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Exploring Multilepton Signatures From Dark Matter at the LHC

While overwhelming cosmological evidences point to the existence of Dark Matter (DM), only its gravitational interaction has been experimentally confirmed. Limitations on the most general mono-X DM signature at colliders motivate searches beyond this. This could manifest in the form of a weak multiplet/doublet DM via weak interactions giving multilepton plus missing energy final states that can be probed at the LHC. Here we present our latest limits on inert 2-Higgs Doublet model (I2HDM) and Minimal Fermion Dark Matter model (MFDM) for 8/13 TeV pp collisions, producing 2-3 leptons plus missing energy final states, using CheckMATE.

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