COBRA Rocketry Association

Above: COBRA's Copperhead rocket, flown to an altitude of 14,583 feet and recovered on December 1, 2018.

Sponsorship Packet

January 2019

Our Team

Demographics

Our team is composed of a diverse group of University of Colorado Boulder students. Among our nearly 70 active members, who range from first-year undergraduates to second-year graduates, are students representing nearly every department at CU. COBRA's members include aerospace, mechanical, and electrical engineering students, as well as students in the Leeds School of Business and the Department of Physics.

COBRA members bring with them hands-on experience developed during industry internships and research opportunities; their defining characteristics are an intense eagerness to share knowledge and ideas and the tenacity to follow through as a team.

Above: Members of COBRA organized on November 3, 2018 after a test fire of a custom 4-inch diameter motor.

Projects

Propulsion

- Production of solid fuel grains and motor assemblies, with qualification campaigns for all major motor designs

Structures

- Design and fabrication of composite motor cases and airframe components using a CNC filament winder; manual layup of components such as fin cans and nose cones

Avionics

- Development of a high-performance custom flight computer with advanced telemetry and payload capabilities, including redundant video transmission, data logging, and flight sequencing

Simulation

- Custom multiphysics packages to simulate rocket flight, from launch to touchdown
- Monte Carlo simulations to estimate dispersion characteristics and allow for accurate predictions of rocket trajectories and load cases

Outreach

- Individual high powered rocketry certification through Tripoli, a national rocketry organization
- Engineering education events and information sessions

IREC 2019

The Intercollegiate Rocket Engineering Competition, or IREC, is an ESRA rocketry event which is held every June at Spaceport America in New Mexico. The competition attracts advanced university teams from across the globe to compete: more than 600 students participated in the 2016 competition, representing over 50 schools from 6 different continents. Student teams compete in a suborbital challenge where they launch 1-3U cubesat-sized payloads on custom sounding rockets after formally documenting their engineering designs.

COBRA will participate in the highest altitude portion of the competition: this entails launching “a rocket carrying no less than 8.8 lb of payload to a target apogee 30,000 ft above ground level.”

Above: An example IREC rocket launching at Spaceport America

IREC 2019 Budget

Avionics

- Radios and Payloads $1,200
- Sensors and GPS $500
- Motherboard and CPU $900
- Wiring Harnesses $200

Structures

- Consumable Materials $2,000
- Recovery Systems $1,800
- Manufacturing Hardware $1,600
- PPE and Miscellaneous $1,000

Propulsion

- Propellant $1,000
- Motor Casings $2,600
- Test Stand $2,300
- PPE and Miscellaneous $600

Team

- Travel $4,000

Total

- IREC 2019 $19,700

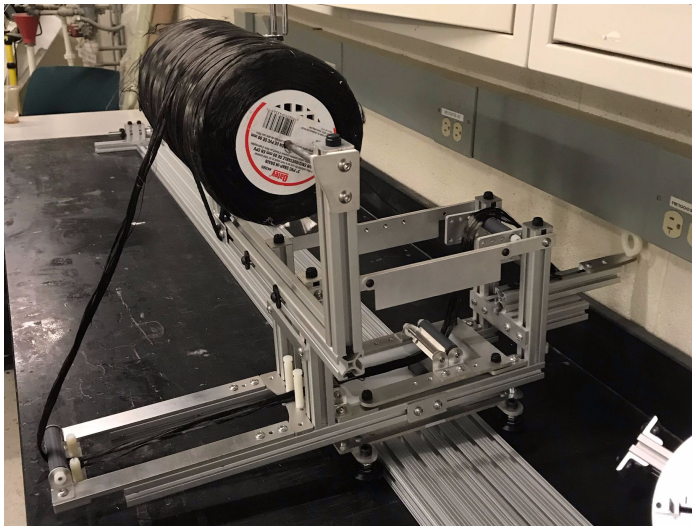
Although our budget may be subject to change, the above estimates outline the broad needs of our team for the upcoming competition. All money to support the team will go initially towards this budget, then secondarily towards team operating costs and stretch goals.

Spaceshot

Our aspirational goal as a team is to be the first student organization to send a rocket to the edge of space at 100 km. This boundary, also known as the Karman line, has never before been broken by a collegiate team. To do this, we will take part in competitions to broaden our team's understanding of high-powered rocketry and enhance our skill set. The goal of Spaceshot is not only to show that a student-led team can reach the edge of space, but to inspire future students and future generations to reach for the stars.

The current Spaceshot vehicle design is a 12-15ft, 8in diameter rocket, constructed from filament wound body tubes and a composite propellant solid rocket motor with a composite motor case and fin can.

This rocket is being designed and built from the ground up using knowledge and materials accrued by this team over our several years of research, testing, and manufacturing. We regularly conduct instrumented scale tests of our solid rocket motors, and take every precaution when it comes to safety; we have first-responders available for every test and launch.



Above: COBRA's fiber winder, used to make custom composite airframes and motors

Spaceshot Budget

Avionics

- $4,000

Structures

- $10,000

Propulsion

- $8,000

Travel

- $4,000

Total

- $26,000

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Sponsors

The Colorado Boulder Rocketry Association (COBRA) will provide your company or organization with cost-effective media exposure while demonstrating your commitment to engineering education, exploration, and technological innovation. We launch our rockets several times per year and compete in widely-publicized events with other universities and companies, and our rockets are extensively photographed by media and event attendees.

Sponsors are given access to COBRA's growing image, video and test data archives as well as our inerted rockets and engineering samples, which can be provided on a temporary basis for display purposes. Our rockets are held to high standards of cleanliness and engineering quality, and we go out of our way to effectively use the opportunities for publicity provided by competitive rocketry events and media interviews.

COBRA’s continued growth is enabled by the support of forward-looking individuals and organizations. With your support, we can continue to safely build talent in the aerospace engineering field and push the limits of student-led high-powered rocketry.

Sponsor Levels

PLATINUM: $10,000

- Logo dominates all main parachutes with choice of color scheme and formatting.
- Promotion during all media interviews and public appearances.
- Up to 1 kg of inert payload on rocket is permitted (subject to engineering approval).

GOLD: $1,000

- Logo present on parachutes and side(s) of rockets facing ground viewers and photographers at launch.
- Access to team resume book.
- Promotion during all public appearances.

SILVER: $500

- Logo present on rockets, team apparel and banners.
- Logo prominent on website.

BRONZE: $200

- Logo on banners, transport cases and website.
- Name or logo flies inside rocket.

DONOR: Under $100

- Recognition of donation for tax deduction purposes.
- Name present on website

Levels of sponsorship include the benefits of lower levels and are maintained for a period of 1 year past the date of sponsorship.

Contacts

http://www.cobrarocketry.space

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