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Search for jet quenching in high-multiplicity pp collisions using inclusive and semi-inclusive jet production in ALICE

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Small collision systems exhibit features that are characteristic of collective flow, a hallmark of QGP formation. However, jet quenching in small systems has not yet been observed, and quantifying or setting limits on the magnitude of jet quenching in small systems is a key element in understanding the limits of QGP formation. In this talk we present a search for jet quenching effects in pp collisions at $\sqrt{s} = 13$ TeV based on two jet observables: inclusive jet production, and the semi-inclusive yield of jets recoiling from a high-p_{T} hadron. Both measurements are carried out differentially in event multiplicity, which varies the size of the collision system. Jets are reconstructed from charged particles using the anti-k_{T} algorithm, with R between 0.3 and 0.7. The R-dependent inclusive jet cross section is compared to pQCD calculations. To search for jet quenching effects, the shape of the inclusive jet yield in different multiplicity intervals is compared to the one obtained in minimum-bias (MB) events. The jet yield increases as a function of charged-particle multiplicity, which is similar to the one observed from soft sectors. In the semi-inclusive analysis, recoil jet acoplanarity is measured for events selected on high multiplicity (HM) and compared to the MB population. A striking modification of the acoplanarity distribution, which is nominally characteristic of jet quenching, is observed in the measured HM population. Its origin is elucidated by comparison to model calculations, with implications for the larger LHC small-systems program.

Author: CC CHAIRS, ALICE

Presenter: KRIZEK, Filip (Czech Academy of Sciences (CZ))

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