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Investigating jet modification in high multiplicity proton-proton collisions at 13 TeV using PYTHIA 8 event generator

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With the onset of LHC, several studies of small collision systems (proton-proton and proton-lead) at high multiplicity have revealed collective phenomena similar to those observed in heavy-ion collisions where these effects can be understood through the formation of hot and dense partonic matter, Quark-Gluon Plasma (QGP). However, jet quenching, one of the most important characteristic features of QGP formation in heavy-ion collisions, has not yet been observed in small systems, thereby posing questions about the origin(s) of the collective-like effects and the possible formation of QGP in such systems. In this work, we have studied the radial transverse momentum density profile $\rho(r)$ inside inclusive charged-particle jets in high multiplicity and minimum bias proton-proton (pp) collisions at $\sqrt{s} = 13$ TeV using PYTHIA 8 Monash 2013 Monte Carlo simulation. We will present the possible sources contributing to the modification of $\rho(r)$ at high multiplicity pp events compared to the minimum bias ones.

Session

Heavy Ions and QCD

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