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The GAPS Experiment for Indirect Dark Matter Searches with Low-energy Cosmic-Ray Antinuclei

The General Antiparticle Spectrometer (GAPS) is a balloon-borne experiment, firstly optimized to identify low-energy (⊠ 0.25 GeV/n) cosmic antinuclei from dark matter annihilation or decay. With a novel detection approach that uses the uniquely characterized atomic X-rays and charged particles from the decay of exotic atoms, the GAPS program will deliver an unprecedented sensitivity to cosmic antideuterons, an essentially background-free signature of various dark matter models. In addition, GAPS will deliver a precise antiproton spectrum with high statistics in an unexplored energy range and leading sensitivity to cosmic antihelium.
The GAPS project is currently completing its on-ground commissioning and preparing for the first Antarctic balloon flight from the McMurdo Station in late 2024 while two follow-up flights are planned. This talk will cover the overview and the recent status of the GAPS mission.

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