

A Search for Dark Matter in jet/gamma+MET Final States with the CMS Detector

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Abstract content

Results are presented from a search for new physics in the final states containing either a photon or a jet accompanied by an imbalance in transverse energy using a data sample corresponding to an integrated luminosity of 4.7 fb^{-1} collected in pp collisions at $\sqrt{s} = 7 \text{ TeV}$ by the CMS experiment. The observed event count agrees with standard model expectations, establishing upper limits on the spin-independent dark matter candidate (χ)-nucleon cross section of $0.72 - 157 \text{ fb}$ ($16.1 - 16.8 \text{ fb}$) at 90% confidence level (CL) and extending limits into the formerly-unexplored χ -mass (M_χ) region below 3.5 GeV for the single jet (single photon) channel. For the spin-dependent χ -nucleon cross section, the new upper limit is $0.0337 - 21.5 \text{ fb}$ ($16.1 - 17.6 \text{ fb}$) at 90% CL, for $M_\chi 1-1000 \text{ GeV}$, respectively, exceeding prior search sensitivities for the single jet (single photon) channel.

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