

Flavour Physics meets Heavy Higgs Searches

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We point out that the stringent lower bounds on the masses of additional electrically neutral and charged Higgs bosons crucially depend on the flavour structure of their Yukawa interactions. We show that these bounds can easily be evaded by the introduction of flavour-changing neutral currents in the Higgs sector. As an illustration, we study the phenomenology of a two Higgs doublet model with a Yukawa texture singling out the third family of quarks and leptons. We combine constraints from low-energy flavour physics measurements, LHC measurements of the 125 GeV Higgs boson rates, and LHC searches for new heavy Higgs bosons. We propose novel LHC searches that could be performed in the coming years to unravel the existence of these new Higgs bosons.

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Session Classification: Parallel Session on Collider Searches