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Hadron Production at LHCb Experiment

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This study presents measurements of dijet and neutral pion production in high-energy nuclear collisions using the LHCb detector. The measurements provide essential insights into the parton distribution functions, nuclear structure, and particle production dynamics within the framework of Quantum Chromodynamics (QCD). The nuclear modification factors for neutral pions produced in proton-lead collisions at a center-of-mass energy of 8.16 TeV show a significant suppression in the forward region and the first evidence of enhancement in the backward region. The inclusive π^0 and π^\pm -dijet production cross-sections in the forward region of pp collisions, measured at a center-of-mass energy of 13 TeV, are found to be in agreement with theoretical predictions at next-to-leading order. The measurements of dijet and neutral pion production provide complementary information on the PDFs and nuclear structure, which are important for understanding QCD dynamics in high-energy nuclear collisions and for further improving the theoretical models

Collaboration / Activity

LHCb

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