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2l+MET signature from two-component dark matter at the LHC

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The talk will cover an exploration on the dilepton plus missing transverse energy (MET) signature from LHC run-III to search for two-component scalar Dark Matter (DM). The model discussed in this work is a 3-Higgs Doublet Model (3HDM) where two of the doublets are inert from the Standard Model (SM) and the other one is active and also the SM Higgs doublet, hence an I(2+1)HDM. Each inert sector will provide a scalar DM particle with a discrete symmetry of Z2xZ2 applying on the doublets, and therefore the model will provide two-component DM. The work studies the model parameter space on the masses of two DM particles and the mass differences between the DMs and the next-to-lightest neutral states in each dark sector. Despite the numerical analysis is performed within the I(2+1)HDM for illustrative purposes, this approach makes our essentially largely model-independent and thus suitable for interpretations in other two-component scalar DM scenarios giving rise to the dilepton plus MET signature.

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