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Lepton Flavor Violation: From Muon Decays to Muon Colliders

We study dimension-6 lepton flavor-violating (LFV) operators within the Standard Model Effective Field Theory (SMEFT). We analyze their signals at a high-energy muon collider and compare them to constraints from lepton flavor-violating Higgs and Z decays, as well as precision measurements of τ and μ decays. Low-energy bounds are assessed by matching onto the low-energy effective theory. Our analysis shows the complementarity of low- and high-energy constraints by considering various operator combinations and assumptions about flavor structure.

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