

Search for the Higgs boson decaying to a pair of muons in pp collisions at 13 TeV with the ATLAS detector

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The dimuon decay of the Higgs boson is the most promising process for probing the Yukawa couplings to the second generation fermions at the Large Hadron Collider (LHC). We present a search for this important process using the data corresponding to an integrated luminosity of 139 fb^{-1} collected with the ATLAS detector in pp collisions at $\sqrt{s} = 13 \text{ TeV}$ at the LHC. Events are divided into several regions using boosted decision trees to target different production modes of the Higgs boson. The measured signal strength (defined as the ratio of the observed signal yield to the one expected in the Standard Model) is $\mu = 1.2 \pm 0.6$. The observed (expected) significance over the background-only hypothesis for a Higgs boson with a mass of 125.09 GeV is 2.0σ (1.7σ).

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