

Tau leptons as a tool to investigate the CP properties of the Higgs boson at CMS

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Among the Higgs boson decay channels, the one to tau leptons can offer insight into the properties of the Higgs boson. The structure under CP symmetry of the Yukawa coupling between the Higgs boson and tau leptons was investigated in CMS by reconstructing the decay planes of the two tau leptons and measuring their angular separation. Tau decay planes are reconstructed depending on the studied decay channel to take advantage of the correlation between the tau lepton spin and the momenta of its decay products. Using the data collected during the LHC Run 2 data-taking period, the study revealed that the Yukawa coupling is largely dominated by a pure CP-even component. A pure CP-odd Yukawa coupling is excluded with a 99.7% allowing to constrain the allowed phase space for possible BSM scenarios.

What is your topic?

CP and T violation

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