

Study of Higgs boson CP properties in vector-boson fusion production in di-tau final state with the ATLAS detector

Thursday, 30 October 2025 14:20 (20 minutes)

The talk will present a study of the CP properties of the Higgs boson produced through vector-boson fusion mode. The analysis is using the full Run2 data collected by the ATLAS experiment at the LHC. The talk will highlight the motivation for this study, the main analysis parts like the background estimation and the signal categorisation, and finally the results will be shown. Results are obtained using the Optimal Observable method. CP-violating interactions between the Higgs boson and electroweak gauge bosons are considered in the effective field theory framework, with the interaction strength described both in the HISZ and in the Warsaw basis. No deviations relative to the Standard Model are observed, and limits are obtained on the strength parameters. All these results are described in a paper by the ATLAS collaboration which is available on arXiv (<https://arxiv.org/abs/2506.19395>) and under final review before publication on JHEP.

Primary author: DE MARIA, Antonio (Nanjing University)

Presenter: DE MARIA, Antonio (Nanjing University)

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