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Dijet studies at the LHC

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High-energy partons generated in relativistic particle collisions create well-collimated showers of particles, which are called jets. The jet study is used widely in heavy-ion collisions, where the quark-gluon plasma (QGP) medium forms. Previous studies from RHIC and LHC indicate that dijet invariant mass can be sensitive to modifications caused by the QGP medium. In this study, we present a model study of the dijet mass distributions in proton-proton and proton-lead collisions at a center-of-mass energy of 5.02 TeV as preparation before measuring the dijet invariant mass in the data. I used the anti-kt algorithm for jet reconstruction with the resolution parameter R=0.4. In the result, the modifications of proton-lead collisions and proton-proton Monte Carlo simulation results are negligible but significant in the region of low dijet mass. The raw data should be corrected due to the inefficiencies of undetected missed and over-detected fake charged particles, the procedure called unfolding. In this study, I present the unfolded spectra of the proton-lead data, but lead-lead needs to be developed for the correction of lost jets due to background subtraction.

Theory / experiment

Experiment

Group or collaboration name

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