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Study of the spin and parity of the Higgs boson in di-boson decays with the ATLAS detector

Tuesday, 4 August 2015 16:00 (30 minutes)

This talk will present studies of the spin, parity and tensor couplings of the Higgs boson in the $H \rightarrow ZZ \rightarrow 4l$, $H \rightarrow WW \rightarrow e\nu\mu\nu$ and $H \rightarrow \gamma\gamma$ decay processes at the LHC, based on 25 fb^{-1} of pp collision data collected by the ATLAS experiment at 7 TeV and 8 TeV. The Standard Model (SM) Higgs boson hypothesis, corresponding to the quantum numbers $J^{PC} = 0^{++}$, is tested against several alternative spin scenarios, including non-SM spin-0 and the spin-2 models with universal and non-universal couplings to fermions and vector bosons. Using the $H \rightarrow ZZ \rightarrow 4l$ and $H \rightarrow WW \rightarrow e\nu\mu\nu$ decays, the tensor structure of the HVV interaction in the spin-0 hypothesis is also investigated.

Oral or Poster Presentation

Oral

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