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## Non-decoupling SUSY in LFV Higgs decays: a window to high $m_{\text{SUSY}}$ at the LHC

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The recent discovery of a SM-like Higgs boson at the LHC, with a mass around 125-126 GeV, together with the absence of results in the direct searches for supersymmetry, is pushing the SUSY scale ( $m_{\text{SUSY}}$ ) into the multi-TeV range. This discouraging situation from a low-energy SUSY point of view has its counterpart in indirect SUSY observables which present a non-decoupling behavior with  $m_{\text{SUSY}}$ . This is the case of the one-loop lepton flavor violating Higgs decay rates induced by SUSY, which may remain constant or even increase as  $m_{\text{SUSY}}$  grows, depending on the class of intergenerational mixing in the slepton sector which are taken into account ( $LL$ ,  $LR$ ,  $RL$  or  $RR$ ). In this work we focus on the LFV decays of the three neutral MSSM Higgs bosons  $h$ ,  $H$ ,  $A \rightarrow \tau\mu$ , considering the four types of slepton mixing ( $\delta_{23}^{LL}$ ,  $\delta_{23}^{LR}$ ,  $\delta_{23}^{RL}$ ,  $\delta_{23}^{RR}$ ), and show that all the three channels could be measurable at the LHC. The most promising predictions for the present and future LHC stages are also included.

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