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Extracting the anomalous dimensions of energy-correlators in charged jets in pp collisions at 13 TeV with ALICE

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The projected N-point Energy Correlators (ENCs) are a novel tool to probe jet substructure in hadronic collisions by exploring the energy flow within jets. Defined as the energy-weighted correlations of N tracks as a function of their angular separation, these correlators reveal the multiscale nature of jets. Jet evolution from perturbative, hard-scattered partons to non-perturbative sprays of hadrons is imprinted in the slopes of the ENCs. The lower charged-particle jet p_{T} range between 20 and 80 GeV/c accessible at ALICE makes these observables especially interesting as it allows one to probe both pQCD and npQCD effects. The ratio, E3C/E2C, exhibits sensitivity to the running of the strong coupling constant, α_{S}, while being robust to detector effects. In this talk, we will present the measurement of the E2C, E3C and the sensitivity of the E3C/E2C ratio to α_{S} via their anomalous dimensions in pp collisions at 13 TeV. Additionally, we will present an outlook for measuring the E3C/E2C ratio in Pb-Pb collisions. The jet p_{T} range at ALICE offers a unique phase space to study jet-medium interactions. We will show how the E3C/E2C ratio can probe the QGP due to its robustness to the uncorrelated heavy-ion background while retaining its sensitivity to medium effects.

Category

Experiment

Collaboration

ALICE

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