



# FLIGHT OPPORTUNITIES



ISSUE 86 — SEPTEMBER 2025

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## RECENT FLIGHTS

### NASA Research and Student Payloads in Suborbital Flight

September 18, 2025

Fourteen researcher payloads and 24 TechRise student payloads were tested in microgravity on a flight aboard Blue Origin's New Shepard reusable suborbital rocket system on Sept. 18. The flight helped researchers from NASA, universities, and private companies advance solutions that could aid the agency's lunar exploration through missions like Artemis as well as future Mars missions.

NASA's TechRise Student Challenge provides middle and high school students a hands-on opportunity to gain critical skills in engineering, computing, electronics, and more. ***See the Learn with NASA section below for more about TechRise.***



*After separation from the Blue Origin New Shepard suborbital rocket launched on Sept. 18, 2025, the capsule descends to Earth carrying 14 researcher payloads and 24 TechRise student payloads. Credits: Blue Origin*

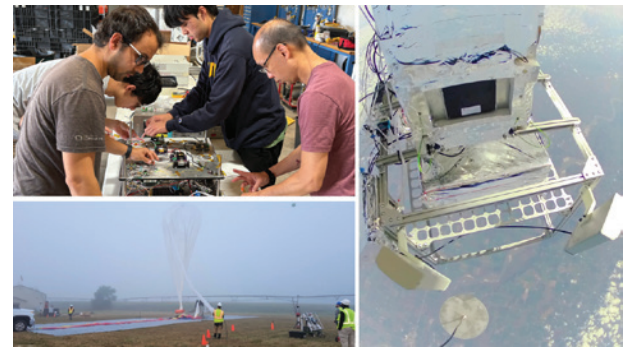
[Read about the payloads on this flight](#)

## Balloon Test of Small Sensor for Big Navigation Improvement

September 10, 2025

Researchers at the University of California, Los Angeles (UCLA) designed a chip-sized device to achieve a significant improvement in the precision navigation performance of small spacecraft. On this high-altitude balloon flight, supported by Flight Opportunities, UCLA had its first real-world test of the device's potential.

The Sept. 10 flight operated by Aerostar of Sioux Falls, South Dakota, gave researchers the opportunity to determine whether their miniature accelerometer can obtain accurate position and orientation data during a suborbital flight, allowing them to evaluate its performance and adjust the design ahead of future missions.



The UCLA research team at the Sept. 10, 2025, Aerostar high-altitude balloon flight test of their compact navigation module included (pictured left to right) Talha Yerebakan, Justin Tang, Willson Luo, and Chee Wei Wong. Credits: NASA (top left) and Aerostar International

[Read about this flight test](#)

## COMMUNITY OF PRACTICE WEBINAR

Our next Community of Practice webinar will be held on November 5, 2025.

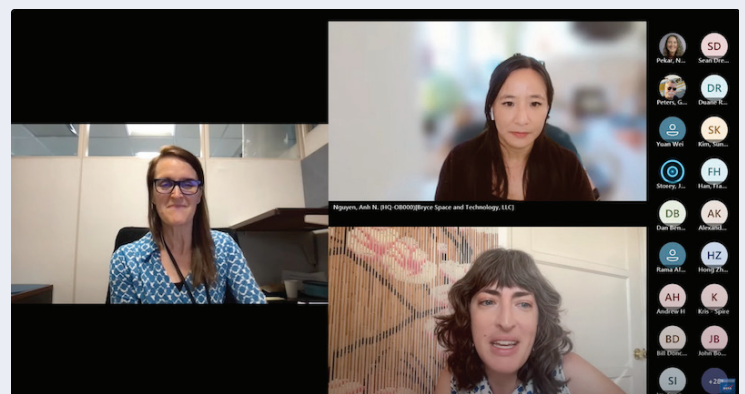
Look for updates in next month's newsletter and on our website.

## ON-DEMAND WEBINARS

Watch any of our [past webinars on demand!](#)

These webinars share best practices and important lessons learned from suborbital and orbital researchers, flight providers, and NASA personnel experienced in using flight tests to advance technologies.

