

The Search for Self-Interacting Dark Matter with Displaced Lepton Jets in p-p collisions at $\sqrt{s} = 13$ TeV at CMS

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The existence of dark matter is supported by evidence such as rotation curves of galaxies and gravitational lensing. Models of self-interacting dark matter (SIDM) could possibly explain the dark matter phenomenon and distribution of dark matter within galaxies. In this search for SIDM, the particle dark matter produced at the LHC forms a heavy bound state, which subsequently decays into a pair of boosted, long-lived dark photons. The decays of the dark photon could produce clusters of displaced and collimated leptons, which we reconstruct as "displaced lepton jets". A search for SIDM has been undertaken at CMS in the 13 TeV p-p collision dataset. This talk focuses mainly on measurements of the efficiency of reconstructing the dark photon decays into lepton jets with respect to various signal and detector parameters, and the displacement of the lepton jet which would serve as a discriminating parameter between signal and background.