D⁰ mesons and their antiparticles were reconstructed in minimum bias p-Pb collisions at √s_{NN} = 5.02 TeV as well as in different multiplicity classes, via their hadronic decays. Selection of D⁰ decays [στ ~ 123 μm] was based on the reconstruction of secondary vertex topologies. Further background reduction using particle identification based on Time Projection Chamber and Time Of Flight signals. Raw yields extracted from fits (exponential + gaussian) to the invariant mass distributions of selected Kn pairs.

Prompt D⁰ signal obtained by correcting the raw yields for the reconstruction and selection efficiency and subtracting the contribution coming from B meson decays.

Example of D⁰ invariant mass distributions in 3 multiplicity intervals for 2 different p_T ranges. Multiplicity estimator based on the number of tracklets in lnN<1. Tracklets = track segments pointing to the primary vertex obtained associating hits on the 2 layers of the Silicon Pixel Detector.

Compatibility of D⁰ yields increasing with charged particle multiplicity [proportionality between N_{tracklets} and N_{mesons} determined in Monte Carlo]:

\[ \frac{N_{mesons}}{N_{tracklets}} = \frac{\sigma_{mesons}}{\sigma_{tracklets}} \]

Same increasing trend within uncertainties in all p_T intervals. Compatible results are obtained with D⁺ and D*⁺.

Collision geometry information extracted with a hybrid method. <N_{mesons}> obtained by rescaling the min. bias value with ratio of the multiplicity at mid-rapidity in a given class to the min. bias one.

Compatible results are obtained with D⁺.

Measurements of the D⁰, D⁺, D*⁺ and D*⁻ mesons nuclear modification factor R_{pPb}:

\[ R_{pPb} = \frac{\left( \frac{dσ}{dp_T} \right)_{pPb}}{\int \left( \frac{dσ}{dp_T} \right)_{pp}} \]

pp cross section obtained by a pQCD-based energy scaling of the cross section measured at √s = 7 TeV [3]. R_{pPb} consistent with unity within uncertainties.

Suppression observed in central Pb-Pb collision at high p_T [4] due to final state effects induced by the hot partonic matter.