



masa

Sponsorship Packet

Fall 2022

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MASA Rockets

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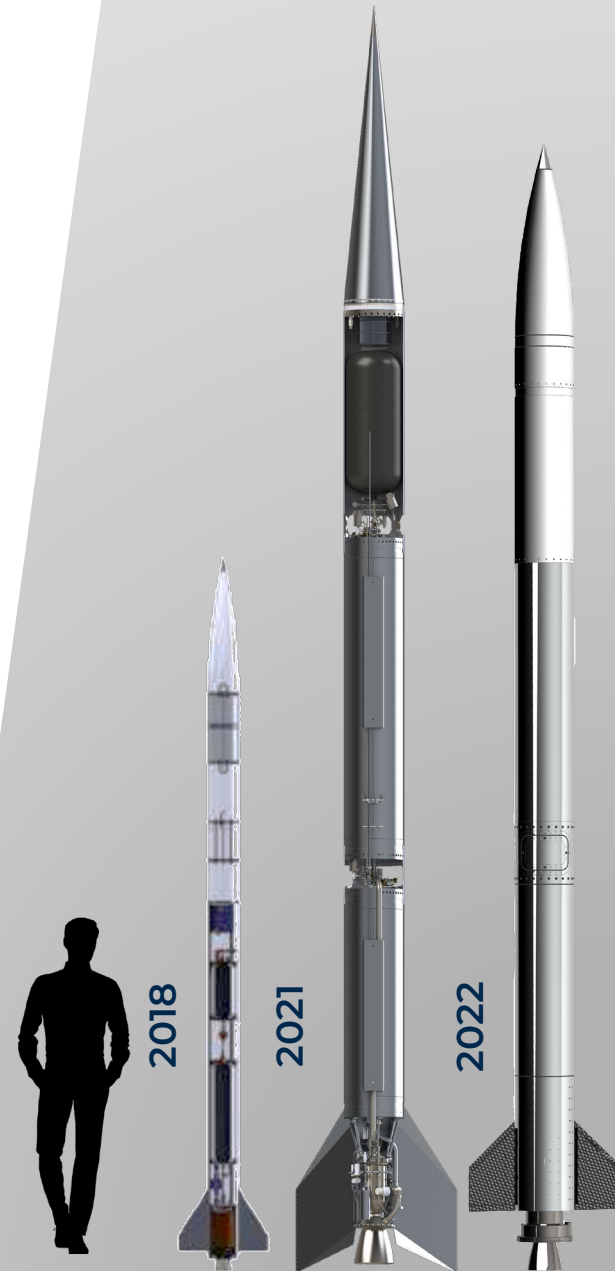
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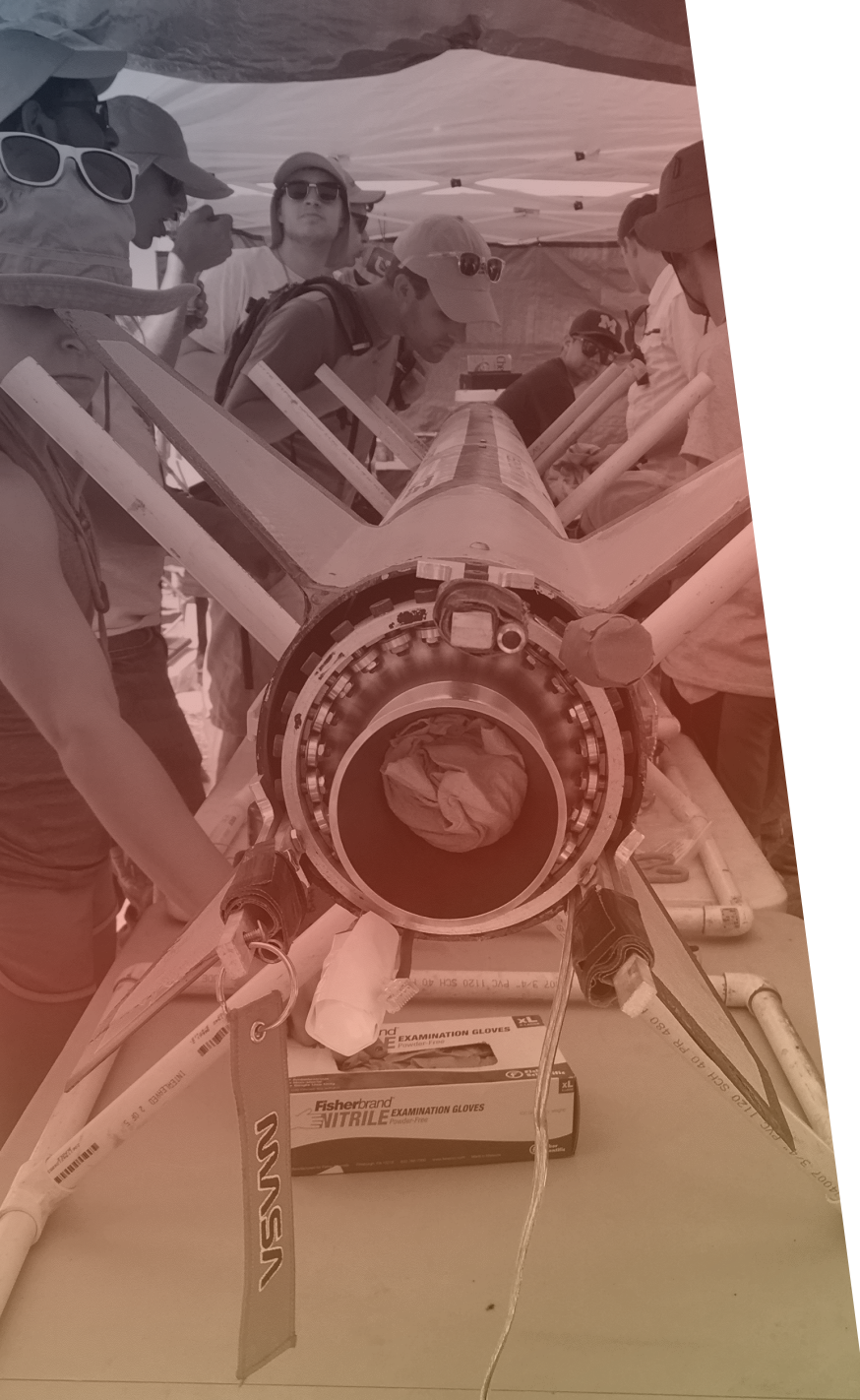


