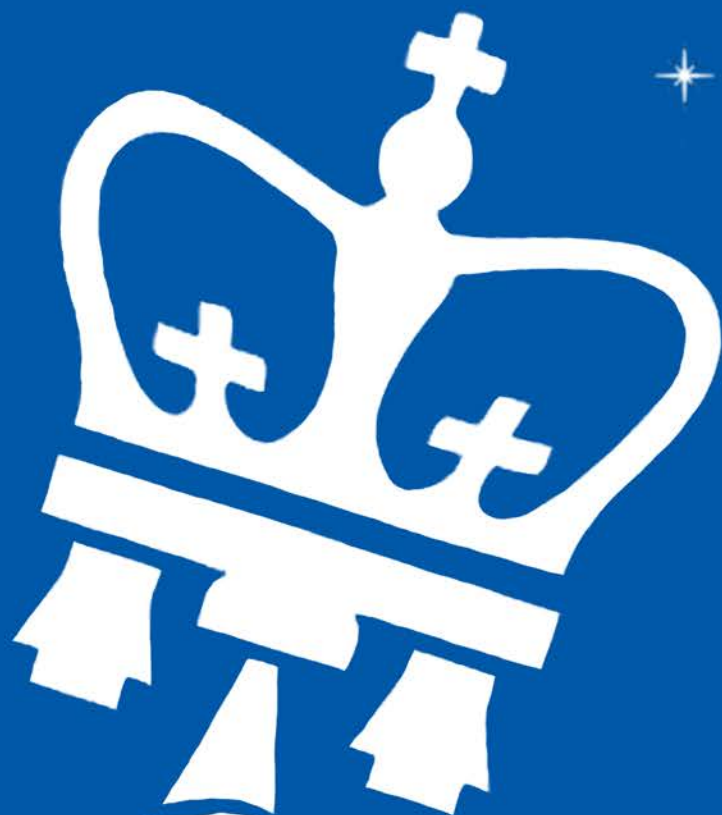


BLAST

OFF!

2018-2019



with Columbia Space Initiative



Columbia Space Initiative

Dear Future Sponsor,

Every Friday, several classrooms in Columbia's Engineering building become mission control centers. Students from over a dozen disciplines work side by side **designing satellites, building rockets, and developing mission architectures**. Though just three years old, the Columbia Space Initiative (CSI) has become one of the largest communities at Columbia University, with over 120 active members.

CSI is an umbrella organization of teams that work on space technology projects, which we call missions. This year, our missions competed in the final rounds of **two NASA competitions, spoke with an astronaut aboard the International Space Station, and travelled to the Intercollegiate Rocket Engineering Competition in New Mexico**. In addition, we seize the opportunity space presents to inspire the next generation of scientists and engineers. Since our founding, we have hosted over twenty space-related public events featuring astronauts and other members of the space industry, with a total of over 2,000 attendees. Furthermore, we regularly hold workshops for K-12 students around New York City, in places ranging from the Intrepid Sea, Air, and Space Museum to the NY Hall of Science.

Since Columbia has no aerospace engineering program, CSI offers the only opportunity for Columbia students to develop their interests in space exploration. Membership in CSI is not competitive, because we believe that rocket science is better together. As a collaborative endeavor, CSI does not just teach technical skills; our members **learn how to work in interdisciplinary teams and how to produce quality deliverables under tight time constraints**. These experiences have helped them succeed during internships at institutions such as Boeing, the Jet Propulsion Laboratory, NASA Langley Research Center, and Space For Humanity. Our methodology has also earned acclaim from our peers. This year, CSI received both the **Best New Chapter Award** and the International Space University/Women in Aerospace **Gender Diversity Award** from Students for the Exploration and Development of Space (SEDS).


Getting to space is expensive. Every semester, our members dream of more ambitious missions, requiring us to seek more support. Each year, CSI seeks funding from several organizations and departments at Columbia set up to facilitate extracurricular travel and projects. This year, CSI became a chapter of Students for the Exploration and Development of Space (SEDS), and received a grant from them as well. **We could not succeed without the support we receive from our backers and are grateful for all of the financial aid, material support, and mentorship made available by our sponsors**. We hope you join us as we pursue the final frontier.


Eileen Chen, Co-President

Millen Anand, Co-President

Mission Statement:

We seek to make Columbia students and faculty the catalysts, not simply witnesses, of the next generation of space exploration by expanding our organizational skills, scientific insight, and technological horizons.

19  Majors pursued
by members



 **2,000**
attendees at Outreach
events open to the public

6  Technical
Missions




108,100^{ft}
MAX
ALTITUDE
of
ROAREE-1
BALLOON

120+  weekly
members

A photograph of a Blue Origin New Shepard rocket being hoisted by a crane against a cloudy sky. The rocket is vertical, and the crane's lattice structure is visible to its left.

