

SPONSORSHIP PACKET

FRESNO STATE ROCKETRY

2027



FRESNO STATE
Lyles College of Engineering

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fresnostaterocketry.org



About Us

Fresno State Rocketry is a multidisciplinary, student-led team of engineers who design, build, and fly high-powered rockets. We are Fresno State's official student branch of the American Institute of Aeronautics and Astronautics (AIAA), the world's largest technical aerospace society.

We offer opportunities for students to engage in hands-on technical projects, turning classroom theory into real life results. As the only pathway to the aerospace industry in the Central Valley, Fresno State Rocketry facilitates students development of relevant technical experience in composite materials, additive manufacturing, CAD/CAM/DFM, aerodynamic characterization, flight profile simulation, propulsion systems design, and more. Our alumni graduate with offers in-hand to prestigious aerospace organizations such as NASA, SpaceX, Blue Origin, United Launch Alliance, Honeywell, Raytheon, Lockheed Martin, Northrop Grumman, and many Air, Space, and Naval Bases across the country.

Fresno State Rocketry provides the resources to students free of charge to complete personal rocketry projects and obtain their flight certifications with the Tripoli Rocketry Association (TRA). We also engage in team-based projects where we compete in national high-power rocketry competitions, develop custom propulsion systems, and mechanical systems for active flight control.

15th

OVERALL, NASA SLI NATIONALS

#1

COLLEGIATE TEAM IN CALIFORNIA

2

COMPLETED NASA SLI SEASONS

What We Do



First group of Fresno State students to obtain their TRA flight certifications. Fall 2023

Certification Program

Our Rocketry Certification Program introduces students to the fundamentals of rocketry and aerospace engineering through hands-on workshops and guidance from experienced members. The objective of these workshops is that students build their own high-power rockets from scratch using many of the same processes employed by industry programs. Participants build practical skills in design, simulation, manufacturing, and flight testing. Members work with custom composites and 3D printing, aiming to achieve a Tripoli Rocketry Association Level 1 or Level 2 certification with successful flights.



NASA USLI 2026-2027

The Student Launch Initiative (SLI) is a national competition hosted annually by NASA tasking collegiate teams with a technical challenge mirroring a real NASA space exploration project lifecycle.



The Vehicle

To accomplish this mission, the team has designed a fully custom fiberglass and carbon fiber composite vehicle that stands at about 6.5 ft tall. Loaded and on the pad, it weighs 23 lb, carrying an 8 lb imaging payload, parachutes, recovery electronics, and necessary integration hardware.

To carry the payload to a target apogee of 5,250 ft, the vehicle is propelled by an AeroTech K700W, burning 2.4 lb of propellant in 3.5 s.



Signatures on the team's first custom fin can in Huntsville, AL

The Payload

This year's payload mission challenges teams to visually identify, photograph, and determine distance to a target on the ground. Our solution is an autonomous lander carried within the vehicle which is jettisoned during main parachute descent to land under its own parachute.

On touchdown, the lander deploys landing legs to stand upright and begin its search sequence. The payload then pans a camera through a 360 degree sweep, searching for the NASA-designated target using computer vision. After identifying the target, a photograph is taken and distance is calculated onboard without using GPS, a key mission requirement.

This is a multidisciplinary challenge, stressing numerous facets of mechanical, electrical, and computer engineering. Teams work closely together, designing payload subsystems to interface with one another, the payload itself, and the vehicle as a whole.

Solid and Liquid Propulsion

Typically, high power rockets are propelled by commercial off-the-shelf solid rocket motors, limiting the potential performance of highly-optimized airframes. The team has begun experimenting with designing their own solid and liquid propulsion systems to better meet personalized mission criteria. This entails research into thermochemical systems, pressure vessel design and manufacture, and test operations.

Solid Rocket Motors

The team has formulated, cast, and test fired ammonium perchlorate composite propellant (APCP) solid motors with the intent to fly rockets to extreme speeds and altitudes. Winter 2026, the final product will fly 12 lb of propellant generating over 500 lb of thrust, carrying a rocket to over 70,000 ft at Mach 4.5.



