

## ALICE vertexing performance and charm reconstruction

ALICE is a general-purpose heavy-ion experiment designed to study the physics of strongly interacting matter and the quark gluon-plasma in nucleus-nucleus collisions at the LHC.

The measurement of open charm and open beauty production allows one to investigate the mechanisms of heavy-quark production, propagation and, at low momenta, hadronisation in the hot and dense medium formed in high-energy nucleus-nucleus collisions.

The track impact parameter, defined as the distance of closest approach of a track to the primary (collision or initial) vertex, is the variable allowing to evaluate the displacement of the track. It is a critical variable for the selection of physics signals which are tagged by the secondary vertex with a small displacement from the primary vertex.

This is, in particular, the case for the detection of particles with open charm and open beauty, namely  $D^0$  ( $c\tau \sim 123\mu\text{m}$ ),  $D^+$  ( $c\tau \sim 315\mu\text{m}$ ) and B mesons ( $c\tau \sim 500\mu\text{m}$ ). The main requirement applied for the selection of such particles is the presence of one or more daughter tracks (decay products) which are displaced from the primary vertex (e.g. for  $D^0 \rightarrow K^- \pi^+$  two displaced tracks are required).

This poster presents the ALICE track impact parameter resolution for the pp and Pb-Pb collisions, as well as the performance on the exclusive reconstruction of the decay  $D^0 \rightarrow K^- \pi^+$ .

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**Track Classification:** Heavy flavor and quarkonia production