

Antimatter cosmic rays in the era of precision measurements

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Antimatter cosmic rays have become a fashionable tool to probe for the presence of dark matter particles in the Milky Way. Should these species exist, they would annihilate or decay, hence producing positrons and anti-nuclei which would distort the conventional signals expected at the Earth. But are these backgrounds well known? There's the rub.

Regardless of the dark matter problem, anti-matter is produced in the form of secondary cosmic-rays through the interaction of high-energy protons and helium nuclei on the interstellar medium. A precise calculation of the corresponding fluxes at the Earth is paramount to unravel any exotic signal. I will discuss how these backgrounds are estimated and present various reasons for which these predictions are still less precise than desired. The periodical announcement of the discovery of dark matter in the antiproton signal will illustrate my purpose. I will conclude with the search for anti-helium nuclei.

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