

## Search for Flavour Changing Neutral Current Couplings of Higgs-up Sector Quarks at Future Circular Collider (FCC-eh)

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**Abstract :** In the search for new physics beyond the Standard Model, Flavour Changing Neutral Current (FCNC) is a good research field in terms of the observability at future colliders. Increased Higgs production with higher energy and luminosity in colliders is essential for verification or falsification of our knowledge of physics and predictions, and the search for new physics. Prospective electron-proton collider constituent of the Future Circular Collider project is FCC-eh. It offers great sensitivity due to its high luminosity and low interference. In this work,  $thq$  FCNC interaction vertex with off-shell top quark decay at electron-proton colliders is studied. By using MadGraph5\_aMC@NLO multi-purpose event generator, observability of  $tuh$  and  $tch$  couplings are obtained with equal coupling scenario. Upper limit on branching ratio of tree level top quark FCNC decay is determined as 0.012% at FCC-eh with  $1 \text{ ab}^{-1}$  luminosity.

**Keywords :** FCC, FCNC, Higgs Boson, Top Quark

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