



NC STATE

HIGH-POWER ROCKETRY CLUB

SPONSORSHIP PACKET 2026 - 2027



ABOUT US

OUR TEAM

The High-Powered Rocketry Club at NC State University, colloquially known as Tacho Lycos, offers students from all majors and backgrounds real world experience in the research, design, testing, and launching of high-powered rockets. The club has been competing in the NASA Student Launch Competition annually since its formation in 2009.



OUR ORIGIN

We were founded in 2009 to compete in the NASA Student Launch Challenge, and began to expand in 2013 by partnering with an Aerospace Engineering capstone Senior Design team. This collaboration strengthened our design and building capabilities while fostering mentorship between graduating seniors and newer members.

OUR FUTURE

This will be our first year competing in the International Rocket Engineering Competition (IREC) after earning numerous top 5 finishes and awards in NASA Student Launch. We're working to build strong connections with our sponsors, giving us the resources to take on bolder designs, innovative payloads, and greater flights.





COMPETITION

INTERNATIONAL ROCKET ENGINEERING COMPETITION

The International Rocket Engineering Competition (IREC), is a prestigious event where student rocketry teams from across the world compete to launch high-altitude rockets. Competition criteria include a minimum payload size of 2.2 pounds, and target altitudes of either 10,000, 30,000 or 45,000 feet above ground level. Multistage rockets and all chemical propulsion types (solid, liquid, and hybrid) are allowed. IREC's competition standards are designed to encourage creativity and ingenuity in all stages of engineering.

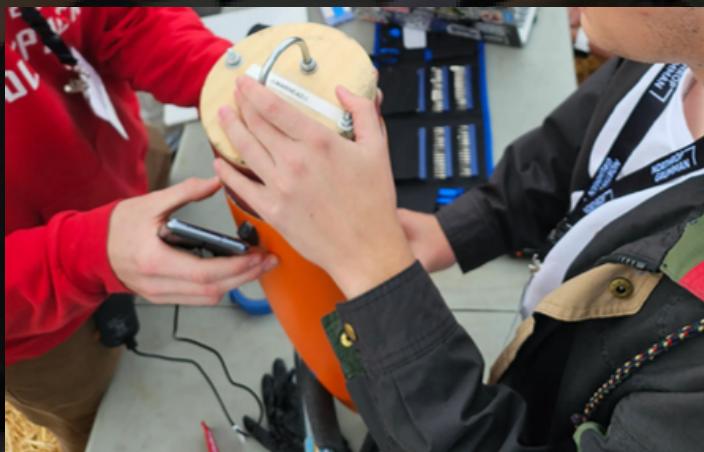


COMPETITION SCORING

Teams submit technical documentation that details the the rocket's design, analysis, testing, and safety procedures. Scoring is based on the quality of engineering design and implementation, the accuracy of the rocket's flight relative to the target altitude, the successful recovery of the vehicle, and the performance of payload systems.

A NEW ERA

As we expand as a program, we have decided to take on the challenge of IREC to test our abilities on a global stage and leave room for further expansion of our program. This brings major increases in development and travel costs, but will enable us to engineer more creative, innovative solutions.





RECENT ROCKETS

JACKPOT

2025 - 2026

3RD PLACE OVERALL NATIONALLY

The NASA SL competition rocket Jackpot's design reviews, outreach programs, safety procedures, as well as its successful flight and payload deployment all played a fundamental role in the 3rd place overall award.

APOGEE
4606
FEET

APOGEE % ERROR
0.2%
ERROR

MAX ACCELERATION
7.8
G-FORCE

EXIT VELOCITY
101.6
FT/SEC

1ST PLACE ALTITUDE AWARD

Awarded to the team whose rocket is closest to their target altitude. Our team aimed for an apogee of 4600 ft and reached 4606 ft.

