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Pathlength dependence of particle-yield modification on the near-side with ALICE at the LHC

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Ultra-relativistic heavy-ion collisions at the LHC produce a hot and dense medium, which is a deconfined state of quarks and gluons. Jets are produced from hard processes in the initial stages of the collision and interact with the medium while propagating through it. Angular correlation analyses of hadron pairs are a convenient method to observe jets and their interaction with the medium without fully reconstructing the jets.

Comparing the jet peak yield in pp collisions and Pb-Pb collisions gives information about the hard parton's energy loss mechanism through the medium. The jet energy loss while propagating through the medium can be quantified in azimuthal di-hadron correlations with the observable I_{AA} , the ratio between the jet peak yield in Pb-Pb collisions to pp collisions. Furthermore, the in-medium jet modification can be more precisely measured by comparing jets which traverse different pathlengths through the medium. The pathlength dependence of the jet modification can be observed with I_{AA} as a function of the relative angle between the trigger particle and the event plane.

In this presentation, I_{AA} as a function of centrality, relative angle to the event plane, and the transverse momentum of the associated particles for Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV will be shown. In addition, the results will be compared to AMPT model calculations.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

Primary author: KIM, Hyeonjoong (Yonsei University (KR))

Presenter: KIM, Hyeonjoong (Yonsei University (KR))

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