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Flavor changing heavy Higgs interactions at the LHC¹ BRENT MCCOY, BARIS ALTUNKAYNAK, CHUNG KAO, University of Oklahoma, WEISHOU HOU, National Taiwan University, MASAYA KOHDA, Chung-Yuan Christian University — A general two Higgs doublet model (2HDM) is adopted to study the signature of flavor changing neutral Higgs (FCNH) decay $\phi^0 \rightarrow t\bar{c} + \bar{t}c$, where ϕ^0 could be a CP-even scalar (H^0) or a CP-odd pseudoscalar (A^0). Measurement of the light 126 GeV neutral Higgs boson (h^0) couplings at the Large Hadron Collider (LHC) favor the decoupling limit or the alignment limit of a 2HDM, in which gauge boson and diagonal fermion couplings of h^0 approach Standard Model values. In such a limit, FCNH couplings of h^0 are naturally suppressed by a small mixing parameter $\cos(\beta - \alpha)$, while the off-diagonal couplings of heavier neutral scalars ϕ^0 are sustained by $\sin(\beta - \alpha) \sim 1$. We study physics background from dominant processes with realistic acceptance cuts and tagging efficiencies. Promising results are found for the LHC running at 13 or 14 TeV collision energies.

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