



Contribution ID: 455

Type: Experimental poster

## Measurement of the CP structure of the Yukawa interaction in Higgs boson decays to tau leptons in CMS

Thursday, June 10, 2021 6:45 PM (1 hour)

The discovery of the Higgs boson in 2012 by the CMS and ATLAS collaborations marked the start of the exploration of the Higgs sector of particle physics. The properties of the Higgs sector under CP symmetry have been investigated mostly in its couplings to gauge bosons. With the full Run 2 data-taking period it became possible to study the CP properties of the Yukawa coupling of the Higgs to fermions, and in particular to tau leptons. This was done reconstructing the decay planes of the two tau leptons and measuring their angular correlation. The measured mixing angle between CP-even and CP-odd couplings is  $(4 \pm 17)^\circ$  and is consistent with the Standard Model prediction of a pure CP-even coupling and allows to constrain the allowed phase space for possible BSM scenarios. A pure CP-odd hypothesis is instead excluded with 99.7% confidence level.

**Primary author:** CARDINI, Andrea (Deutsches Elektronen-Synchrotron (DE))

**Presenter:** CARDINI, Andrea (Deutsches Elektronen-Synchrotron (DE))

**Session Classification:** Poster Session

**Track Classification:** Higgs physics