

Searches for Dark Matter Mediators with the CMS Detector

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We present several complementary searches for dark matter mediators using a 35.9 inverse femtobarn data set of proton-proton collisions at 13 TeV collected with the CMS experiment at the LHC in 2016. One technique uses the CMS scouting data stream concept to record larger data rates than otherwise possible. Other searches use initial state radiation to overcome trigger thresholds and study boosted dijet resonances, whose decay products are merged into a single jet. Novel jet substructure techniques are used to avoid sculpting the distribution of the jet mass distribution and the dominant background is estimated from data. The searches are interpreted in the context of simplified models of dark matter with a leptophobic mediator. This approach has also been extended to the search for boosted Higgs bosons decaying to bottom quark-antiquark pairs.

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