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

*Tuesday, August 4, 2015 4:00 PM (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  $25 \text{ fb}^{-1}$  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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**Session Classification:** EWK and Higgs Sector

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