Phenomenology 2018 Symposium



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Measurement of cross sections and couplings of the Higgs Boson in bosonic decay channels with the ATLAS detector

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The precise measurement of the properties of the Higgs boson is one of the main goal of the physics research at the LHC. The presentation shows the new results achieved by the ATLAS collaboration in the bosonic Higgs decay channels $(H \rightarrow \gamma \gamma, H \rightarrow ZZ^*, H \rightarrow WW^*)$ using 36 fb⁻¹ of proton-proton collision data recorded at $\sqrt{s} = 13$ TeV during the 2015 and 2016. Cross-section measurements for the production of a Higgs boson through gluon-gluon fusion, vector-boson fusion, and in association with a vector boson or a top-quark pair are reported. The signal strength, defined as the ratio of the observed to the expected signal yield, is measured for each of these production processes as well as inclusively. Moreover measurements of simplified template cross sections, designed to quantify the different Higgs boson production processes in specific regions of phase space, are reported. Finally the presentation shows the measurement of the fiducial cross-section of the production of the Higgs boson and the differential and double-differential cross-section measurements related to the Higgs boson kinematics as well as the kinematics and multiplicity of the jets produced in association with a Higgs boson.

Summary

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