

ASU-led space telescope is ready to fly

By Steve Filmer, ASU News
March 31, 2025

The [Star Planet Activity Research CubeSat](#), or SPARCS, a small space telescope that will monitor the flares and sunspot activity of low-mass stars, has now passed its pre-shipment review by NASA.

“We’ve finished all of our testing, and could go to space tomorrow,” said [School of Earth and Space Exploration](#) Professor Danny Jacobs.

Jacobs is co-investigator for the mission, along with principal investigator and astrophysicist Evgenya Shkolnik, also a professor in the School of Earth and Space Exploration

According to Shkolnik, SPARCS is a mission to understand the interaction between stars and their planets — especially the impact of high-energy radiation on the atmospheres of those exoplanets.

“An exoplanet is any planet that orbits a star other than our sun,” she said. “There are more such exoplanets in our Milky Way galaxy than there are stars.”

SPARCS will look toward low-mass stars, where their flares have much more impact on their habitable zone planets than our sun has on the Earth.

“We know these stars flare like crazy, much more actively, much more energetically, much more frequently than our own sun,” Shkolnik said.

How the telescope will work

SPARCS will carry a telescope into space that looks at the ultraviolet part of the stellar spectrum. These are wavelengths of light our eyes can’t see.

It will get data about the high-energy photons coming from the stars, which shower the atmospheres of their exoplanets.

“We will have data for the first time for the rarest and strongest of these stellar flares,” Shkolnik said.

The data should give answers to important space science questions and possibly clues about whether any of these exoplanets might have the right conditions to support life.

“We would look at a model of an earth-like planet with an earth-like atmosphere, and say, if we were to blast that atmosphere with these kinds of dynamic explosions, which we call stellar flares, what will happen to the atmosphere?” Shkolnik explains. “Will the chemistry change completely?”

Some flares, she says, may be so strong they’ve removed all the water or destroyed the atmospheres completely.

ASU’s role in building the telescope

“Here at ASU, we designed and built the payload, which is a telescope with a camera on the end of it and a computer to manage the whole thing,” Jacobs said.

Working inside the School of Earth and Space Exploration, the team spent months testing and integrating the payload into a spacecraft, which was built by Blue Canyon Technologies.

According to Jacobs, 15 undergraduate students have been paid by the university to help build SPARCS, working in the clean room and in many other roles.

These students are members of [ASU Interplanetary Laboratory](#), which has been plugging undergrads into hands-on roles for the past five years.

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When SPARCS goes into space

SPARCS is what NASA calls a cubesat, with dimensions “very close to a family-sized Cheerios cereal box,” Shkolnik said.

“One of the benefits of being a small mission is that you can catch a ride with another spacecraft, so you don’t need a dedicated rocket.”

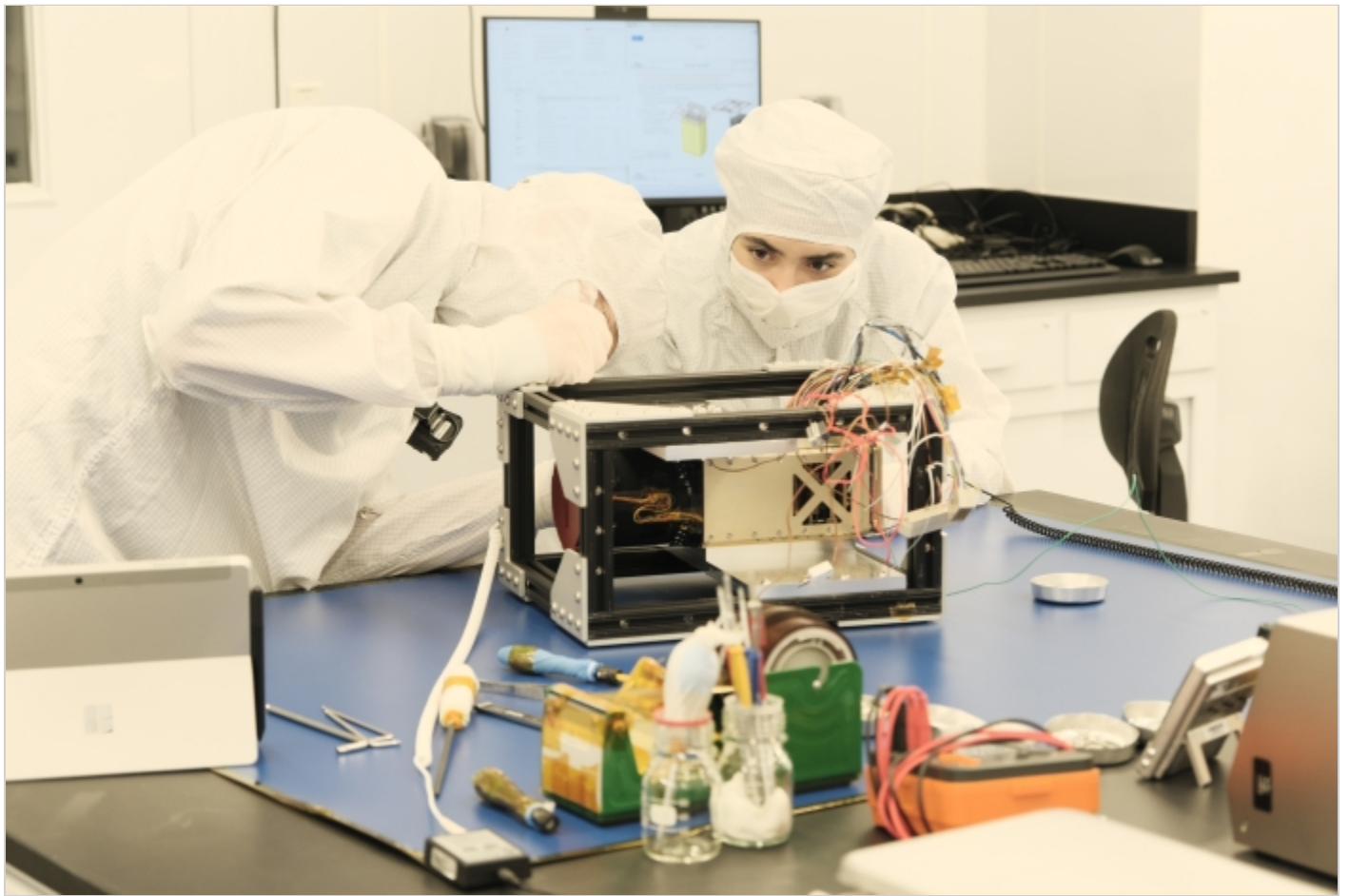
The ride is scheduled to happen this fall, as part of another NASA payload launching from California.

“And by catching a ride, it’s much cheaper,” Shkolnik said. “You don’t have to spend the millions of dollars for a dedicated ride, and that’s what makes these small missions possible.”

(Video: <https://vimeo.com/1066724366?share=copy>)

This story originally appeared on [ASU News](#).

Main image



ASU scientists work on the Star Planet Activity Research CubeSat at ASU. Photo by Steve Filmer/ASU Media Relations