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Experimental signatures of a new dark matter WIMP

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The WIMP proposed here yields the observed abundance of dark matter, and is consistent with the current limits from direct detection, indirect detection, and collider experiments, if its mass is $\sim$ 72 GeV/c^2. It is also consistent with analyses of the gamma rays observed by Fermi-LAT from the Galactic center (and other sources), and of the antiprotons observed by AMS-02, in which the excesses are attributed to dark matter annihilation. These successes are shared by the inert doublet model (IDM), but the phenomenology is very different: The dark matter candidate of the IDM has first-order gauge couplings to other new particles, whereas the present candidate does not. In addition to indirect detection through annihilation products, it appears that the present particle can be observed in the most sensitive direct-detection and collider experiments currently being planned.

Are you are a member of the APS Division of Particles and Fields?

Yes

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