



Contribution ID: 37

Type: Oral

Multiplicity Dependence Study of Heavy-Flavour Muon and J/ψ in pp Collisions Using EPOS4

The multiplicity dependence of heavy-flavour production provides insight into the interplay between soft and hard processes in proton-proton collisions. By studying the relative yield of J/ψ as a function of charged-particle multiplicity, the mechanisms governing quarkonium production in events with different levels of activity can be investigated.

This work uses the EPOS4[1] event generator with and without hydrodynamic evolution to predict the production of muons from charm- and beauty-hadron decays as a function of charged-particle multiplicity in different transverse-momentum regions in pp collisions at

$\sqrt{s} = 5.02$ TeV. The study compares the relative J/ψ yield with and without hydrodynamic evolution, as well as observations from the ALICE Collaboration [2]. The comparison provides insight into the role of hydrodynamic evolution in the multiplicity dependence of heavy-flavour and quarkonium production in pp collisions.

REFERENCE

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Session Classification: Parallel - HI

Track Classification: Heavy Ions and Nuclear