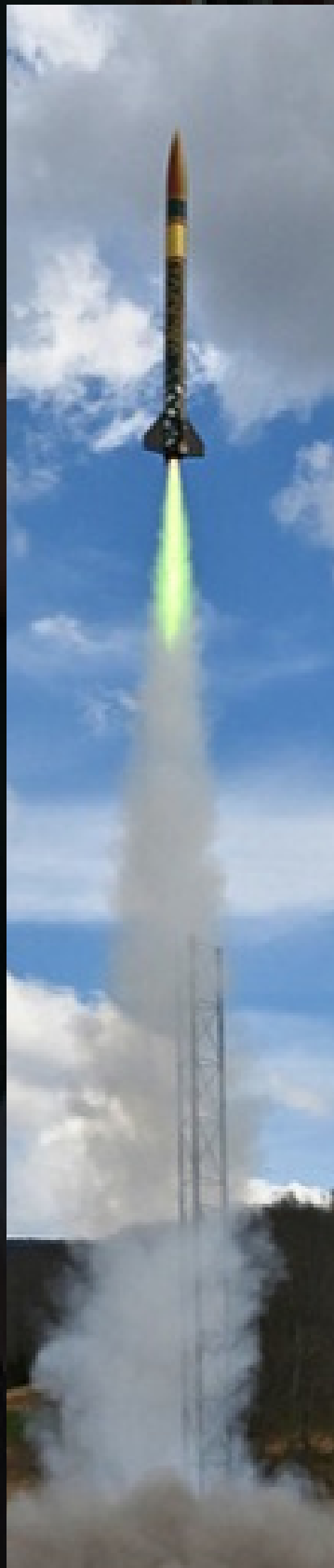
1ST PLACE STEM ENGAGEMENT AWARD

Recognizes the team that engages most with their local communities. Our team reached 2200+ students during the season.



1ST PLACE BEST- LOOKING ROCKET

Awarded to the team that achieves the best pairs exceptional rocket aesthetics and craftsmanship with safe, flight-worthy engineering.





RECENT ROCKETS

PELICANATOR

2024 - 2025

2ND PLACE OVERALL NATIONALLY

Awarded to the second overall team. Design reviews, outreach, safety, and a successful flight will all factor into the Runner Up Award winner.

MAX VELOCITY
509.7
FT/SEC

MAX THRUST
1932
NEWTONS

MAX ACCELERATION
248
FT/SEC²

APOGEE
4226
FEET

2ND PLACE AIAA RESEARCH LAUNCH VEHICLE INNOVATIVE PAYLOAD AWARD

Awarded to the team with the most creative and innovative payload design while maximizing safety and science value.

1ST PLACE PROJECT REVIEW AWARD

Awarded to the team that is viewed to have the best combination of written reviews and formal presentations.



2ND PLACE SAFETY AWARD

Awarded to the team that demonstrates the highest level of safety according to the scoring rubric.





RECENT ROCKETS

SHAKE 'N BAKE

2023 - 2024

**5TH PLACE
OVERALL NATIONALLY**

Awarded to the fifth overall team. Design reviews, outreach, safety, and a successful flight will all factor into the Runner Up Award winner.

MAX VELOCITY

503.7

FT/SEC

DISPLACEMENT

2222

FT FROM LAUNCH

DESCENT RATE

24.65

FT/SEC

APOGEE

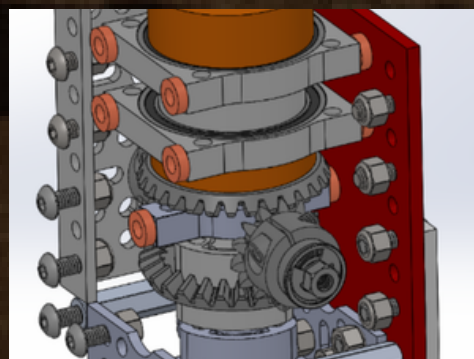
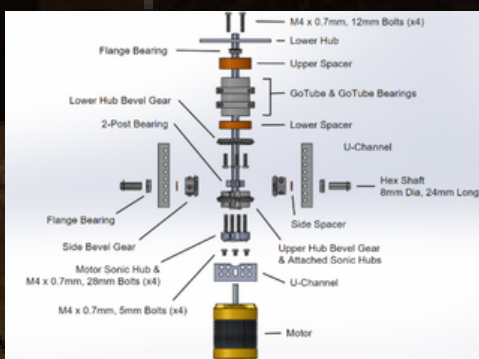
4067

FEET

SAIL

DEPLOYABLE PAYLOAD

The SAIL, or STEMnaut Atmosphere Independent Lander, was designed and built for the 2023-24 NASA Student Launch competition's payload challenge. Its purpose was to deploy out of the rocket 400 feet above ground level, descend at human-survivable speeds, and land in a predetermined orientation without the use of a parachute or streamer.





