

## Searching for dark matter in Antarctica: the GAPS experiment.

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The primary science goal of the General Anti Particle Spectrometer (GAPS) 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 is a balloon-borne cosmic-ray experiment expected to be launched during the Antarctic summer season 25/26. It consists of a ten-layer silicon tracker, cooled by a novel oscillating heat pipe thermal system. It is surrounded on all sides by a precision timing plastic scintillator time-of-flight (TOF) and trigger system. 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. 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. During the summer season 24/25, the GAPS team performed an extensive ground calibration campaign at the Long Duration Balloon facility at the McMurdo base in Antarctica. 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.

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