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Nine Lepton Flavor Changing Decays

We analyze the lepton flavor violating (LFV), Higgs LFV and Z boson LFV decays in the context of a seesaw model with an arbitrary number of scalar doublets. The lepton sector is enlarged by adding to each lepton family a right-handed neutrino singlet. We compute analytically the full one-loop decay amplitudes for the processes $l_i \rightarrow l_j \gamma$, $Z \rightarrow l_i l_j$, and $h \rightarrow l_i l_j$ where $i \neq j$ and $i, j = e, \mu, \tau$. We study how the various contributions to the decay amplitude behave as functions of neutrino masses, the masses of the new scalar particles and of Yukawa couplings. The numerical analysis shows that the branching ratios of LFV decays in the case of two Higgs doublet model may be between the current experimental bounds and the future experimental sensitivities for all nine decays simultaneously.

Mini-abstract

Lepton flavor violating decays in the context of a seesaw and of two Higgs doublet model

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