Search for lepton flavor violating decay $H^0 \to \tau^\pm \mu^\mp$ at hadron colliders

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Abstract

In the two Higgs doublet model (2HDM) type III and in several other extensions of the Standard Model (SM), there are no discrete symmetries that suppress flavor changing couplings at tree level. The experimental observation of the ν_μ-ν_τ flavor oscillation may suggest the non-conservation of lepton number. This would lead to the decay of the type $H^0 \to \tau^\pm \mu^\mp$. We determine the present low energy limit on lepton flavor violating (LFV) couplings from the muon $g-2$ measurement and discuss the prospects for detecting lepton flavor violating decays at the TeVatron and at the Large Hadron Collider. The achievable bounds on the LFV coupling parameter $\kappa_{\tau\mu}$ are presented.

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