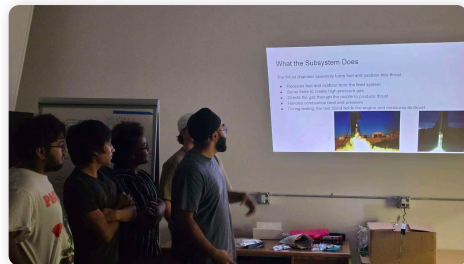
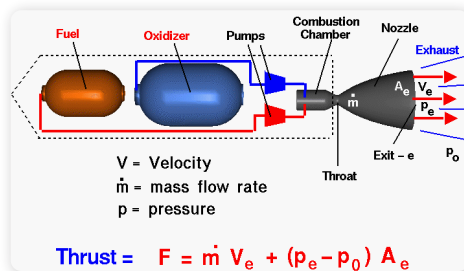
Solid propellant being mixed pre-curing

Liquid Rocket Engines

Our liquid propulsion team is currently developing a nitrous oxide-ethanol liquid bi-propellant engine and associated hardware for test firing. This engine is expected to generate 250 lb of thrust for 5 s. Liquid propulsion systems have become standard in modern orbital rockets, making understanding their design and manufacturing processes essential for aspiring aerospace engineers.



CNC milling a bracket on a Haas VF4



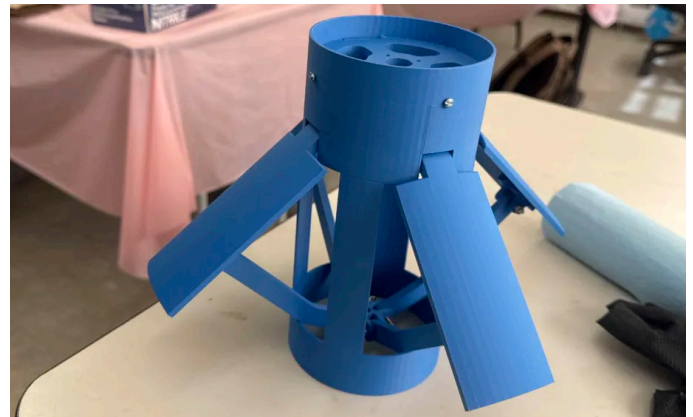
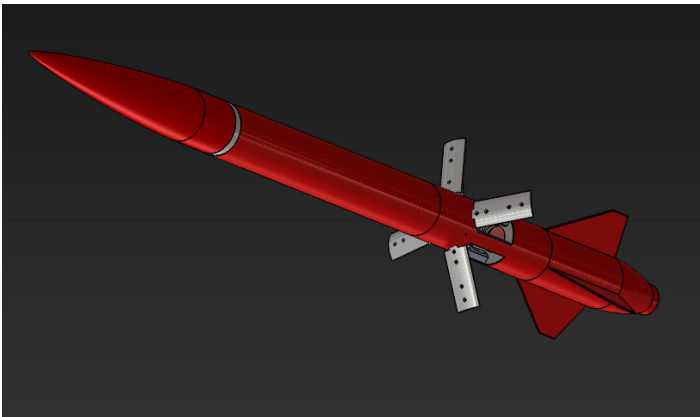
Half Cat Rocketry Mojave Sphinx

Active Airbrakes

Our team is developing a dynamic air braking system designed to actively control a rocket's maximum altitude during ascent. The system uses deployable flaps that extend from the rocket's airframe surface to increase aerodynamic drag, enabling the vehicle to more precisely reach a target apogee and reduce landing distance from the launch pad, both critical mission requirements in many competitions.

