

Charged Lepton Flavor Violation in General Two-Higgs Doublet Model

Thursday 20 May 2021 15:15 (15 minutes)

The rates of charged lepton flavor violating (cLFV) processes in the Standard Model (SM) are highly suppressed—practically zero—due to tiny neutrino masses. Therefore, the observation of cLFV phenomena would be an indisputable sign of physics beyond the SM. In this talk, we will discuss cLFV processes in the framework of the general two-Higgs doublet model (g2HDM) without Z_2 symmetry. The g2HDM naturally contains flavor violating Higgs couplings, which can induce cLFV transitions. We will cover τ decays: $\tau \rightarrow \mu\gamma$, $\tau \rightarrow 3\mu$, muon decays: $\mu \rightarrow e\gamma$, $\mu \rightarrow 3e$, and $\mu \rightarrow e$ conversion in nuclei, and reassess the possibility of their potential discovery at the upcoming array of experiments. In particular, we will emphasize the importance of two-loop contributions driven by the extra flavor conserving top Yukawa coupling, ρ_{tt} , which is naturally $\mathcal{O}(\lambda_t) \sim 1$, and show that these contributions can enhance the cLFV rates to the vicinity of experimental sensitivity.

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Session Classification: Higgs/EW Physics 1