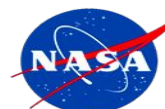




Searching for cosmic antihelium nuclei with the GAPS experiment

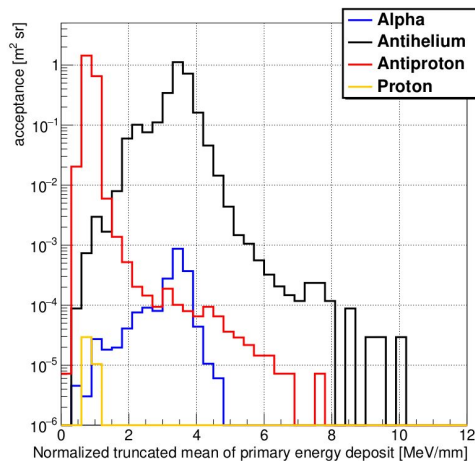


- GAPS (**G**eneral **A**nti**P**article **S**pectrometer) optimized for the search of heavy antinuclei in the upper atmosphere
- antideuteron is a smoking-gun signature for heavy dark matter/exotic physics.
- astrophysical background negligible

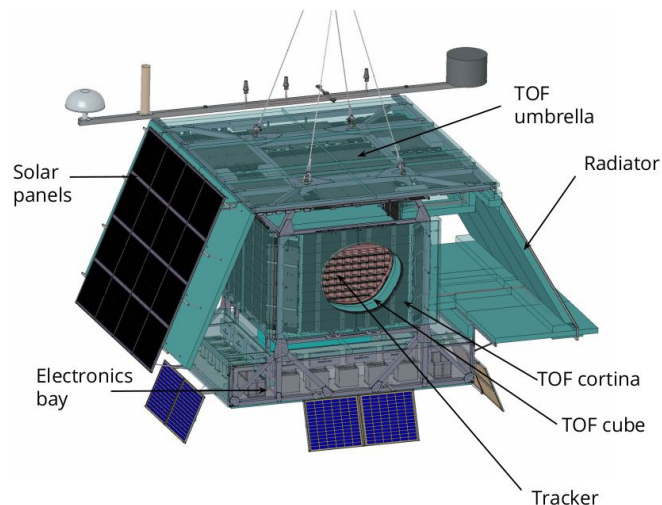
Antihelium-3 analysis

7 variables combined in Lh approach.

Exploit primary track characteristics & annihilation star topology.



The GAPS experiment



Two subsystems:

TOF time of flight system, plastic scintillator paddles, β measurement, trigger

Si(Li) tracker 1000 detectors in 10 planes, energy resolution at 4 keV for 20 – 100 keV



Searching for cosmic antihelium nuclei with the GAPS experiment



- Acceptance in the order of $1 \text{ m}^2 \text{ sr}$ for highest quality GAPS events.
- GAPS allows to set unprecedented limits in an energy region inaccessible to AMS-02
- Orthogonal detection technique allows for cross-validation of AMS-02 antihelium-3/4 candidates

