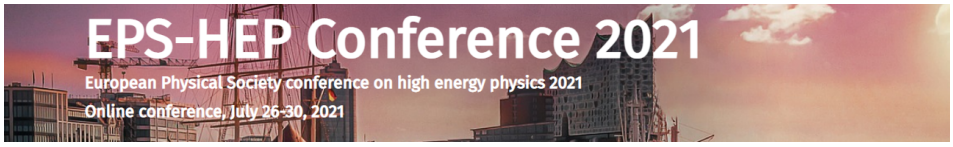

Contribution ID: **415** Type: **Poster**

Search for exotic decays of the Higgs Boson using photons with the CMS experiment

In multiple beyond the SM scenarios, the 125 GeV Higgs boson can decay to light pseudoscalars (a), which each decay into two photons, resulting in a four photon final state. We present a search for exotic decays of the SM Higgs boson in the four photon final state using 131.8 fb-1 of proton-proton collision data collected by the CMS experiment at a center-of-mass energy of 13 TeV. This analysis probes pseudoscalars that range in mass from 15 GeV to 60 GeV and decay into photons that are reconstructed as resolved objects in the CMS electromagnetic calorimeter. Although the branching fraction for a $\longrightarrow \gamma\gamma$ is subdominant, the low backgrounds in 4γ make it an interesting and important final state. These new results, the first in the four photon final state from CMS, set limits on the production cross-section of the SM Higgs boson times the branching ratio of $h \longrightarrow aa \longrightarrow \gamma\gamma\gamma\gamma$ as a function of pseudoscalar mass.

First author

Tanvi Wamorkar

Email

tanvi.wamorkar@cern.ch

Collaboration / Activity

CMS

Author: WAMORKAR, Tanvi (Northeastern University)

Presenter: WAMORKAR, Tanvi (Northeastern University)

Session Classification: T10: Searches for New Physics

Track Classification: Searches for New Physics