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Exploring minimally flavor violating Higgs decays

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We consider the tentative hint of Higgs boson decay $h \rightarrow \mu\tau$ recently seen in LHC data in a grand unified theory framework which is based on the SU(5) gauge group and implements the principle of minimal flavor violation. This allows us to explore the possibility that this decay has some link to potential new physics in the quark sector. We look at different simple scenarios in this context and how they are subject to various empirical restrictions. In one specific case, the relative strengths of the flavor-changing leptonic Higgs couplings are determined mainly by the known quark mixing parameters and masses, and a branching fraction $B(h \rightarrow \mu\tau) \sim 1\%$ is achievable without the couplings being incompatible with the relevant constraints. Upcoming measurements on Higgs leptonic decays and searches for the $\mu \rightarrow e\gamma$ decay with improved precision can offer further tests on this scenario.

Summary

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