

# An approach to test the core-corona model using multiplicity dependent particle production at LHC energies

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The core-corona picture implemented in the EPOS~3 model has successfully described the multiplicity dependence of particle production in proton–proton (pp) and proton–nucleus collisions at LHC energies.

The inclusion of viscous hydrodynamics plays a key role in describing the observed features of data. It suggests an interpretation of new phenomena assuming the formation of a small drop of the Quark-Gluon Plasma. However, initial state effects produce similar signals. Therefore, novel ideas are of crucial importance in order to make a comprehensive comparison between models and data.

In this regard, we propose a strategy in order to enhance or suppress the effects arising from the core component of the EPOS~3 model using measureable quantities. In doing so, based on our earlier studies, we investigate

the simulated sample differentially as a function of event charged-particle multiplicity and the transverse momentum ( $p_T$ ) of the leading jet ( $p_T^{\text{jet}}$ ) reconstructed at mid-pseudorapidity ( $|\eta| < 1$ ).

The baryon-to-meson and hyperon-to-pion particle ratios as well as the average  $p_T$  are determined as a function of multiplicity and  $p_T^{\text{jet}}$  in inelastic pp collisions at  $\sqrt{s} = 7\sqrt{2}$  TeV.

The results suggest sizable effects that could be compared to experimental data.

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