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Low Energy Theorems and the Higgs boson.

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Decayings that have a lepton flavor violation (LFV) are affected by the standard model (SM). However, from recent observations at the LHC, some limits have been found for these types of processes that show a change in flavor, up to a confidence level of 3σ . In particular, the process $h \rightarrow \tau\tau$ seems to maintain a higher decay ratio (branching ratio) $\mathcal{B}(h \rightarrow \tau\tau) \approx 0.25$, compared to other channels. In this work we study the width of decay $\Gamma(h \rightarrow \tau\tau)$ and $\mathcal{B}(h \rightarrow \tau\tau)$ for this decay. The specification of both parameters is made using the following premises: The theoretical framework is that of the SM, but considers the neutrinos with mass, Both, 't Hooft - Feynman, and Unitary gauges, are used in the calculation. The Low Energy Theorems (LETs) technique is used to make the calculus to a one loop approach. In the end, the result obtained is contrasted with other results reported in the literature that have been performed using some other calculation techniques.

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