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Probing dark matter annihilation in the Galaxy with antiprotons and gamma rays

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We analyze cosmic-ray antiproton observations in the light of dark matter (DM) annihilation in our Galaxy using the recent precise AMS-02 measurements. Taking into account cosmic-ray propagation uncertainties by fitting at the same time DM and propagation parameters we find a significant indication of a DM signal for various annihilation channels in the mass range between 40 and 130 GeV and with an annihilation cross-section close to the thermal value. Intriguingly, this signal is compatible with the DM interpretation of the Galactic center gamma-ray excess and recent observation of dwarf satellite galaxies as we will demonstrate by perform a joint fit of the antiproton and gamma-ray data. As an example, we interpret our results in the Higgs Portal model.

Experimental Collaboration

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