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## Investigating charm-hadron fragmentation with azimuthal correlation distributions of charm hadron and charged particles in pp collisions with ALICE

The study of heavy-flavour hadrons in small systems, such as proton-proton (pp) collisions, offers insights into quantum chromodynamics (QCD) processes and allows us to deepen our understanding of the heavy-flavour quark parton shower and hadronisation processes. In a complementary approach to charm-tagged jets, measurements of azimuthal correlations between charm hadrons and charged particles provide a differential description of charm-jet shape and composition in terms of the transverse momentum of associated particles. Additionally, the comparison of correlation-peak measurements for different charm-hadron species can help to understand better the charm hadronisation mechanism, and investigate the possibility of different mechanisms in addition to in-vacuum fragmentation.

In this talk, we report new results of angular correlations between charm hadrons and charged particles in pp collisions from Run 3 data samples, comparing them with state-of-the-art Monte Carlo predictions and models implementing different charm production and hadronisation mechanisms. We will present a comparison between strange and non-strange D-meson correlation measurements, aiming to investigate the influence of strangeness on the charm hadronisation process. Additionally, we will discuss new  $\Lambda_c^+$  baryon correlation measurements and compare them with results from the D-meson studies, giving insights into the differences in charm hadronisation between charm baryons and mesons.

### Category

Experiment

### Collaboration (if applicable)

ALICE

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