Blue Origin

The Blue Origin mission intends to launch a small scientific payload on a New Shepard suborbital rocket in the third quarter of 2019. The payload will investigate whether long-duration spaceflight puts astronauts at risk for ligament and articular cartilage damage, as well as whether bone loss caused by spaceflight has a particularly strong impact on certain regions of the body.

A group of about ten people, mostly young adults, standing together in a modern indoor setting with large windows. They are dressed in casual to semi-formal attire, including jackets and sweaters.

CubeSat

CubeSat is working with the Micropropulsion and Nanotechnology lab at George Washington University on two projects. The first one is a 3U (30x10x10 cm) CubeSat to test low-volume solid state μ cat thrusters that the lab is developing. CSI is contributing cameras to image the thrusters in action. The CubeSat is tentatively scheduled to launch in Q4 2019 with the NASA CubeSat Launch Initiative. The second, longer-term project is a 6U (30x20x10 cm) CubeSat with a spectrometer to detect wildfires and explosives.

A group of five students are gathered outdoors on a grassy field, working with a large, light-colored high-altitude balloon. One student is holding a rope attached to the balloon, while others are observing. The background shows a line of trees under a clear sky.

High-Altitude Balloons

The High Altitude Balloons mission aims to launch a high altitude balloon every semester with a scientific payload. Its first balloon, ROAREE-1, launched on April 16, 2016 and reached 108,000 ft with imaging and environmental sensor payloads. In 2017, the mission constructed a cloud chamber to visualize subatomic particles above the ozone layer, as well as a system to launch a model rocket at altitude.

A close-up view of an astronaut inside a spacecraft, wearing a white spacesuit and helmet. The astronaut is working on a complex metal structure, possibly a part of the spacecraft's exterior or interior. The background shows various equipment and structural elements of the spacecraft.

Micro-g NExT (NASA)

Micro-g NExT is a competition to design tools that solve problems NASA astronauts face outside their spacecraft. In 2016, the team designed and built a device to anchor an astronaut to an asteroid; in 2017, they developed an asteroid core sampling device; in 2018, the team designed and built a zip-tie cutter and retainer. All the devices were tested in the Neutral Buoyancy Laboratory in the final round of the competition. The mission won Micro-g NExT in 2016. This year, the mission is working on a tool to detect and remove or cover sharp edges on a spacecraft that are created by micrometeoroid and orbital debris impacts.



RASC-AL (NASA/NIA)

RASC-AL is a space architecture design competition, where teams write white papers in response to NASA design prompts. In 2016, the mission designed an asteroid habitat; in 2017, the mission worked on a concept for a commercial space station; in 2018 they developed a concept for a reusable in-space propulsion system. All of the concepts were presented at the RASC-AL Forum during the final round of the competition. This year, the RASC-AL mission is working on a proposal to send humans from the Gateway to the lunar surface.



Rockets

The Columbia Rocketry Program designs, builds, and tests high performance rockets. As one of only a few collegiate rocketry teams worldwide developing hybrid rocket engines, we are a dedicated group of engineers and scientists focused on technical advancement. Through regular engine design iteration and testing, we are developing safe and reliable hybrid engines with adjustable thrust output. The Rocketry Program is currently putting to use our experiences gained over the last year from the 11 foot 56 lb. Athena II rocket to design and build our second entry in the Spaceport America Cup, Athena III.

Outreach



← February 22nd, 2018

Peggy Whitson, commander of the International Space Station and record-holder for the American with the most time in space, gives a talk to an enthralled audience as a part of CSI's Extreme Engineering speaker series.

March 23rd, 2018 →

Sian Beilock, president of Barnard College (the Columbia-affiliated women's college), poses with CSI's Barnard students at Spaceposium. Each year, CSI members gather for Spaceposium to showcase what they've accomplished over the past year.



