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Exploring jet profiles in pp and Pb-Pb collisions at 2.76 and 5.02 TeV with the ALICE detector

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Jets, defined as collimated sprays of particles originating from initial hard scattered partons, serve as well calibrated probes of the Quark-Gluon Plasma formed in high-energy nuclear collisions. Their production cross section and geometrical profile in elementary pp collisions is precisely calculable within the framework of perturbative QCD (pQCD). Hence, any modification of its production observed in heavy-ion collisions compared to an incoherent sum of

individual pp collisions could be attributed to in-medium effects. Such modifications, called jet quenching, have been measured in high-energy heavy-ion collisions both at RHIC and at the LHC, and they were interpreted as partonic energy loss in the QGP.

In this contribution, the measurements of inclusive charged jet spectra for jet resolution $R = 0.2, 0.3, 0.4$ and 0.6 in pp and $R = 0.2, 0.3, 0.4$ in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be presented. The nuclear modification factors in different centrality and R bins, and comparisons to the results at $\sqrt{s_{NN}} = 2.76$ TeV and pQCD based Monte Carlo simulations will be presented. This allows to explore the radial energy profile of jets via measurements of jet yield ratios in different resolution parameter R in an IR-safe fashion.

The results of jet-hadron correlation measurements in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV for charged jets and fully reconstructed jets will also be presented. The associated hadron yields of inclusive and recoil jets were measured. Jet and associated hadron correlation widths have also been measured to constrain possible modifications of the jet shape. The measurements are compared to the baseline constructed from pp data, which is embedded into Pb-Pb data. Comparison to model predictions will also be shown. To study the influence of the large combinatorial background in Pb-Pb collisions, as well the jets surface bias, the measurement has been performed

for jets reconstructed with several constituent energy and momentum cuts.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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