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Analysis of H -> WW Decay in ggF and VBF Production Modes

The Higgs boson is a fundamental particle in the Standard Model of particle physics, but its properties are not well-constrained experimentally. This analysis aims to improve our understanding of the Higgs boson through measurements of the H → WW decay channel in gluon-gluon fusion (ggF) and vector boson fusion (VBF) production modes. The ggF channel is the dominant production mechanism for Higgs bosons at the Large Hadron Collider (LHC), while the VBF channel is a subdominant but important process that can provide additional information about the properties of the Higgs boson. The analysis uses data collected by the ATLAS experiment at the LHC, and utilizes deep neural networks to identify and measure these Higgs boson processes. The results of the analysis will provide new constraints on the Higgs boson's couplings to W bosons and can be used to improve our understanding of the Higgs boson in the Standard Model and beyond.

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