2017, launching 4 times and competing in two virtual competitions. Shown below are some of our past projects.

#### CU L8TER

*Launched in 2017 Spaceport America Cup*



#### ORBITAL REDENBACHER

*Launched and Recovered in 2018 Spaceport America Cup*



#### CHEF BOYAPOGEE

*Launched and Recovered in 2019 Spaceport America Cup*



#### TRAGIC SCHOOLBUS

*Designed, manufacturing cancelled Due to Covid 19*



#### ICANT BELIEVE IT'S NOT SUPERSONIC

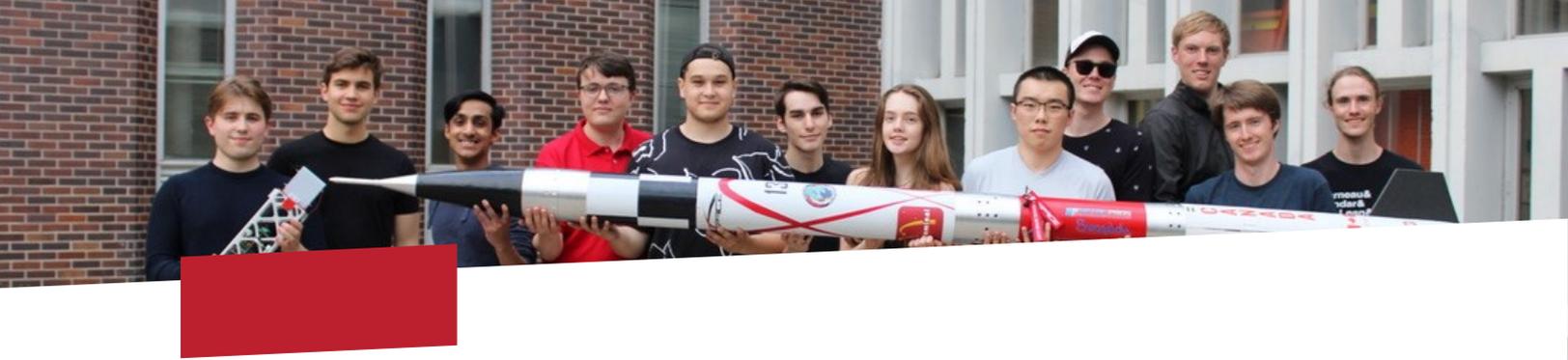
*Participated in the 2021 Virtual Spaceport America Cup.*



#### McNOMINAL

*Launched and Recovered in 2022 Spaceport America Cup*





## 3 THE TEAM

The team is divided into 5 subteams that all work together to create our final launch vehicle. These teams are comprised of members with diverse skillsets that come together to focus on one challenge: launching rockets!



### AEROSTRUCTURES

Responsible for creating the structure of the rocket. This includes designing and manufacturing all of the aerodynamic components, as well as the internal structure of the rocket.



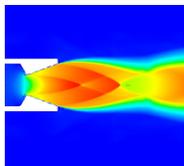
### AVIONICS

Responsible for the design and manufacturing of the telemetry systems of the rocket. Including, sensors, data downlink and the student research and designed ground station.



### PAYLOAD

Designs and builds a payload that is ejected from the rocket at apogee. This scientific experiment is a 3U Cubesat with a dedicated reaction wheel and computer vision system used to stabilize a camera based altitude determination system.



### PROPULSION

Selects and handles the rocket's motor for competition. The primary work of the propulsion subteam is in the research and development of a hybrid rocket motor that will launch on future CU InSpace rockets.



### RECOVERY

Designs, develops and tests the parachutes, release mechanisms, and tethers for the rocket to ensure a soft landing and allow for the intact recovery of the vehicle.

# 4 OUTREACH

CU InSpace aims to promote rocketry and space education to Carleton University and the Ottawa area! We have established several projects that provide an opportunity for our community to learn about what our club does while providing new challenges for our members, and promoting collaboration with fellow Carleton students.



## SMALL ROCKET COMPETITION

*An event jointly organized between CU InSpace and the Carleton Mechanical & Aerospace Society. The goal is to promote engineering, problem solving and collaboration amongst students at Carleton University. Teams of students are given a selection of household items from which they build and launch model rockets over the span of an afternoon.*

## CONFERENCE ATTENDANCE

*CU InSpace will send delegates to space related conferences in the Ottawa area this year. These conferences provide a valuable opportunity for members to network with industry professionals as well as gain an insight into possibilities for development of our own rocket.*



## VIRTUAL VENTURES SUMMER CAMPS

*Virtual Ventures promote STEM learning for K-12 students through summer Camps and other programming. We have partnered with Virtual Ventures to provide presentations about CU InSpace, and provide an opportunity for middle and high school students to get their hands on our rockets.*

## HIGHSCHOOL OUTREACH

*CU InSpace presents the benefits of STEM programs to high schools in the Ottawa area. We demonstrate how engineering works out-side of the classroom to encourage students to pursue STEM learning.*





## 5 SPONSORSHIP

Sponsoring CU InSpace allows us to provide students with a unique opportunity to apply classroom principles to real-world challenges. With commitment, perseverance, and your support, our members and team continues to strive for technical excellence and innovation.

Your contribution gives your organization exposure at team meetings, during outreach presentations, and at the annual international Spaceport America Cup and Launch Canada competitions.

THERMOSPHERE  
**\$5000+**

Logo of organization added to team website  
Logo added to final presentation slide  
**Large** Logo added to vertical banner  
**Large** Logo added to team shirts  
**Large** Logo added to competition rocket  
Honourable mention at outreach events  
Social media promotion

MESOSPHERE  
**\$2000–5000**

Logo of organization added to team website  
Logo added to final presentation slide  
**Large** Logo added to vertical banner  
**Large** Logo added to team shirts  
**Large** Logo added to competition rocket

STRATOSPHERE  
**\$1000–2000**

Logo of organization added to team website  
Logo added to final presentation slide  
Logo added to vertical banner  
Logo added to team shirts  
Logo added to competition rocket

TROPOSPHERE  
**UP TO \$1000**

Logo of organization added to team website  
Logo added to final presentation slide  
Logo added to vertical banner  
Logo added to team shirts



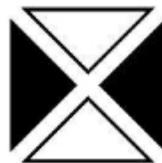


**Carleton University**

Faculty of Engineering and Design



CARLETON STUDENT ENGINEERING SOCIETY



MAROTTA



PROTOCASE  
Custom Electronic Enclosures  
For Engineers & Designers



THANK YOU!

Thank you to our current sponsors for facilitating our journey and the future to come. "Per aspera ad astra" – through hardships to the stars.



[www. cuinspace.ca](http://www.cuinspace.ca)