Our September 3, 2025, webinar is now available: [Exploring Hosted Orbital Capabilities with NASA's Flight Opportunities Program](#)



[Watch our on-demand webinars](#)

## Virgin Galactic Selected as Flight Provider for Upcoming TechLeap Flight Tests

The winners of the 2024 **TechLeap Prize: Universal Payload Interface Challenge** will be flight testing their solutions aboard one of Virgin Galactic’s new Delta Class spaceships.

This TechLeap challenge invited applicants to propose an optimized “system of systems” to enable easy integration of diverse technology payloads onto various commercial suborbital vehicles, orbital platforms, and planetary landers. The goal is to quickly and seamlessly adapt a wide range of small space payloads for flight testing, helping accelerate the pace of technology maturation to support future space exploration missions.

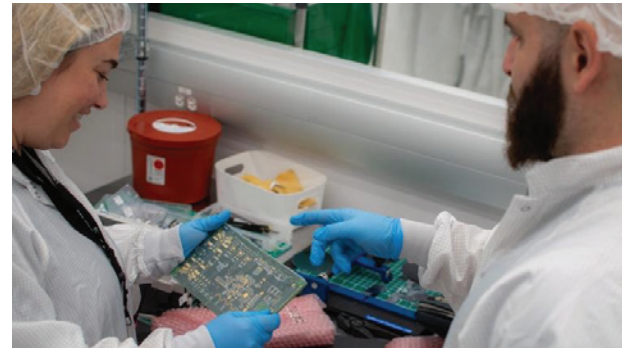


*Virgin Spaceship (VSS) Unity heading to space. Credits: Virgin Galactic*

[Read more about the Universal Payload Interface Challenge](#)

## Two TechLeap Prize Winners Flight Test Their Solutions Ahead of Schedules

Two winners of the **TechLeap Prize: Universal Payload Interface Challenge** were able to begin flight testing their proposed solutions ahead of the Flight Opportunities-supported flight scheduled for late 2026 with Virgin Galactic (see above). These demonstrations illustrate the potential for rapid infusion of UPIC solutions and the power of the TechLeap Prize mechanism to accelerate technology maturation.



*Solange Massa (left) and Aram Garibyan (right) discuss the ANIMA onboard computer printed circuit board. Credits: NASA*

### Winner: **Ecoatoms**

**Proposed Solution:** ANIMA (Apparatus for Nominal Integration with Minimal Adaptations)

**What It Is:** ANIMA is a three-part universal interface that includes (1) a payload cable that is common regardless of the launch vehicle, (2) a vehicle-specific adapter to provider power and launch vehicle data, and (3) an onboard computer to facilitate data exchange between a wide range of payload types and host vehicles. ANIMA aims to bridge the hardware integration gap, making space accessible to commercial, government, and academic users.

**Flight:** September 18, 2025, in Van Horn, TX aboard Blue Origin’s New Shepard reusable suborbital rocket system

**Winner: ELFIN** (Electron Losses and Fields Investigation) student team at the SPACE Institute of the University of California, Los Angeles

**Proposed Solution: SDPI**  
**(Software-Defined Payload Interface)**

**What It Is:** The SDPI is a compact yet flexible CubeSat-compatible system that allows the payload developer to define multiple digital and power interfaces via software.

**Flight:** September 15, 2025, in Fort Summer, NM aboard a high-altitude balloon provided through NASA’s Columbia Scientific Balloon Facility

# Modular Configurable Electric Power Converter

CisLunar Industries

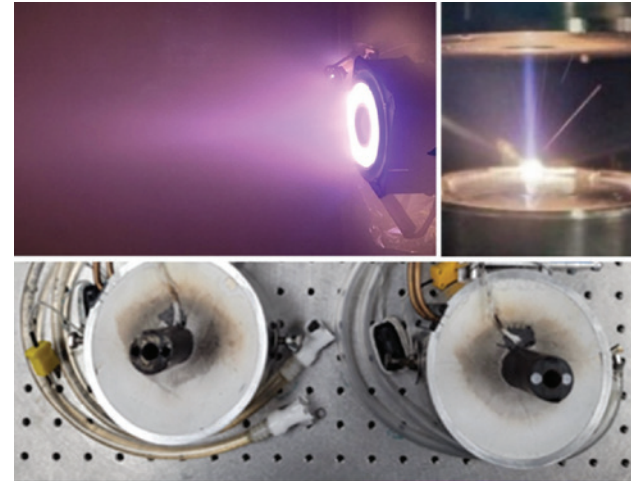
## Flight Task Awarded to Momentus Space – Scheduled to fly early 2026

