

Abstract Submitted
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Measurement of fiducial and total cross section for Higgs boson production in the four-lepton decay channel in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector HANNAH HERDE, Brandeis Univ, ATLAS COLLABORATION — Fully characterizing the Higgs boson provides a key portal to stringently examine the Standard Model and search for tantalizing hints of new physics. We will present the measurement of the cross section for Higgs boson production in the four lepton (electron or muon) decay channel in a fiducial region within the detector acceptance, defined in terms of lepton traverse momenta and pseudo-rapidity. The extrapolation to the total cross section, covering the full phase-space, is also presented. The measurements are performed using 2015-2016 pp collision data at $\sqrt{s} = 13$ TeV collected with the ATLAS detector. We will also present the measurements of the fiducial cross section as a function of the final state as well as a confrontation of the cross section for same flavor and opposite flavor final states. The inclusive fiducial cross section is compared with the Next-to-Next-to-Next to Leading Order theoretical calculation for the gluon-gluon fusion production mode, and Next-to-Next-to Leading Order calculations for production via vector boson fusion and associated production modes in the fiducial phase-space.

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