

SwRI to build miniature solar observatory for manned suborbital flight

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Southwest Research Institute (SwRI) has received funding from NASA to build a miniature, portable solar observatory for developing and testing innovative instrumentation in suborbital flight.

The SwRI Solar Instrument Pointing Platform (SSIPP) will fly on new, commercial manned suborbital craft, such as XCOR's Lynx spacecraft, to enable spaceborne science and instrument development at a fraction of the cost of unmanned sounding rockets.

SSIPP is a self-contained unit that is bolted in place of a passenger seat on the Lynx. In flight, it optically locks onto the Sun, providing steering feedback to the pilot and delivering a clean, stabilized view of the Sun to a small instrument mounted on an optical workbench inside the unit.

"The biggest challenge for new space instrumentation is the high cost barrier for entry into service," said SSIPP team leader Dr. Craig DeForest, a staff scientist in the [Planetary Science](#) Directorate of SwRI's Space Science and Engineering Division. "Until now, making a new instrument has meant building and testing a complete, custom, self-contained observatory each time."

SSIPP instead will provide common infrastructure and a conditioned, pointed optical beam, so that new instruments can be built and aligned directly on its optical workbench. "That is a fantastic way to innovate, because you can try out new ideas quickly, without building and testing a million-dollar rocket payload," said DeForest. "SSIPP will bring the

ground-based, laboratory style of innovation to spaceflight."

SSIPP is one of several new projects around the nation that exploit the suborbital [space tourism](#) market to accomplish research cost-effectively.

"I'm excited to see SwRI's early leadership role in this new research arena grow to include heliophysics research," said SSIPP systems consultant Principal Scientist Dr. Dan Durda, also of SwRI's Space Science and Engineering Division. "For the cost of one unmanned [sounding rocket](#) flight, SSIPP can fly five times or more," said Durda, who is a co-investigator in SwRI's suborbital flight program and one of three SwRI staff members in training for suborbital flights.

SSIPP development is phased to match Lynx vehicle development and flight testing and operations. The current phase is to have SSIPP fly inside the cockpit, but subsequent versions will fly outside and be exposed directly to space, enabling imaging and spectroscopy of X-ray and ultraviolet rays that do not penetrate Earth's atmosphere or the cabin canopy.

Provided by Southwest Research Institute

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