

# Searches for rare Higgs boson decays at CMS

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The couplings of the Higgs boson to fermions have been studied with third and second generation quarks and leptons, while no direct measurements of its interactions with the lighter u,d,s quarks have been performed to date. The search for ultra rare decays  $H \rightarrow \gamma + \phi/\rho/K^*0$  can probe these couplings. While the contribution to the rate of these decays from the diagrams involving Yukawa couplings is negligible in the Standard Model (SM), in theories beyond the SM this contribution could be significantly enhanced and deviations from the SM branching ratios could be observed because of the interference with the dominant diagrams, where meson is formed via Higgs boson decays to Z bosons or photons. Results with data collected by the CMS experiment at a centre of mass energy of 13 TeV will be shown.

## Alternate track

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**Primary authors:** CMS; Mr ARDINO, Rocco (Universita e INFN, Padova (IT))

**Presenter:** Mr ARDINO, Rocco (Universita e INFN, Padova (IT))

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