

Established in 2015, Space Technologies and Rocketry at Berkeley (STAR) is the largest undergraduate aerospace organization on campus. Our mission is to become a world-class student rocketry organization and send rockets to space!

## Fall 2024 Sponsor Packet

# STAR

# OUR AMBITIONS



Competed in NASA SLI and currently complete in IREC (Intercollegiate **Rocketry Engineering Competition**)



## **EDUCATION**

Prepare and educate members through introductory programs and hands-on workshops for industry.



# **OUTREACH**

Host events with elementary through high school students and run an annual \$10,000 scholarship program



ELLIE

6

Year: 2022 Outcome: Successful Hot Fire



**Stage Separation** 

7

Year: 2022 Outcome: **Successful Staging** 



8

CalVisitor Year: 2023

9

Outcome: Altitude: 10,023 ft/3055 m



#### MINDI

Year: 2022 Outcome: 14,325 ft/4366 m



**BROKE RECORD** 





- 1. 4th out of 160 teams in IREC 2023 for apogee
- Parkeley's only successfully
  - recovered liquid vehicle
- 3. Hold the university altitude record
- 4. Flew Berkeley's first stage separation rocket

#### THESE ACCOMPLISHMENTS ARE MADE POSSIBLE BY OUR SPONSORS





Vords

Members

From

STAR has impacted my experience at Cal in so many positive ways. I'm a third year deaf and hard of hearing Mechanical Engineering Major who joined Fall 2022, and I have already seen tremendous growth in my technical abilities! STAR is very conscious of accessibility and they go above and beyond to make sure that I am getting by in the club. All of my inputs are always heard, and members always repeat themselves when I ask them to. Plus, all of the members are AWESOME! I feel like I belong at STAR, and I have no regrets in joining this club.

#### - Salvador Bravo, B.S. Mechanical Engineering 2024

Even as a psychology student with limited skills in engineering, STAR has allowed me to continue building my media, business, and leadership skills in an energetic and fun environment. Taking on massive ambitions as a club, facing them together, and ultimately succeeding makes me proud to be a part of STAR! - Saranyu Nel, B.A Psychology 2025

My experience in STAR has enabled me to greatly improve my leadership capability, problem-solving skill, and the ability to work in a team setting. I love being in this collaborative community where we conquer challenges, create solutions, and develop valuable

friendships.

#### - Hubert Liu, B.S Mechanical Engineering 2024

# RECENT PROJECTS



**STAR's first liquid bi-propellant** rocket which flew to 6,128 ft

> **Two-stage competition vehicle** that flew to 27,326 ft in IREC 2024 and holds the UC Berkeley apogee record







## What was Caldera?

flew to 27326 ft

## **Objectives**

- Test staging mechanism with custom explosive bolts
- Flying with our KELSE-Y payload Results
  - Apogee of 27326 ft!

# CALDERA/IREC 2024

 Two-stage competition vehicle with a target apogee of 30,000 feet for IREC 2024 that

 Successful staging and airstart Successful recovery of both stages











### **Kinetically Engineered Life Support Experiment - Yeast**

- Proof of concept for a life system system to keep a human brain alive during flight
- Cardiovascular system: Fluidic system moves nutrients to a yeast culture
- Pulmonary system: PDMS membrane to exchange carbon dioxide with the atmosphere
- pH measurements
- Custom PCB
- Designed for a CubeSat form factor



#### **Custom Flight Computer**

two flights

#### **Custom Live Telemetry**

#### **Custom Motor Controller**



Subsystems





The board controls airbrakes, successfully tested on

We receive live data on our rocket's position and velocity throughout flight.

This boards drives the motor for our airbrakes and ask as a power supply for the flight computer







#### What was ALULA?

• STAR's first liquid bi-propellant rocket which won the FAR Dollarper-Foot challenge with an apogee of 6128 ft!

