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Conservative upper limits on WIMP annihilation cross section from Fermi extragalactic gamma rays

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The spectrum of an isotropic extra-galactic gamma-ray background (EGB) has been measured by the Fermi-LAT telescope.

The EGB is here derived by the subtraction of further contributions, with respect to the Fermi modelling, from undetected point sources and truly diffuse processes.

Within the hypothesis that the residual EGB is entirely due to annihilation of galactic dark matter particles, we derive upper limits on the WIMP annihilation cross section.

We work in a minimal modelling framework and consider our upper limits as strongly conservative. In addition, we set upper limits also in velocity suppressed annihilation cross section models as well as on the Sommerfeld enhancement of the WIMP cross section.

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