Blueshift, a solid-fuel rocket, sits
on the launchpad at IREC 2017

MASA is pushing the boundaries of student rocketry!

We are the student-run rocketry team at the University of Michigan. Our current project, Clementine, utilizes state-of-the-art avionics, aerostructures, and propulsion systems as part of the largest student-built rocket to launch in the United States!





Mission

MASA's mission is to design, build, and fly liquid rockets, while teaching students about the basics of rocketry. We provide valuable hands-on engineering experience to students at the University of Michigan and to aspiring engineers through our outreach projects.

◀ MASA's Laika, the first-ever liquid-bipropellant rocket to be launched by students at Spaceport America Cup in 2018, undergoes final checks

Team

MASA is the student-run rocketry team at the University of Michigan. We take a multidisciplinary approach to engineering, bringing students together to design, build, and launch pioneering liquid-fueled rockets. MASA is composed of 7 subteams, allowing team members to grow in all aspects of engineering, business, outreach, and leadership. Together, MASA works to take Michigan to new heights!

MASA remains one of the only teams in the world to have launched and recovered a liquid-propellant rocket and was the first to do so at the Spaceport America Cup in 2018.



Sponsoring MASA

MASA's sustained innovation is made possible by our corporate and private sponsors. Join us and become part of a growing legacy of partners that help keep MASA at the forefront of student rocketry, year after year.

Social Media & Online Exposure

With thousands of followers across social media and tens of thousands on University pages which we often partner with, you will gain exposure for your company and products when you sponsor our team!

Access to top-tier engineering students

Gain access to MASA's hardworking, diverse, and talented workforce with resume books and networking events with the team.

Press & Industry Coverage

In 2019, MASA was featured on-stage at the Dassault Systèmes 3DEXperience Forum in Las Vegas and this year, we participated in the launch of the Academic Rocket Launch Alliance at AIAA SciTech. MASA constantly receives recognition, and your company can be front and center with us!

Tax Benefits

MASA has 501(c)(3) non-profit tax-exempt status, and all donations to the team are tax-deductible.



Benefits by sponsorship tier:

	Stratosphere (Up to \$5k)	Mesosphere (Above \$5k)	Thermosphere (Above \$10k)	Kármán Line* (Above \$35k)
Exposure on social media, livestreams, & newsletter	•	•	•	•
Tax Benefits	•	•	•	•
Logo or name on website	•	•	•	•
Logo on team t-shirt and banner	•	•	•	•
Access to member resume book and networking events	•	•	•	•
Access to rocket & test footage, filming events†		•	•	•
Logo on rocket		•	•	•
Invitation to witness engine static fire, rocket launch‡		•	•	•
Priority logo placement & branding			•	•
Co-branding of Clementine Project, custom statement on website				•

Design review considered equivalent to \$500 in funding. Value of donated materials and gift-in-kind agreements is included in sponsorship level values.

