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Measurements of the properties of the Higgs-like boson in the four lepton decay channel with the ATLAS detector using 25 fb^{-1} of proton-proton collision data STEFANO ZAMBITO, Brandeis University, ATLAS COLLABORATION — We present an update of the search results and property measurements of the observed Higgs-like boson in the decay channel $H \rightarrow ZZ^{(*)} \rightarrow \ell^+\ell^-\ell^+\ell^-$ where $\ell, \ell' = e$ or μ , using proton-proton collision data corresponding to integrated luminosities of 4.6 fb^{-1} and 20.7 fb^{-1} at $\sqrt{s} = 7 \text{ TeV}$ and $\sqrt{s} = 8 \text{ TeV}$, respectively, recorded with the ATLAS detector at the LHC. A clear excess of events over the background is observed at $m_H = 124.3 \text{ GeV}$ in the combined analysis of the two datasets with a significance of 6.6 standard deviations, corresponding to a background fluctuation probability of 2.7×10^{-11} . The mass of the Higgs-like boson is measured to be $124.3_{-0.5}^{+0.6}(\text{stat})_{-0.3}^{+0.5}(\text{syst}) \text{ GeV}$, and the signal strength (the ratio of the observed cross section to the expected SM cross section) at this mass is found to be $1.7_{-0.4}^{+0.5}$. A study of Higgs boson production mechanisms allows a first measurement of couplings with this channel. A spin-parity analysis is performed.

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