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Trigger studies for the Higgs pair production in the $WWbb$ final state at $\sqrt{s}=13$ TeV with the ATLAS detector

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We report here the results of the search for the Higgs boson pair production where one Higgs boson decay via $h \rightarrow bb$ and the other via $h \rightarrow WW^* \rightarrow lvqq$, where l is either an electron or a muon. This search uses the full dataset 2015 (3.2 fb⁻¹) plus 2016 (33.3 fb⁻¹) of proton-proton collision data at the center of mass energy of 13 TeV recorded with the ATLAS detector at the Large Hadron Collider (LHC). In addition studies on trigger are going on by adding a new trigger having 1 lepton and 3 jets together with the 1 lepton trigger to increase the signal acceptance at low lepton p_T. The performances of such algorithms will be discussed.

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