

# Image: Partial Gravity Simulator practice

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Credit: ESA–S. Corvaja

In preparation for his Beyond mission, ESA astronaut Luca Parmitano was at the Johnson Space Center in Houston, USA, in March 2019. Here he is strapped to the Partial Gravity Simulator to practice repairing the dark-matter hunter AMS-02.

AMS-02, the Alpha Magnetic Spectrometer, consists of seven instruments that monitor [cosmic rays](#) from space. The 6918 kg instrument was installed in 2011 and results hint at a new phenomenon that may reveal more about the invisible '[dark matter](#)'.

The facility was only meant to run for three years, but it has been so successful that the International Space Station partners and scientific community wish to extend its working life. Despite this, three of the four cooling pumps have stopped working and need to be repaired – this is where Luca comes in.

At the Space Vehicle Mock-up Facility in 'Building 9' Luca is testing tools, procedures and techniques to replace the cooling system during a series of spacewalks planned for this year. AMS-02 was never designed to be repaired in space so each aspect of the spacewalk needs to be considered and practiced in detail.

Provided by European Space Agency

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