2025 - 2026 STATISTICS

52 MEMBERS ATTENDED
INTEREST LAUNCH

09 LAUNCHES
PARTICIPATED IN

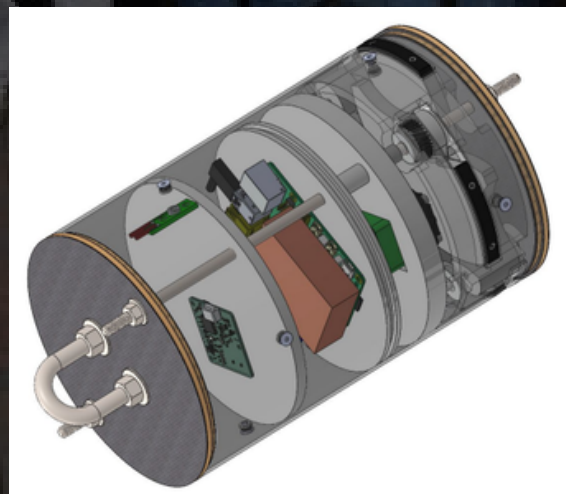
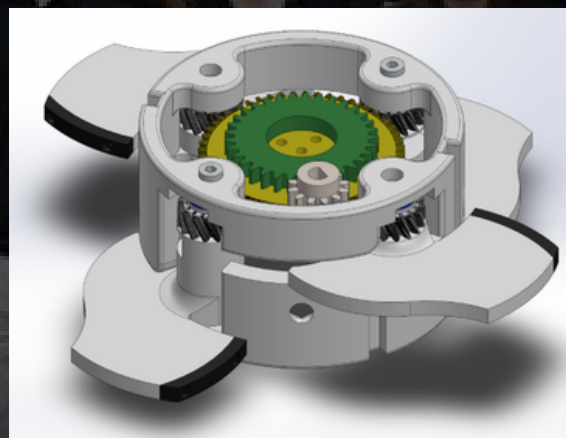
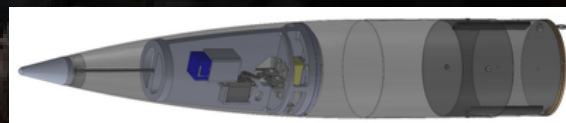
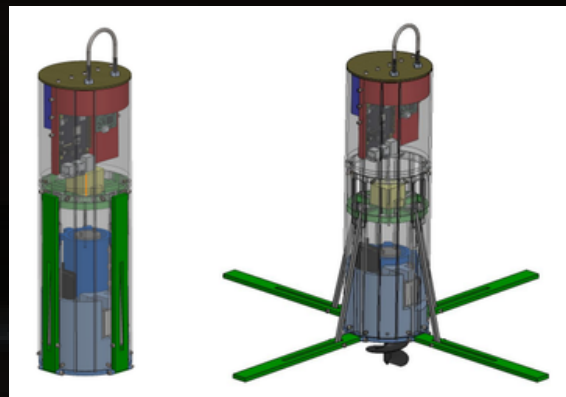
15 MEMBERS WITH
CERTIFICATIONS

2K COMMUNITY
MEMBERS REACHED

20 OUTREACH EVENTS
ORGANIZED

25 HUNDRED RAISED FOR
HABITAT FOR HUMANITY

5K HOURS SPENT DURING
THE 25/26 SEASON





RESEARCH & DEVELOPMENT

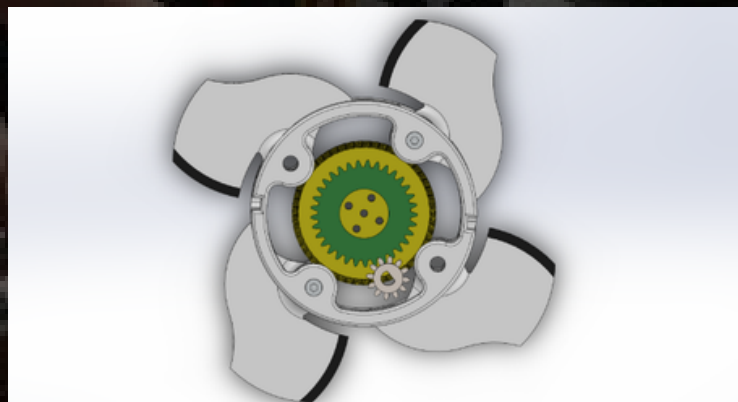
WOLFWORKS EXPERIMENTAL

Formed in 2019, Wolfworks Experimental (WWE) is the club's research and development division. Originally created to allow for focused progress towards an air brake system, it has grown to explore a variety of advanced rocketry concepts beyond those tested in competition.

