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ATLAS NOTE

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Spin measurement in $H \rightarrow WW^{(*)} \rightarrow \ell \nu \ell \nu$ channel with 20.7 fb^{-1} of data collected with the ATLAS detector at $\sqrt{s} = 8 \text{ TeV}$

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Abstract

This analysis aims for spin measurement in $H \rightarrow WW^{(*)} \rightarrow \ell \nu \ell \nu$ channel with 20.7 fb^{-1} of data collected with the ATLAS detector at $\sqrt{s} = 8 \text{ TeV}$. In summer 2012 a new neutral boson was discovered. The measured production rate of the new particle is consistent with the Standard Model Higgs boson production rate. The next step is to measure the properties of the found particle, e.g. its spin. This analysis investigates the compatibility of the observed excess with spin-0, spin-1 or spin-2 hypotheses. Data collected in 2012 with the ATLAS detector favours a spin-0 signal and results in the exclusion of a spin-2 signal at 99% to 94% confidence level depending on the production mode and the spin-1 signal at 91% confidence level.