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The CR-WIMP connection in the Galaxy

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Whether or not an exotic component, as the fugitive Dark Matter, contributes to the observed high-energy CR fluxes, is one of the most important open problem in Cosmology. Charged CRs play a key role in this context, since Weakly Interacting Massive Particle annihilations or decays can be a copious source of antimatter in our Galaxy, and the local CR fluxes from conventional astrophysical sources can be predicted with fair accuracy. In this talk, I will show the implications of adopting realistic models for the propagation of CRs in the Galaxy and in the Heliosphere on our ability to provide accurate background predictions. In particular, I will focus on the antiproton channel since the recent measurements by AMS-02 can be profitably used to search for DM contributions or to constrain the DM annihilation cross section in the Galactic halo. Remarkably, this channel has been recently used to argue the DM interpretation of the gamma-ray excess observed from the Galactic Center.

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