Initial Stages 2021



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Sensitivity of jet quenching to the initial geometry in Pb+Pb collisions with ATLAS

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Measurements of jet suppression and modification in heavy-ion collisions provide powerful and broad information on the dynamics of the hot, dense plasma formed in relativistic nucleus-nucleus collisions.

In this talk at the Initial Stages conference, we present measurements of jet energy loss and modification which are sensitive to the initial transverse geometry of Pb+Pb collisions.

The measurements are performed using the high-statistics Pb+Pb collision data at 5.02 TeV recorded during 2018 with the ATLAS detector at the LHC.

These data can provide insight into the path length or system size dependence of energy loss, and the sensitivity to fluctuations in the transverse geometry.

This talk will first present a broad measurement of the single jet yields as a function of the azimuthal angle with respect to the 2nd, 3rd, and 4th event planes in Pb+Pb collisions.

The azimuthal anisotropies for jets are reported as a function of jet pT and centrality.

Second, this talk will present a measurement of the fully unfolded dijet momentum balance in high-statistics Pb+Pb and pp data.

The balance distributions are presented as a function of centrality and leading jet pT, exploring a significantly higher kinematic range than Run 1 results.

Finally, these results will be placed in context of other jet measurements in ATLAS, such as recent measurements of Z+hadron correlations which, due to the Z selection, sample an unbiased set of hard scattering production points in the nuclear overlap region.

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