

Cosmic Rays from Dark Matter Decay

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A series of experiments measuring high-energy cosmic rays have recently reported strong indications for the existence of an exotic source of high-energy electrons and positrons. If interpreted in terms of the decay of dark matter particles, the PAMELA measurements of the positron fraction and the Fermi LAT measurements of the total electron plus positron flux restrict the possible decaying dark matter scenarios to a few cases. Pursuing a model-independent approach, we identify some promising scenarios of dark matter decay and calculate the predictions for the diffuse extragalactic gamma-ray flux, including the contributions from inverse Compton scattering with the interstellar radiation field.

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