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First measurement of VH in full hadronic final state with the ATLAS detector

Thursday 16 May 2024 17:00 (15 minutes)

The study of Higgs boson production at large transverse momentum is one of the new frontiers for the LHC Higgs physics program. This talk will present the first measurement of Higgs boson production in association with a vector boson in the full hadronic qqbb final state using data recorded by the ATLAS detector at the LHC in pp collision at 13 TeV and corresponding to an integrated luminosity of 137 fb^{-1} . Using novel jet substructure and b-tagging techniques enables the Hbb measurement despite the large irreducible QCD background. Dominant backgrounds from multijet production are determined directly from the data and the extraction of the Z to bb signal is used as a validation of the method. The VH production cross section is measured inclusively and differentially in several ranges of Higgs boson transverse momentum: 250-450, 450-650, and greater than 650 GeV. The inclusive signal yield relative to the Standard Model expectation is observed to be $\mu=1.4^{+1.0}_{-0.9}$

Plenary (Invited talks only)**Mini Symposia (Invited Talks Only)****Presenter:** ZHENG, Zhi (SLAC National Accelerator Laboratory (US))**Session Classification:** Electroweak & Higgs Physics**Track Classification:** Electroweak & Higgs Physics