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## The Antarctic calibration campaign for the GAPS experiment

*Thursday 15 May 2025 17:25 (25 minutes)*

The General Anti Particle Spectrometer (GAPS) is a balloon-borne cosmic-ray experiment expected to be launched during the Antarctic summer season 25/26.

Its primary science goal is to search for light antinuclei in cosmic rays at kinetic energies below 0.25 GeV/n, as a possible indirect dark matter signature.

GAPS will measure the antiproton component with unprecedented statistics in an unexplored low-energy range and will deliver leading sensitivity to cosmic antideuteron and antihelium nuclei. It consists of a ten-layer silicon tracker, cooled by a novel oscillating heat pipe thermal system, and is surrounded on all sides by a precision timing plastic scintillator time-of-flight (TOF) and trigger system.

GAPS utilizes a novel exotic-atom-based particle identification technique, in which an incoming antinucleus is trapped within the tracker and identified by the resulting annihilation topology.

An extensive ground calibration campaign was performed at the Long Duration Balloon facility at the McMurdo base during the summer season 24/25.

The performance of the fully integrated payload was investigated with the muon ground data.

This talk will highlight some results from the Antarctic ground testing campaign and present an outlook for the next Antarctic season of 25/26 for which GAPS is scheduled to launch.

### Eligibility for "Best presentation for young researcher" or "Best poster for young researcher" prize

No

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