

PAMELA and Fermi-LAT data as backgrounds for future dark matter searches

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The recent data from PAMELA and Fermi-LAT can be interpreted as evidence of new astrophysical sources of high energy positrons. In that case, such astrophysical positrons constitute an additional background against the positrons from dark matter annihilation. In this paper, we study the effect of that background on the prospects for the detection of a positron dark matter signal in future experiments. In particular, we determine the new regions in the (mass, σ_{ann}) plane that are detectable by the AMS-02 experiment for several dark matter models. In spite of the larger background, we find that these regions are not that different from those obtained for the conventional background model. That is, an astrophysical explanation of the present data by PAMELA and Fermi-LAT implies that the detection of positrons from dark matter annihilation is only slightly more challenging than previously believed.

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