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## The GAPS experiment - a search for light cosmic ray antinuclei

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The General Anti Particle Spectrometer (GAPS) is a balloon-borne cosmic-ray experiment currently under construction and scheduled for a long duration balloon flight from McMurdo Station in the Antarctic.

Its primary science goal is the search for light antinuclei in cosmic rays at kinetic energies in below 0.25 GeV/n. This energy region is especially of interest for beyond-the-standard model searches and is still mostly uncharted. Searches for light antimatter nucleons with energies below  $\sim 0.25$  GeV/n promise a novel approach for the search of dark matter. A large fraction of dark matter models proposes annihilation or decay of the unknown dark matter particle with matter/antimatter pairs in its final state. Some antiparticle searches carried out so far hit for a possible excess of antiparticles at low energies, however, the large uncertainties in the astrophysical backgrounds make interpretations challenging.

GAPS promises to yield unprecedented sensitivity for the search of antideuterons and will measure the low-energy antiproton spectrum with large statistics and high precision. To reach the required sensitivity, the GAPS detector incorporates a new approach for antimatter detection, utilizing a tracker with custom-designed, lithium-drifted silicon detectors, designed to measure the X-ray cascade expected from antimatter capture, together with fast time-of-flight system, allowing for a high precision beta measurement.

This talk will review the current progress of construction and the overall status of the instrument, discuss the latest sensitivity estimates and present the path forward to the first flight.

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