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Measurement of charged and full jet production and nuclear modification factor in pp and p-Pb collisions with ALICE

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The study of jet production in small collision systems is essential for testing our understanding of perturbative and non perturbative QCD and cold nuclear matter effects. In addition, studies at high multiplicity in small collision systems exhibit signatures of collectivity, which is still not fully understood within a unified picture across system size. Jet quenching in small systems is not observed within current measurement precision, calling for more precise jet measurements.

This talk presents new results of charged and full jet production in pp and p-Pb collisions, and the corresponding nuclear modification factor R_{pPb} at $\sqrt{s_{NN}} = 5.02, 8,$ and 13 TeV. These results are expected to be the most precise measurements of the R_{pPb} by ALICE to date. To investigate whether jet energy is redistributed in cold nuclear matter, the cross-section ratios for different jet resolution parameters (R) are compared between pp and p-Pb collisions, as well as within each collision system. Finally, comparisons between data and model predictions are discussed. This result extends to lower jet transverse momentum than previously measured at the LHC, constraining hard parton production and fragmentation mechanisms applied in model calculations, and the impact of the nuclear-modified parton distribution function on jet production. This measurement also provides new constraints on jet quenching in small collision systems.

Category

Experiment

Collaboration (if applicable)

ALICE

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