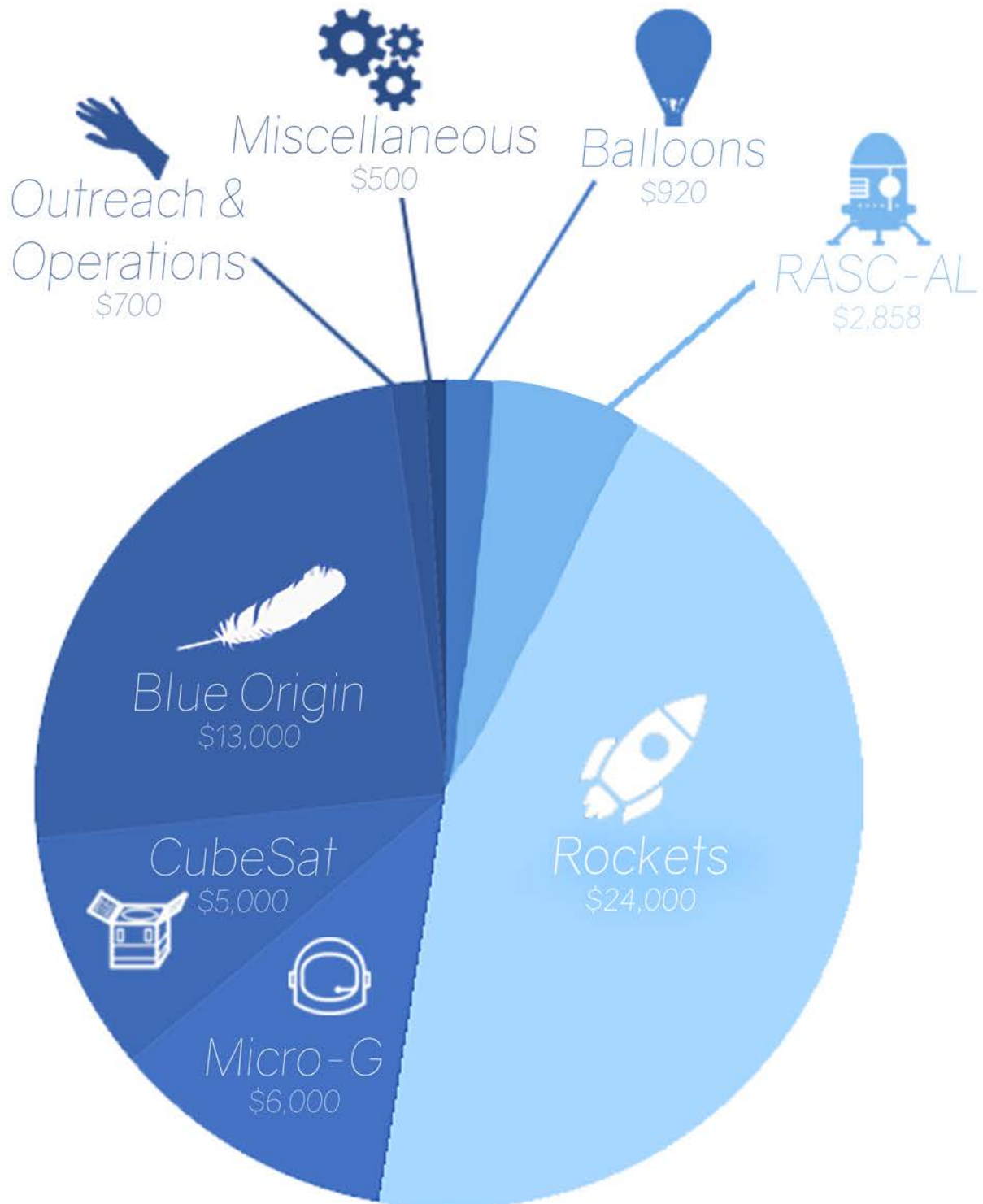
← September 22nd, 2018

Members of the Outreach team teach children about aerodynamics via a paper airplane activity at the Intrepid Space & Science Festival, attended by 23,000 people.

2018-2019 Budget Projections

\$52,978 total

Parts • Travel • Registration • Manufacturing • Equipment • Software



Sponsorship Benefits:	FLY-By \$20-\$1,999	Impactor \$2,000-\$9,999	Orbiter \$10,000-\$19,999	Lander \$20,000+
Hyperlinked logo on website sponsorship page	●	●	●	●
Promoted social media post(s) + digital strategy	●	●	●	●
Social media announcement		●	●	●
Framed club photo		●	●	●
Autographed copy of Mike Massimino's <i>Spaceman</i>		●	●	●
Invitation to hardware test or design review(s)		●	●	●
CSI hardware & members available for appearances		●	●	●
Resumes of all members of 1 mission		●	●	●
Name/logo on all hardware & reports of 1 mission			●	●
Resumes of all members of 3 missions			●	●
Booth at Spaceposium (end-of-year showcase)			●	●
Right to redesign graphics of 1 mission				●
Resumes of all club members				●
Right to redesign all mission graphics				●
Large hyperlinked logo on website landing page				●
Club event Co-naming Logo on main banner Hosted speaker				●

*Contact us about in-kind sponsorships and allocating funding towards a specific mission!

STAY CONNECTED

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