



Contribution ID: 373

Type: **Parallel Session talk**

## Searching for resonant HH production at CMS

*Tuesday 6 August 2019 16:00 (12 minutes)*

### Summary

New, massive bosons could be found with the LHC. Theories with warped extra dimensions and supersymmetry predict the existence of such resonances, which for some model parameters, have a significant branching fraction to two Higgs bosons. Searches for these predicted new resonances decaying to two Higgs bosons with the CMS detector are presented. Jet substructure techniques and lepton identification are used to search for massive bosons decaying to the  $b\bar{b}\bar{b}\bar{b}$ ,  $b\bar{b}\tau\tau$ , and the  $b\bar{b}l\nu qq$  final states. The results are based on data collected during Run 2 of the LHC at a centre-of-mass energy of 13 TeV.

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**Session Classification:** Collider SM & BSM (Parallel)