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Cosmic ray positrons and antiprotons: implications for Dark Matter

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Using the updated proton and helium fluxes just released by the AMS-02 experiment we reevaluate the secondary astrophysical positron and antiproton fluxes. We compare our results with the positron flux and the preliminary antiproton to proton ratio, both measured by AMS-02. The main uncertainties for the theoretical calculation are assessed. For positrons, we test the possibility to explain the measured excess with a Dark Matter scenario and we probe the parameter space for the Dark Matter component. Then, we examine the possibility to explain the data with the contribution of one single pulsar. For antiprotons, we find no unambiguous evidence for a significant excess with respect to expectations. Yet, some preference for a flatter energy dependence of the diffusion coefficient starts to emerge. Also, we provide a first assessment of the room left for a Dark Matter component, deriving new stringent constraints.

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