Spacewalking astronauts close to fixing cosmic ray detector
25 January 2020, by Marcia Dunn

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.

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