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Energy flow in jets in pp and Pb–Pb collisions with ALICE

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Jets are excellent probes for studying the deconfined matter formed in heavy ion collisions. However, competing energy-loss effects, such as the dependence on the opening angle of the shower, radiative emissions to large angles, and the medium response to the jet, can obscure interpretation. This talk presents two new observables aimed at disentangling these effects. First, we introduce a new infrared and collinear safe measurement of the jet energy flow within jets reconstructed with different resolution parameters R . Changing the jet R varies the relative contribution of competing energy-loss effects. Additionally, we utilize the excellent ALICE PID capabilities in new measurements of jet-hadron correlations with identified hadrons and identified hadron ratios in jets in pp and Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. The final state jet hadrochemical composition can differ from the vacuum due to medium-induced modifications to jet fragmentation or the medium response. Finally, the ALICE PID capabilities can also be exploited to study gluon jet fragmentation with the new LHC data in pp collisions at $\sqrt{s} = 13.6$ TeV.

Category

Experiment

Collaboration (if applicable)

ALICE

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