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Measurement of the D^{*+} nuclear modification factor in p-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV in different multiplicity intervals.

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At the beginning of 2013, p-Pb collisions at the centre-of-mass energy of 5.02 TeV per nucleon pair have been recorded with ALICE at the LHC. The analysis of D-meson production in p-Pb collisions can provide information on how much the heavy-flavour production in nuclear collisions is influenced by cold nuclear matter effects, such as the nuclear modification of the parton distribution functions and initial-state multiple scatterings.

The magnitude of cold nuclear matter effects can be investigated by means of the nuclear modification factor R_{pPb}. It is defined as the ratio between the D-meson yield in p-Pb and the yield in pp scaled by the average number of binary collisions. The ALICE Collaboration measured the D^{*+} multiplicity-integrated R_{pPb} in the central rapidity region in the momentum range $1 < p_{\mathrm{T}} < 24$ GeV/c, which was found to be compatible with unity and with model calculations including initial state effects. The study of the same observable in different multiplicity intervals provides insight into the dependence of cold nuclear matter effects on the geometry of the collision. However, in p-Pb collisions the connection between the collision geometry and the observed multiplicity through a Glauber approach has proven to be very challenging. Different multiplicity estimators are used to investigate this connection.

$\mathrm{D}^{*+} \rightarrow \mathrm{D}^0\pi^+$ decays have been reconstructed in the central rapidity region $|y_{\mathrm{lab}}| < 0.8$. In this poster, the multiplicity dependence of the D^{*+} nuclear modification factor as a function of p_{T} will be presented. Results obtained using different multiplicity estimators will be compared.

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