AIR BREAKS

ACTIVE APOGEE CONTROL

An apogee targeting system that deploys retractable flaps to increase drag and reduce altitude, helping achieve the target apogee. Developed for the NASA Student Launch to improve scoring by enhancing apogee accuracy.



BARBENHEIMER

TWO STAGE CUSTOM AIRFRAMES

Project Barbenheimer was our club's first staged rocket and one of our first rockets made using composite wet layups. It helped pave the way for our 2025-2026 senior design rockets which are also made using composites.



PENCIL PUSHER

SUPERSONIC ROCKET

Our first supersonic rocket, built with a fiberglass airframe and carbon fiber-reinforced sandwich composite fins with a birch core. It flew successfully to Mach 1.4 in 2023 and Mach 2.0 in 2024 with apogee around 10k and 15k feet respectively.





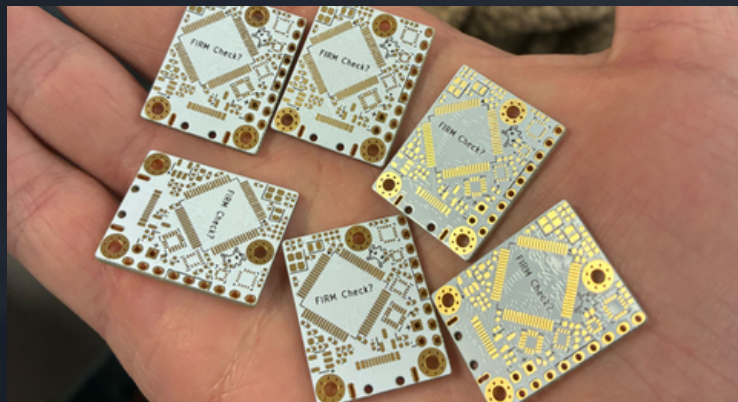
RESEARCH & DEVELOPMENT

PROJECT FIRM

FILTERED INERTIAL ROTATION MODULE

A multifaceted solution to address pain points in payload development and airbrake development.

It is a custom-designed PCB with hand-picked sensors to perform data collection during rocket flights and process the data through a Kalman Filter for high accuracy.



SQUAKIT

CUSTOM AIRFRAMES

Squakit was one of our first attempts at making a custom composite airframe. We wrapped fiberglass around a cardboard shipping container, and painted it like a creeper from Minecraft. We launched it successfully during the 2024 and 2025 interest launches.



SSR ROVER

ELECTROMECHANICAL SYSTEMS

Made from 3D-printed CF-PETG, the rover was built to drive on rough terrain. It features 2 continuous and 5 positional servos, an ultrasonic sensor and more. It includes a parachute release and driving stabilizers.



