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Exploring Multilepton Signatures From Dark Matter at the LHC

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Limitations on the most general mono-X Dark Matter signature at colliders motivate searches beyond this, such as multilepton plus missing energy signatures. In this talk I present our latest limits on the inert 2-Higgs Doublet model (I2HDM) and Minimal Fermion Dark Matter model (MFDM) for 8/13 TeV pp collisions at the LHC, producing 2-3 leptons plus missing energy final states, using CheckMATE. I will show how 3 lepton final states play an important role, with a leading role in the MFDM case via cascading Higgs decays. We also provide limits and efficiencies for re-interpretation of any scalar of fermion DM model by the community.

Summary

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