

It's rocket science at Penn State's Applied Research Lab

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Rocket engines will soon be blazing away in a series of tests at Penn State's University Park campus, enabling students to gain a better understanding of rocket performance and share some of their knowledge with NASA, according to an agreement reached between the University's Applied Research Laboratory and NASA's Lyndon B. Johnson Space Center.

The [space center](#) will provide bipropellant rockets—[liquid methane](#) /liquid methane control engines—that it developed to the ARL's Space Systems Initiative for testing and characterization. The first of these engines has already arrived.

According to Michael V. Paul, who heads the Space Systems Initiative, more than 80 undergraduate and graduate students will have the opportunity to gain hands-on experience in the safe design, construction and operation of high pressure cryogenic systems and rocket engines. Paul also directs the Penn State Lunar Lion team, part of the Google Lunar XPRIZE, which plans to send a vehicle to the moon, take off from the [lunar surface](#), and land again some distance away.

"The purpose of the rocket testing program is to qualify engines for use in the construction of a Vertical Takeoff Vertical Landing vehicle," said Paul. "This is the prototype for the Lunar Lion, the craft that we expect to win the Google Lunar XPRIZE. We will leverage the results of our collaboration with NASA for the benefit of our team. It will be a particularly valuable experience for the students working on the project."

The rocket engines will be tested in University facilities built for testing high-energy systems for the Navy. The engines burn liquefied oxygen and various hydrocarbons and are considered to be environmentally "green" because they are non-toxic and are safer to use than traditional [rocket engine](#) fuels.

Paul said the agreement is just the beginning of a growing relationship between the University and NASA. Penn State students and engineers will be working with NASA over the next few months to use test results in making upgrades and other changes that will allow the rockets to run more efficiently. When testing has been completed, the Penn State team will provide the performance data to the Johnson Space Center, which could use the information as the basis for further rocket engine modifications.

Provided by Pennsylvania State University

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