

Searching for jet-induced diffusion wakes of quark gluon plasma via jet-track correlations in heavy ion collisions with the ATLAS detector

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Hard-scattered partons traversing the medium produced in heavy-ion collisions lose energy by interacting with the medium. Simultaneously, the medium is modified in this interaction, exchanging energy and momentum with the parton. A typical modification of the medium in this process includes an enhancement of the medium particles in the direction of the parton (the so-called wake) and a depletion (the so-called diffusion wake) in the opposite direction. In this talk, we present jet-track correlations in photon-jet and di-jet events measured in Pb+Pb collisions at 5.02 TeV with the ATLAS detector to search for diffusion wake signals. The results for photon-jet events do not show a significant diffusion wake signal within the current uncertainties. We provide upper limits on the probability, and the CoLBT theory prediction is found to be consistent with the data within the 68% confidence interval. The signals in di-jet events are also interpreted in terms of theoretical predictions, within the statistical significance of the data

Category

Experiment

Collaboration

ATLAS

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