Current electric power conversion systems in space are inefficient, bulky, and costly — particularly for applications requiring over 1 kW of power, such as electric propulsion and in-space servicing, assembly, and manufacturing (ISAM). This results in more complex thermal management systems and oversized batteries and solar arrays, ultimately wasting valuable mass and limiting mission capabilities.

To demonstrate efficient power management and support NASA's ISAM objectives, CisLunar Industries will demonstrate a power processing unit (PPU) for Hall thrusters based on their Modular Configurable Electric Power Converter (MCEPC) technologies as a hosted payload aboard the Momentus Space Vigoride 7 orbital service vehicle, scheduled to fly in early 2026. Payload-to-spacecraft integration began on Sept. 10.

Designed for missions requiring over 1 kW of power, the CisLunar PPU's compact size, low weight, and scalable power output is designed to offer significant benefits for high Delta V maneuvers, ISAM, and logistics for low Earth orbit, geostationary orbit, and cislunar operations. NASA's Small Business Innovation Research (SBIR) program supported the development of this technology.

The upcoming test, supported by NASA's Flight Opportunities program, aims to raise the technology readiness level of MCEPC technology by validating control operation, telemetry/telecommand functions, and adaptive behavior in orbit.



*(top left) 6 kW Hall thruster sustained operation with MCEPC-PPU. (top right) High-voltage e-beam welder operating with MCEPC-PPU. (bottom) Melting and casting aluminum rods with MCEPC-PPU. Credits: CisLunar Industries*

[Learn more about MCEPC](#)

Share this with the educators and students in your community!



## Submit Your Experiment Idea for the TechRise Student Challenge!

**DEADLINE: November 3, 2025**

Are you an educator or student in 6th-12th grade at a U.S. public, private, or charter school? (U.S. territories too!) Then you're invited to submit science and technology experiment ideas to fly on a suborbital vehicle.

**Sixty winning teams will be selected**, with a goal of at least one school from each of the 50 states and U.S. territories. Each team will receive \$1,500 to build their payloads and will get an assigned spot on a NASA-sponsored commercial flight test: either Virgin Galactic's Suborbital-Spaceship or a high-altitude balloon operated by World View Enterprises.

**No experience is necessary to join the NASA TechRise Challenge!** Teams receive technical support from advisors who help students learn the skills they need to bring their experiment to life as a payload on a suborbital vehicle.

[Learn more about the TechRise Challenge](#)

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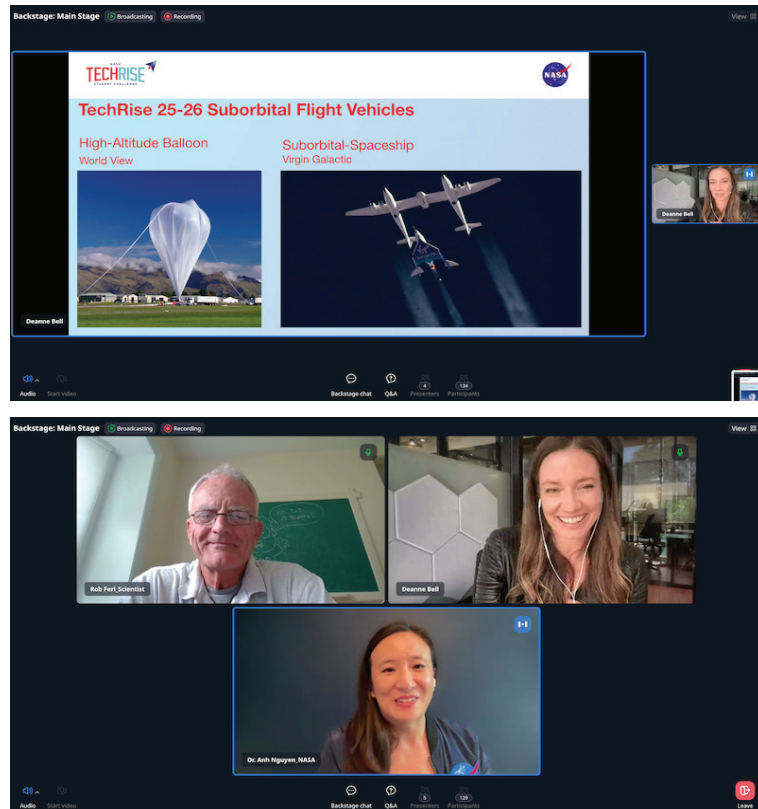
## Did you miss the TechRise Virtual Field Trip? No worries!