* Von Kármán Line tier: At least \$20k of sponsorship value must be a monetary contribution

† Footage use & filming events: Each request must individually be reviewed and approved by the University

‡ Invitation to events: As permitted by COVID-19 safety policies and range safety considerations





How to Help

MASA benefits from:

- **Monetary donations** for rocket & engine development and manufacturing
- **Material donations**, including metal stock, tooling, avionics connectors, PCB printing, engine propellant, pressure transducers and sensors for engine plumbing, etc. These are incorporated directly into rocket and test equipment.
- **Design reviews** from industry experts to guide us during the development phase.

◀ MASA's Ground Support System on the test stand at the Mojave Test Area during the 2022 Summer Hotfire Campaign

Team & Technical Updates

Fall 2022

RP-D2 Engine Hotfire

This July, we successfully hotfired our engine, RP-D2! In the coming months, we will continue working towards launching Clementine, our next liquid bipropellant rocket.



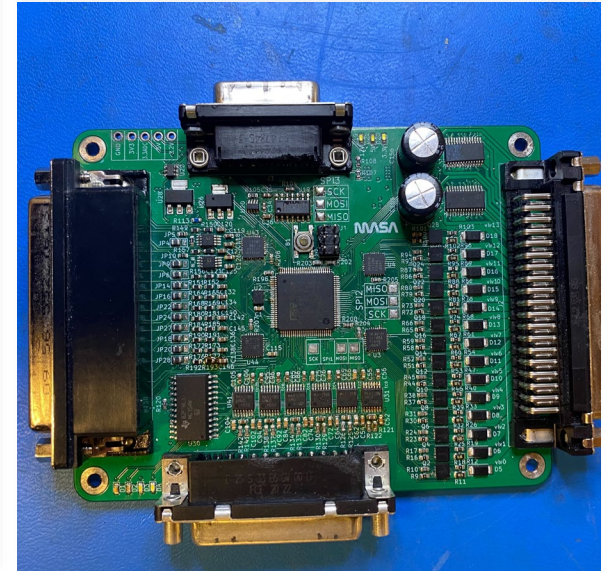
Composite Nosecone

The Aerodynamics and Recovery subteam designed, analyzed, and built a nose cone out of industry-grade fiberglass to house Clementine's recovery systems.



Engine Controller Board

The Avionics subteam designed and manufactured a circuit board to actuate solenoids and transmit readings from numerous onboard sensors.



A person is shown from the back, wearing a dark t-shirt with a NASA logo and a light-colored bucket hat. They are reaching up with both hands to adjust a long, thin light fixture on the ceiling. The person is wearing a black wristwatch on their left wrist and a white wristband on their right wrist. The background is a plain, light-colored wall.

2022-23 Goals

Technical Goals

- To integrate avionics, fluids hardware, and complete testing on vehicle-wide systems
- To design and test our ground support equipment for launch
- To launch Clementine this May!

Team Goals

- To continue implementation of Diversity, Equity, and Inclusion plan that strengthens team by broadening perspectives and promoting teamwork
- To train members in machining to ensure longevity of production capabilities
- To improve documentation to ensure knowledge continuity and safety

Team History

2003: MASA is founded as an amateur rocketry club at the University of Michigan, Ann Arbor.

IREC 2013: MASA successfully launches *Helios*, its first rocket with a composite airframe, and its largest rocket to date.

2013-2015: MASA develops its first hybrid rocket engine, *Alpha Centauri*, alongside its new solid rocket, *Young Hickory*.

IREC 2016: MASA successfully launches *The Great Emancipator* with the *Alpha Centauri* engine to 13,800 ft. It places 2nd in the Advanced Category.

2016-17: MASA improves on its proven hybrid engine and unveils *Gamma Centauri*, designed to propel a rocket to 30,000 ft.

Spaceport America Cup 2017: MASA is awarded 1st place in the Hybrid/Liquid Category for the flight of *Tortas 8* with the *Gamma Centauri* engine, and is declared the overall winner of the competition.

Spaceport America Cup 2018: MASA is the first team to launch and recover a liquid bi-propellant rocket, *Laika*, at the competition. It receives the highest score in the hybrid/liquid category, and the sportsmanship award.



◀ Spitfire liquid rocket engine stack, 2018

2018-2021: MASA participated in the Base 11 Space Challenge, placing 1st in Phase 1 (PDR) and 2nd in Phase 2 (CDR) of the most ambitious student rocket competition to date.

2021-Present: MASA begins development of Clementine, a liquid bi-propellant rocket, with plans to launch in May 2023.



MASA after the 2022 summer hotfire of RP-D2



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