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Two-particle correlation studies and production of the Higgs in association with a single top quark with the CMS experiment at CERN

Abstract

Two-particle correlation studies provide important insights into the underlying mechanism of particle production in high-energy collisions of protons and nuclei. A key feature of such correlations in ultrarelativistic nucleus-nucleus (AA) collisions is the observation of a pronounced structure known as the "ridge" that has been found over a wide range of AA energies and system sizes at both the Relativistic Heavy Ion Collider (RHIC) and the Large Hadron Collider (LHC). Preliminary results of an analysis with ultra-peripheral proton-lead (pPb) collisions at 8.16 TeV with the CMS experiment is presented. Additionally ongoing work to investigate the production of the Higgs boson in association with a single top quark in proton-proton (pp) collisions at 13, 14 TeV will be presented.

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