

Scalars 2023

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Distinguishing dark matter components in collider signal

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Content :

In this talk, we show that two WIMPs produced in the decay chains having sufficient mass splitting can yield a double peak in missing energy or missing transverse momentum distribution of multilepton/multijet signal. We argue that these peaks can be distinguished in terms of height and separation by some carefully crafted kinematic variables. For mono-X signal however, such double peak behavior arises from different Lorentz structure of the WIMP-SM operators and gets camouflaged by huge non-reducible backgrounds. To this end we propose to observe bin by bin signal significance distribution, which retains the double peak behavior of the signal and indicate the presence of two component dark matter.

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