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Perspectives of dark matter searches with antideuterons

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The search for an excess of antideuterons in the cosmic rays flux has been proposed as a very promising channel for dark matter indirect detection, especially for WIMPs with a low or intermediate mass. With the development of the AMS experiment and the proposal of a future dedicated experiment, i.e. the General Antiparticle Spectrometer (GAPS), there are exciting possibilities for a dark matter detection in the near future. In this talk, I'll give an overview on the principal issues related both to the antideuterons production in dark matter annihilation reactions and to their propagation through the interstellar medium and the heliosphere, with a particular focus on the impact of various solar modulation models on the flux at Earth. Lastly, I'll provide an updated calculation of the reaching capabilities for current and future experiments compatible with the constraints on the dark matter annihilation cross section imposed by the antiproton measurements of PAMELA and BESS POLAR II.

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