

Spacewalking astronauts close to fixing cosmic ray detector

January 25 2020, by Marcia Dunn



In this photo provided by NASA shows astronauts NASA's Andrew Morgan and Italy's Luca Parmitano on a spacewalk Saturday, Jan. 25, 2020. The astronauts worked to complete repairs to a cosmic ray detector outside the International Space Station. (NASA via AP)

Spacewalking astronauts worked to complete repairs to a cosmic ray detector outside the International Space Station on Saturday and give it new life.

It was the fourth spacewalk since November for NASA's Andrew Morgan and Italy's Luca Parmitano to fix the Alpha Magnetic Spectrometer. They installed new coolant pumps last month to revive the instrument's crippled cooling system and needed to check for any leaks in the plumbing.

Parmitano quickly discovered a slight leak and tightened the fittings. "Our day just got a little more challenging," Mission Control observed.

Provided everything goes well, the \$2 billion [spectrometer](#)—launched to the [space station](#) in 2011—could resume its hunt for elusive antimatter and [dark matter](#) next week, according to NASA.

NASA has described the spectrometer spacewalks as the most complicated since the Hubble Space Telescope repair missions a few decades ago. Unlike Hubble, this spectrometer was never intended for astronaut handling in orbit, and it took NASA years to devise a repair plan.

Despite their complexity, the first three spacewalks went well. Morgan and Parmitano had to cut into stainless steel pipes to bypass the spectrometer's old, degraded coolant pumps, and then spliced the tubes into the four new pumps—no easy job when working in bulky gloves. The system uses carbon dioxide as the coolant.

Besides checking for leaks Saturday, the astronauts had to cover the spectrometer with thermal insulation.

"Good luck out there, have a lot of fun," astronaut Jessica Meir radioed from inside. "We are very excited for you to be finishing off all of the amazing work that you've already put into this AMS repair, and I think everyone's excited to the prospects of what AMS has to offer once you guys finish off the work today."

The massive 7 1/2-ton (6,800-kilogram) spectrometer was launched to the space station on NASA's next-to-last shuttle flight. Until it was shut down late last year for the [repair work](#), it had studied more than 148 billion charged cosmic rays. The project is led by Samuel Ting, a Nobel laureate at the Massachusetts Institute of Technology.

The repairs should allow the spectrometer to continue working for the rest of the life of the space station, or another five to 10 years. It was designed to operate for three years and so already has surpassed its expected lifetime.

Saturday's spacewalk got started a little late. A strap on a bag accidentally got caught in the seal when one of the inside hatches was closed and the air lock had to be reopened and repressurized before the astronauts could go out.

NASA's two other [astronauts](#) on board, Meir and Christina Koch, performed two spacewalks over the past 1 1/2 weeks to upgrade the space station's solar power system.

Altogether, this station crew has gone out on nine spacewalks.

© 2020 The Associated Press. All rights reserved.

Citation: Spacewalking astronauts close to fixing cosmic ray detector (2020, January 25) retrieved 20 March 2024 from <https://phys.org/news/2020-01-spacewalking-astronauts-cosmic-ray-detector.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--