



Contribution ID: 119

Type: YSF talks

YSF: Analysis of the CP structure of the Higgs boson in tau tau decays at CMS

Thursday, 21 October 2021 16:30 (5 minutes)

The standard model (SM) predicts the Higgs boson to be even under charge-parity (CP) inversion. That makes any experimentally observed deviations from this hypothesis an intriguing hint towards new physics.

In this talk we present the first measurement of the CP properties of the Higgs boson in its coupling to leptons. In particular, the decay into a pair of tau leptons preserves CP information via spin correlations of tau decay products. To extract this information, dedicated analysis techniques have been developed and used to analyse data collected by the CMS experiment during Run 2. Altogether, this allowed to measure the mixing angle between CP-even and CP-odd hypotheses with a precision sufficient to reject the pure CP-odd scenario.

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Session Classification: Parallel: Yukawa

Track Classification: Yukawa interactions