## GAPS - Hunt for dark matter using cosmic ray antideuterons

Tuesday 13 September 2016 17:30 (20 minutes)

The GAPS experiment is foreseen to carry out a dark matter search by hunting for low-energy cosmic-ray antideuterons with a novel detection approach. The theoretically predicted antideuteron flux resulting from secondary interactions of primary cosmic rays, e.g. protons, with the interstellar medium is very low. So far not a single cosmic antideuteron has been detected by any experiment, but well-motivated theories beyond the standard model of particle physics, e.g., supersymmetry or universal extra dimensions, contain viable dark matter candidates, which could lead to a significant enhancement of the antideuteron flux due to self-annihilation of dark matter particles. This flux contribution is calculated to be especially large at low energies, which leads to a high discovery potential for GAPS. GAPS is designed to achieve its goals via a series of ultralong duration balloon flights at high altitude in Antarctica and had a successful prototype flight in June 2012.

The presentation will briefly review the theoretical and experimental implications for a cosmic-ray antideuteron search and discuss the current status and perspectives of the GAPS experiment.

**Summary** 

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