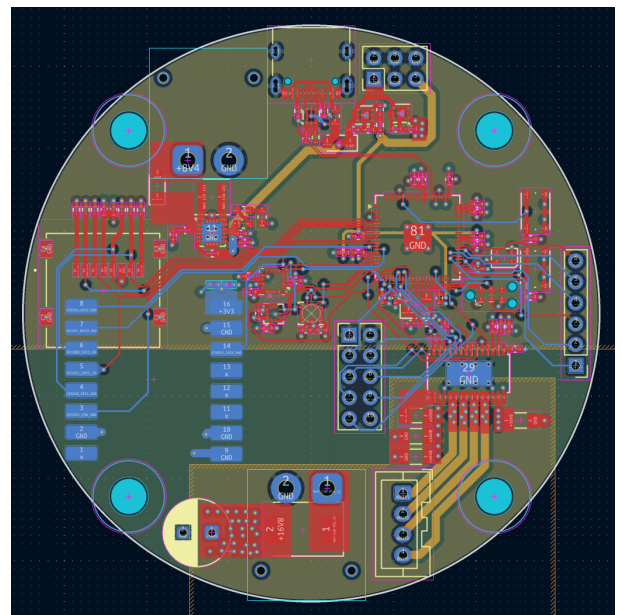
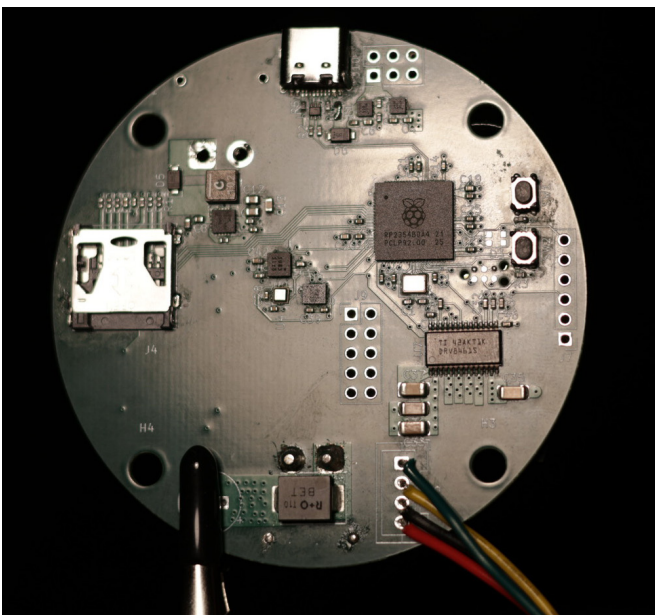
Mechanical Design

This project combines mechanical design, additive manufacturing, structural analysis, and computational fluid dynamics (CFD), giving team members experience in analysis of key mission performance components. The air brakes are extended and retracted using motor-driven linkages, more than quadrupling the vehicle's drag force at full deployment. This allows the system to adjust the vehicle's drag force based on its current speed and projected altitude, similar to a landing aircraft.



Electronics

The air brakes use a student-developed flight computer on a custom PCB. It measures altitude, orientation, acceleration, and magnetic fields, allowing the vehicle to estimate its real-time position in 3D space and predict its future maximum altitude. The computer's control algorithm then determines the brake deployment angle needed to slow the rocket down and lower its actual altitude to its target.



Sponsorship Tiers

	Friends \$1-999	Copper \$1,000+	Bronze \$2,500+	Silver \$5,000+	Gold \$7,000+	Platinum \$10,000+
Named in our group thank you post	X	X	X	X	X	X
Listed on the website, ranked by gift	X	X	X	X	X	X
Logo on the sponsor banner		X	X	X	X	X
Monthly newsletter/progress updates		X	X	X	X	X
Resume book access			X	X	X	X
Dedicated social media post				X	X	X
Shoutout during NASA livestream				X	X	X
Logo on rocket and team shirts				X	X	X
Mentioned in every social media caption					X	X
Large logo on rocket and team shirts					X	X
Select the theme of subscale rocket*						X

***Platinum limited-time offer.** The subscale rocket is designed and built early in the season, so the selection of its theme closes on **November 13th**.



How to Give

Prefer to give in-kind? Materials, machining services, tools, flight hardware, software, or help of any other kind is welcome. We'll recognize you at the tier matching the estimated value of your contribution!

California State University, Fresno is a 501(c)(3) nonprofit organization. All monetary and material contributions are tax deductible. We are happy to assist with any donation and benefit logistics when sponsoring our team.



TO DONATE PLEASE CONTACT US

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Steps to Take

1. Select a Sponsorship Tier
2. Reach out via aiaa.csufresno@gmail.com to confirm tax-deductible payment or in-kind donations.
3. Send high-resolution vector logos (.SVG/.EPS) for shirt, banner, and airframe placement.
4. Keep in touch!

Fresno State Rocketry is always grateful for any type of support. If you have any questions, feel free to contact us.

With your contribution, we can continue to innovate, fly higher, and achieve more than we have before!

fresnostaterocketry.org



Thank you for your sponsorship of the

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