

Propagation of cosmic ray positrons and dark matter searches.

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We developed a new semi-analytical method to better estimate the propagated cosmic-ray positron flux from a few hundreds MeV to 1 TeV.

It allows us to take into account Galactic convection, energy losses inside the disc and diffusive reacceleration, that are often neglected or badly considered

as most of the analyses concentrate on energies above 10 GeV.

Therefore, we are now able to compare rapidly the theoretical positron flux with the AMS-02 data over all the experimental energy range.

Using the recent proton and helium fluxes measured by the AMS-02 experiment, we first reevaluate the astrophysical component of secondary positrons.

We find that the low energy part of the positron spectrum considerably constrains the propagation parameter space.

Then, we explore the possibility to explain the AMS-02 positron data with annihilating dark matter.

We investigate the case of dark matter annihilating through one single channel as well as combinations of channels.

Using solely the AMS-02 positron data, it appears that the room left for dark matter to explain the positron signal becomes very restricted.

Summary

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