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Single jet and dijet measurements of jet quenching with the ATLAS detector

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High energy partons are known to lose energy when passing through the hot and dense medium produced in heavy-ion collision. This results in a modification to the transverse momentum distributions of both charged hadrons and jets. It has been previously shown in Pb+Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV that parton energy loss within the Quark Gluon Plasma results in significant modifications to the transverse momentum balance of dijet pairs. More differential measurements are needed to better understand the path length dependence, the role of fluctuations in the energy loss, and the energy redistribution. This talk presents the latest results on the fully unfolded dijet momentum balance in Pb+Pb and pp collisions at $\sqrt{s_{NN}} = 5.02$ TeV, as well as measurements in Xe+Xe collisions at $\sqrt{s_{NN}} = 5.44$ TeV with the ATLAS detector at LHC. The dijet momentum balance is measured as a function of the azimuthal angle with respect to the event plane. This talk will present also a measurement of the single jet yields as a function of the azimuthal angle with respect to the event plane in Pb+Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. In addition, charged-hadron nuclear modification function will be presented in Pb+Pb and Xe+Xe systems with detailed comparisons between the two collision systems. These measurements provide new information about the path-length and system-size dependence of jet energy loss within the medium.

Collaboration (if applicable)

ATLAS

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

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