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Search for the diffusion wake via measurements of jet-track correlations

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The medium modification induced by jets in heavy ion collisions often manifests as an increase in medium particles in the direction of the parton (the so-called “wake”) and a decrease in the opposite direction (the so-called “diffusion wake”). In this talk, we will discuss jet-track correlations measured in photon-jet events from Pb+Pb collisions at 5.02 TeV with the ATLAS detector, in an effort to disentangle the medium modification from other physical effects, such as parton shower modification, and to detect diffusion wake signals. The results do not reveal a significant diffusion wake signal within the current uncertainties. We provide upper limits on the probability, and the CoLBT theory predictions are found to be consistent with the observed data within a 68% confidence interval. Future possible observables will also be discussed.

Category

Experiment

Collaboration

ATLAS

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