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Multi-electron muon decays

Saturday 4 May 2024 13:55 (20 minutes)

We study the exotic muon decays with five charged tracks in the final state. First, we investigate the Standard Model rate for $\mu \to eeeee\nu\nu$ and find that the Mu3e experiment should have tens to hundreds of signal events per 10^{15} μ^+ decays, depending on the signal selection strategy. We then turn to a neutrinoless $\mu \to eeeee$ decay that may arise in new-physics models with lepton-flavor-violating effective operators involving a dark Higgs h_d. We show that a $\mu \to eeeee$ search at the Mu3e experiment, with potential sensitivity to the branching ratio at the $\mathcal{O}(10^{-12})$ level or below, can explore new regions of parameter space and new physics scales as high as $\Lambda \sim 10^{15}$~GeV.

Are you willing to consider presenting a poster instead?

No

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Session Classification: Talks