#### **Objectives**

- Create modular launch platform for success in liquid competition
- Advance technical engineering skills



Advanced Long-Utility Liquid Ascent Module

Hotfire 2024





#### What was **BEAREALIS**?

ALULA

• A rocket designed for the ALULA engine flown on a solid motor to test recovery and avionics

#### Outcomes

- Flawless flight and recovery
- Received live telemetry for the first time in STAR history

## BEAREALIS Solid Demonstrator and 2nd Hotfire 11/18-11/19







BEAREALIS Solid Demonstrator 11/19/23





ALULA Full Vehicle Launch 5/19/24









![](_page_15_Picture_4.jpeg)

## Winter 2023/2034

Successful launch!

#### May 19th 2024

Optimization

Update flight model and optimize thrust curve Flight Critical Design Review Finalize Flight Vehicle Design

![](_page_15_Picture_10.jpeg)

## **STAR SCHOLARSHIP PROGRAM**

Remove barriers of entry in STEM for women of color by providing sponsorship and workshops!

Last year, we provided 3, \$2000 scholarships in partnership with Mechanics Bank

**\$5,000** (the lowest estimate of living costs for one semester) - \$3,000 (the max amount usually given by scholarship funds) = \$2,000 (the amount we give to make up the deficit)

![](_page_16_Picture_4.jpeg)

**Statistics** 

Women of Color are dramatically underrepresented in STEM fields. 47% of students working more than 15 hours a week have a GPA lower than the required passing grade.

In addition to financial assistance, we host workshops centered around college applications and developing professional skills. Topics include selecting schools to apply to, crafting a personal profile, and essay-writing as well as college interviews, building resumes, and networking.

![](_page_16_Picture_10.jpeg)

Workshops

# **Diversity, Equity,** & Inclusion

We believe in having no barriers to entry. We accept all students, regardless of background, major, race, gender, orientation, or ability on our team, and go above and beyond to ensure that everyone has a safe space to achieve their goals here at STAR.

- Our club holds a better gender ratio than Berkeley
  Engineering
- We take provide **active mentorship** in and out of the club, where students are placed with mentors that guide them through their work on the team.
- No club dues

![](_page_17_Picture_5.jpeg)

# What STAR Represents

- **STAR is the LARGEST** engineering team on campus with over 130 ACTIVE MEMBERS
- We provide all members with engineering training and ask for **NO MEMBERSHIP FEES**
- We run **2 MAIN technical projects**
- Most successful launch history
- Hold the Cal apogee record
- We have an active alumni network (200+)
- We have hosted career presentations with NewSpace and have invited hundreds of students to attend  $\rightarrow$ actively handing students career opportunities
  - Boeing
  - Blue Origin
  - General Motors
  - And more!

#### **ONLY LIMITING FACTOR THIS YEAR IS BUDGET!**

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![](_page_18_Picture_14.jpeg)

# SPONSORSHIP TIERS

Thanks for supporting our dreams and mission! Here are the sponsorship tiers for joining our sponsor group:

	Website	Work Posting	Logo On Rocket	Recruitment	Resume Book
\$300		X	×	×	X
\$500			×	×	×
\$1000				×	×
\$2000					×
\$4000+					

Website: We will proudly publicize your company as one of our partners/sponsors on our website. Work Posting: We will share any work/intern opportunities from your company to our members, and help connect interested students with you. Logo on Rocket: We will put your company's logo on our annual competition rocket.

Recruitment: We will help you set up recruitment events (up to 2 per semester) dedicated to your company on campus and communicate with our organization members directly.

**Resume Book:** We will put together a collection of member profiles that fit your requirements, assisting you in searching for prospective employees.

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upon inquiry.

**Official Website:** https://stars.studentorg.berkeley.edu

**Got Questions? Email:** contact@stars.berkeley.edu

## **Connect with us**

![](_page_20_Picture_5.jpeg)

#### All links/raw data on budget can be provided

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