

Search for lepton flavor violating decays of the Higgs boson

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The first direct search for Lepton Flavor Violating Decays of the recently discovered Higgs boson using 19.7 fb^{-1} of $\sqrt{s} = 8 \text{ TeV}$ data taken in 2012 using the $H \rightarrow \mu\tau_e$ and $H \rightarrow \mu\tau_{\text{had}}$ channels is described, where τ_e and τ_{had} are taus reconstructed in the electronic and hadronic decay channels respectively. The sensitivity of the search is an order of magnitude better than the existing indirect limits. A slight excess of signal events with a significance of $2.5s$ is observed. The local p-value of this excess at $M_H = 126 \text{ GeV}$ is 0.007. Interpreted as a limit this results in a constraint of $B(H \rightarrow \mu\tau) < 1.57\%$ at 95% confidence level. The best fit branching fraction is $B(H \rightarrow \mu\tau) = (0.89^{+0.40}_{-0.37})\%$. The limit is subsequently used to constrain the $Y_{\mu\tau}$ Yukawa coupling.