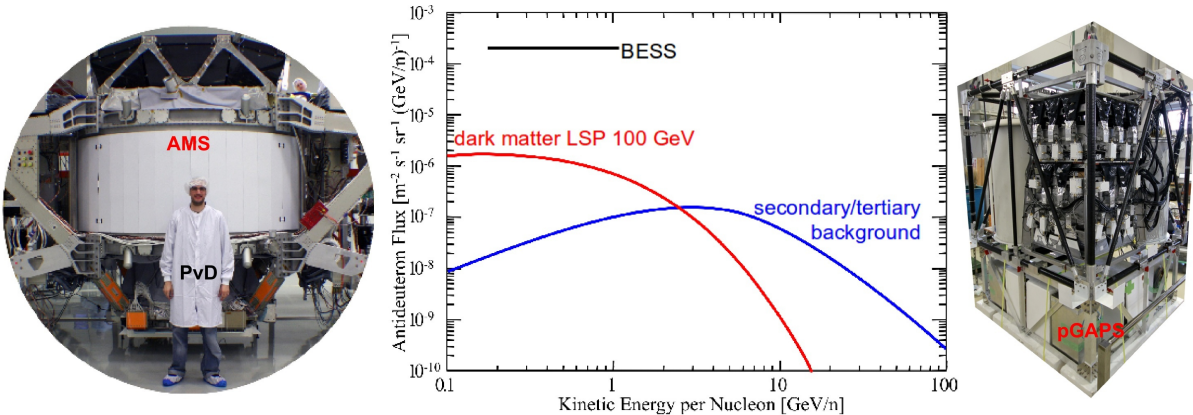


Identification of Dark Matter using cosmic-ray antideuterons



The existence of Dark Matter and the investigation of its nature plays a key role in understanding structure formation after the big bang and the energy density of the universe. Dark Matter cannot be explained with known types of matter, therefore we are at the dawn of something significantly new. Different complimentary approaches for Dark Matter identification exist and one promising way is to search for annihilation/decay products of the so far unknown Dark Matter particles. Antiparticles - without primary sources - are ideal candidates for such a search. Recent results show that accomplishing this task with positrons and antiprotons alone will be very difficult, however **antideuterons could be a promising way**. Antideuterons have never been discovered in cosmic rays so a first time detection of bound antimatter in our galaxy would already be exciting by itself.

I will join the faculty of the Department of Physics & Astronomy in fall 2013 and will search for cosmic-ray antideuterons by utilizing the **AMS experiment**, which is installed on the International Space Station since May 2011, and the upcoming **GAPS experiment**, which is planned to fly aboard high altitude balloons from Antarctica. My group will be involved in several different aspects of searching for and the interpretation of cosmic-ray antideuterons:

- AMS antideuteron data analysis,
- GAPS design studies and Si(Li) tracker module characterization,
- development of an antideuteron simulation package.

I am offering one **Graduate Student** position for the participation in these tasks. Therefore, if you would like to be involved in an interesting variety of tasks (simulation, detector construction, data analysis) in the fields of cosmic rays and Dark Matter identification I would like to invite you to send me your application (short research statement and CV).

Please also see my website for further information and do not hesitate to contact me with further questions.

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