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Flavor Violating Heavy Higgs Decays at the LHC

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We investigate the prospects for LHC discovery of a heavy Higgs boson (H^0 or A^0) decaying into a top quark and a charm quark within the general two Higgs doublet model (2HDM). Discovery of such signal will greatly improve our understanding of electroweak symmetry breaking and possible sources of tree level flavor changing neutral currents. Almost all the coupling measurements of the 125 GeV Higgs boson at the LHC favor the decoupling limit or the alignment limit of a 2HDM, in which the gauge boson and diagonal fermion couplings of the light neutral Higgs scalar (h^0) approach the Standard Model values. In this limit, flavor violating couplings of h^0 are naturally suppressed by a small mixing parameter $\cos(\beta - \alpha) \sim 0$, while the off-diagonal couplings of heavier neutral Higgs scalars are sustained by $\sin(\beta - \alpha) \sim 1$. Promising results are found for the LHC running at 13 or 14 TeV center of mass energy.

Oral or Poster Presentation

Oral

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