FUTURE PLANS

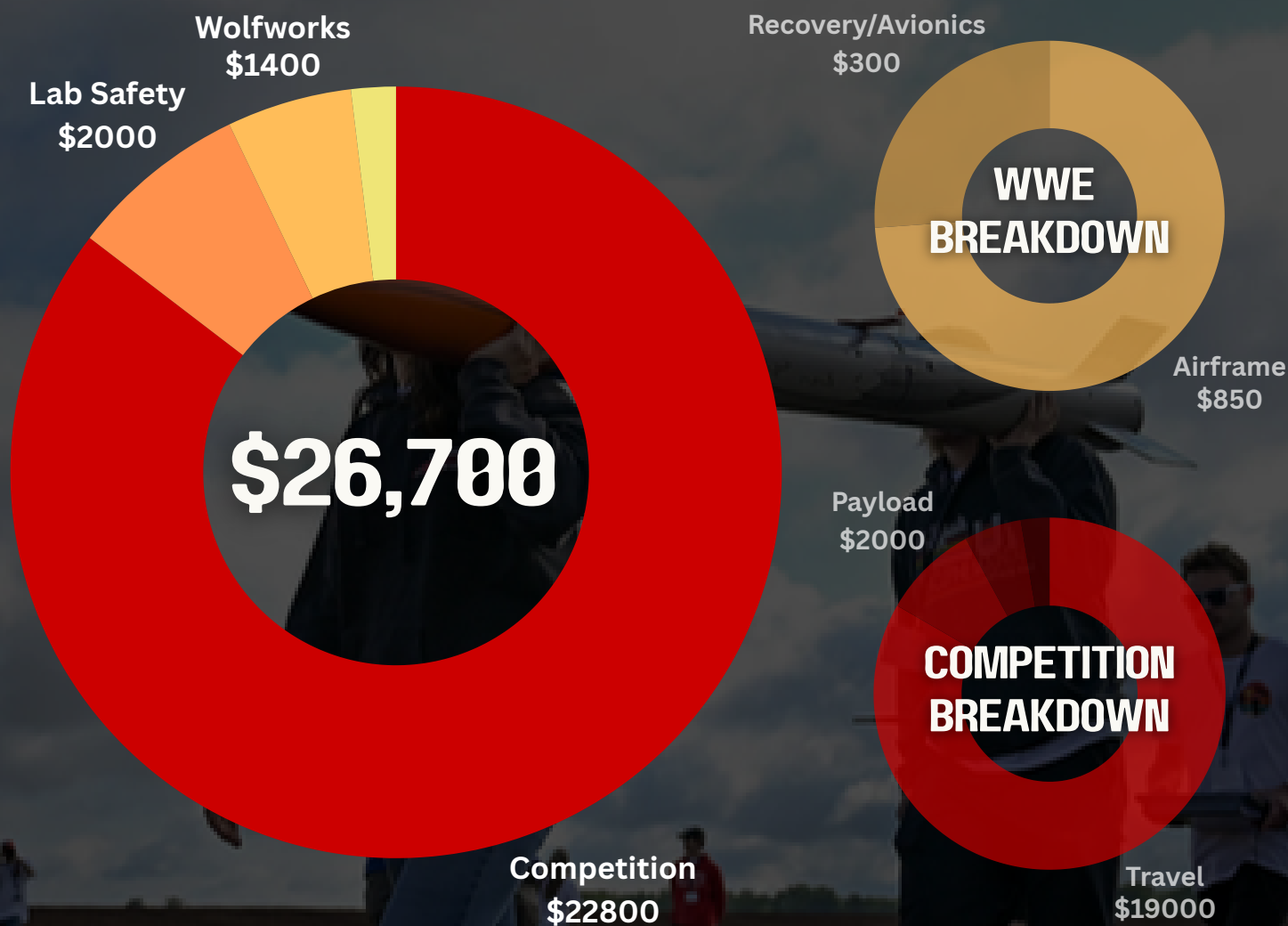
TWO STAGE & CANARDS

Wolfworks aims to build and launch a two-stage high altitude rocket, challenging ourselves to learn and integrate inter-stage coupling systems. This will enable us to better analyze our systems, such as our apogee control system and canards.



BUDGET BREAKDOWN

ESTIMATED 2027 COSTS



ANTICIPATED BUDGET INCREASES

Due to the increasing complexity of our airframes and payloads, there is an ever growing need to improve and expand upon the tools and other equipment in the lab to keep up with both productivity and safety demands.

COMPETITION: +\$15,000

LAB SAFETY: +\$2,000

WOLFWORKS EXPERIMENTAL: +\$4,000

**These numbers are approximate



SPONSORSHIP TIERS

Invitation to Competition			
Invitation to Test Launch			
Team Apparel Feature	Small Logo	Large Logo	Large Logo
Rocket Body Feature	2"x2" Logo on Stand Base	4"x4" Logo on Rocket Body	6"x6" Logo on Rocket Body
Sponsor Showcase Invitation			
Team Social Media Feature			
Team Website Feature			
Weekly Newsletter Feature			
	BRONZE \$500+	SILVER \$1500+	GOLD \$3000+
			PLATINUM \$5000+

The High-power rocketry club is a 501(c)(3) nonprofit organization. All monetary and material **contributions are tax deductible**. Our tax id is 27-2003041. We are happy to assist with any donation and benefit logistics when sponsoring our team.
Benefits stack over years of support.

THANK YOU FOR YOUR SUPPORT!

We look forward to you enhancing the High-Powered Rocketry Club experience for NC State's students through sponsorship support. Thank you for your time and consideration and we hope to be in contact.



 ncsurocketry.org

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 [@ncsurocketry](https://www.instagram.com/ncsurocketry)

 [@tacholycos](https://www.linkedin.com/company/tacholycos)



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