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CP properties measurement of the Higgs boson interaction with τ leptons with the ATLAS detector

The talk will present a measurement of the charge conjugation and parity (CP) properties in the Higgs boson interaction with τ leptons. The study is based on a measurement of CP-sensitive angular observables defined by the visible decay products of tau lepton decays, performed using a data sample corresponding to 139 ifb of proton–proton collisions recorded at a center-of-mass energy of $\sqrt{s}$= 13 TeV with the ATLAS detector at the Large Hadron Collider. The talk will outline the main part of the analysis, from the reconstruction of the CP-sensitive variables to the event selection and background estimation. The results are extracted from a profile likelihood fit using both signal sensitive regions as well as control regions for the main background processes. The results are compatible with the Standard Model predictions and the analysis is also able to exclude a pure CP-odd hypothesis at the level of 3.4 standard deviations.

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