

Fundamental physics in the cosmos: The early, the large and the dark Universe



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Displaced vertices from Pseudo-Dirac Dark Matter

Displaced vertices are a striking yet under-exploited signature of beyond-SM physics at the LHC. Pseudo-Dirac DM includes two new Majorana fermions, the lighter of which is a DM candidate. The model gives the correct relic abundance while having a suppressed annihilation and scattering rate today, and without suppressing the LHC production rate. This evades current constraints while offering particularly promising prospects at LHC, especially at the high-luminosity run. Intriguingly, the parameters yielding the correct relic abundance can also yield observable displaced vertices in upcoming runs of the LHC, as the heavier fermion decays into DM plus quarks.

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