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A new look at the cosmic ray positron fraction.

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The positron fraction in cosmic rays has been recently measured with improved accuracy up to 500 GeV by the space-borne experiment AMS-02, and it was found to be a steadily increasing function of energy, above 10 GeV. This behaviour is in tension with standard astrophysical mechanisms, in which positrons are secondary particles, produced in the interactions of primary cosmic rays during their propagation in the interstellar medium. The observed anomaly in the positron fraction triggered a lot of excitement, as it could be interpreted as an indirect signature of the presence of dark matter species in the Galaxy – the so-called weakly interacting massive particles or WIMPs. Alternatively, it could be produced by nearby astrophysical sources, such as pulsars.

Auteur principal: M. BOUDAUD, Mathieu (LAPTh)

Orateur: M. BOUDAUD, Mathieu (LAPTh)

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