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## Charged Higgs from different representations at the LHC

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Charged Higgs from Higgs doublets generally couples to fermions thus mainly decay to fermionic modes. However, the inert doublets cannot have such two-body decays and mainly decays via three-body. Even then the coupling of charged Higgs with Z and W bosons are absent at the tree-level due to custodial symmetry. SU(2) triplet Higgs boson with  $Y=0$  hyper charge breaks the custodial symmetry leading to a tree-level vertex with Z and W boson. This prompts the decays into ZW as compared to  $t\bar{b}$  in a doublet charged Higgs case. However, additional  $Z_2$  symmetry can make this triplet as inert leading to displaced mono/di-leptonic signatures. In case of complex triplet, the model produces a pure triplet dark matter along with a pure and mixed triplet charged Higgs bosons. The last scenario this gives rise to both the displaced and the prompt charged leptons in the final states. We try to distinguish such scenarios at the LHC.

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