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Cosmic-ray antiprotons in the AMS-02 era: A sensitive probe of dark matter

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Cosmic-ray antiprotons are a remarkable diagnostic tool for the study of astroparticle physics'processes in our Galaxy. While the bulk of measured antiprotons is consistent with a secondary origin, the precise data of the AMS-02 experiment provides us with encouraging prospects to search for a subdominant primary component, e.g. from dark matter. In this presentation, we discuss limits on heavy dark matter as well as a tentative signal from annihilation of dark matter with a mass of around 100 GeV. We emphasize the special role of systematic errors that can affect the signal. In particular, correlated errors in the AMS-02 data that originate from uncertainties in the cross sections for cosmic-ray absorption in the detector have a large impact on data interpretation.

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