



Contribution ID: 288

Type: Oral Presentation

Search for Higgs decaying to invisible particles via vector boson fusion with ATLAS

Thursday 10 July 2025 11:10 (20 minutes)

Given the discovery of the Standard Model Higgs boson in 2012 by both ATLAS and CMS experiments at the Large Hadron Collider at CERN, further properties of the Higgs boson are important to be explored. The search for Higgs decaying to invisible particles is a potential portal to look for physics beyond the Standard Model. Among all Higgs production channels at the LHC, vector boson fusion provides the most sensitivity for the concerned process. Direct search for vector boson fusion production of the Higgs boson decaying invisibly using 139 fb⁻¹ at 13 TeV centre-of-mass energy at ATLAS will be presented. Further development for the similar search at Run 3 with discussion about the interpretation will also be shown.

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Session Classification: Nuclear, Particle and Radiation Physics-2

Track Classification: Track B - Nuclear, Particle and Radiation Physics