D-meson production as a function of charged-particle multiplicity in p-Pb collisions
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The study of D*+ meson production in p-Pb collisions can help us explore the dependence of heavy-flavour production on the collision geometry and on the density of final-state particles.

D*+ meson yields vs charged-particle multiplicity

- D*+ meson production rate increases faster-than-linearly with charged-particle multiplicity in p-Pb collisions. A similar trend has been observed in pp collisions at \( \sqrt{s} = 7 \) TeV [5]. This is consistent with calculations including a contribution of Multi Parton Interactions (MPIs) as well as possibly due to an increased amount of gluon radiation in events with charm. However, the interpretation of p-Pb results is more challenging as also the number of nuclear-nucleon collisions \( N_{\text{coll}} \) has to be taken into account. Models taking into account hydrodynamic evolution after the p-Pb collision predict a similar faster-than-linear increasing trend [7].

Conclusions
- D*+ meson \( Q_{\text{bb}} \) is compatible with unity for both high and low centralities in p-Pb collisions. No evidence of a multiplicity dependence of the D-meson production in p-Pb collisions with respect to that in pp collisions at the same energy is observed.
- D*+ meson production rate increases faster-than-linearly with charged-particle multiplicity in p-Pb collisions. A similar trend has been observed in pp collisions at \( \sqrt{s} = 7 \) TeV [5]. This is consistent with calculations including a contribution of Multi Parton Interactions (MPIs) as well as possibly due to an increased amount of gluon radiation in events with charm. However, the interpretation of p-Pb results is more challenging as also the number of nuclear-nucleon collisions \( N_{\text{coll}} \) has to be taken into account. Models taking into account hydrodynamic evolution after the p-Pb collision predict a similar faster-than-linear increasing trend [7].

References