[Watch the recording](#)

### The TechRise Virtual Field Trip featured:

- A presentation from Rob Ferl, the first NASA-supported researcher **to fly with their payload** on a suborbital rocket
- An overview of how the program works and how U.S. schools can participate
- A primer on suborbital spacecraft and high-altitude balloons
- Questions and answers from students

[Learn more about the TechRise Challenge](#)



## OPPORTUNITIES

### Are You Up for a Challenge?



#### Rock and Roll with NASA Challenge

Phase 1 closes Nov. 4, 2025

\$155,000 in total prizes

This challenge seeks a new kind of wheel for lunar exploration — one that can sprint across razor-sharp regolith, shrug off extremely cold nights, and keep a rover rolling day after lunar day.

[Learn about Rock and Roll with NASA Challenge](#)



#### LunaRecycle Challenge Phase 2

Register by Jan. 22, 2026

\$2 million in total prizes

LunaRecycle challenges teams to develop solutions for recycling common trash materials that could accumulate from activities in deep space.

[Learn about LunaRecycle](#)



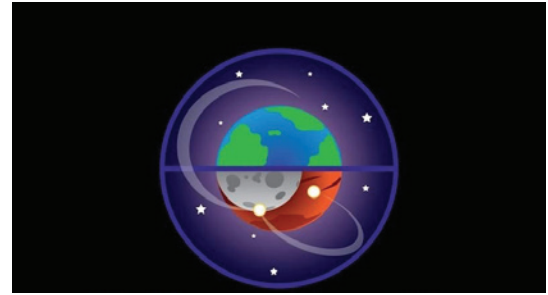
### NASA Revolutionary Aerospace Systems Concepts – Academic Linkage (RASC-AL) competition

Submit NOI by Oct. 13, 2025

\$112,000 in total prizes

U.S.-based undergraduate and graduate-level teams are invited to develop new concepts to improve operations on the Moon and Mars. Themes range from lunar surface exploration, to enhancing humanity's ability to operate and return data from the surface of Mars.

[Learn about the RASC-AL competition](#)



### 2026 Human Lander Challenge

Submit NOI by Oct. 20, 2025

\$126,000 in total prizes

Through this challenge, college students can contribute to the advancement of human landing system technologies, concepts, and approaches.

[Learn about the Human Lander Challenge](#)

## UPCOMING EVENTS

### Attending any of these upcoming meetings? [Let us know!](#)

- **Lunar Surface Innovation Consortium (LSIC) Fall 2025 Meeting**  
Nov. 5–6 | Atlanta, GA (Georgia Tech)
  - Registration for in-person attendees closes October 20
  - Registration for virtual attendees closes October 31
- **2025 ASGSR (American Society for Gravitational and Space Research)**  
December 3-6 | Phoenix, AZ
  - Early bird [registration](#) extended until October 3
  - Regular [registration](#) extended until November 3
- **AGU25 (American Geophysical Union)**  
Dec. 15-19 | New Orleans, LA
  - Flight Opportunities' Danielle McCulloch will be participating in a **Technology Townhall: Commercial Services for Space Science Missions**
  - Date and time TBD

# NASA Flight Opportunities Program

Flight Opportunities is part of NASA's Space Technology Mission Directorate.

Visit [nasa.gov/stmd-flight-opportunities](https://nasa.gov/stmd-flight-opportunities)

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