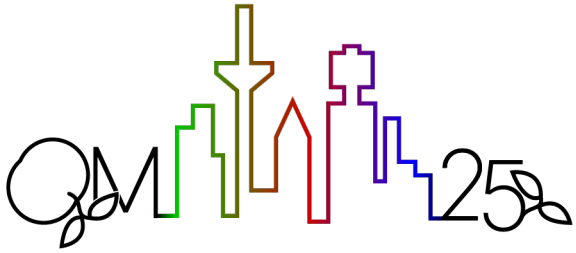

Contribution ID: **632** Type: **Poster**

Measurement of Ξ_c^+ baryon via hadronic decay channel in pp collisions at $\sqrt{s}$ = 13.6 TeV with ALICE

Measurements of charm-hadron production provide a fundamental test to validate the perturbative quantum chromodynamics (pQCD) calculation.
However, in recent years, an enhanced production of charm baryons relative to mesons was observed compared to e^+e^- collisions, challenging the assumption of independent fragmentation adopted in pQCD calculations via the factorization theorem.
The observation has initiated a review of theory frameworks to explain the measurements by considering different process with respect to e^+e^- collisions.
In particular, the measurements of charm baryons containing strangeness, such as $\Xi_c^{0,+}$ and Ω_c^0, might have good constraint power for the theory calculations, as their predictions undershoot the measurements even though they include different hadronization scenarios to describe the measurements.
Therefore, precise measurements of charm baryons containing strangeness across wide p_T range are crucial to constrain the theory calculations.

At the LHC, a new data sample is being collected during Run 3 data-taking period, started in 2022 with upgraded ALICE detector.
The new dataset has improved resolution, thanks to the upgraded tracking detector during last LHC long shutdown 2 (LS 2), as well as a larger sample achieved by continuous readout of the Time Projection Chamber (TPC) detector.
Precise measurements over an extended p_T range using the new dataset are anticipated to provide further ingredients to understand hadronization mechanism of charm quarks.

In this contribution, a measurement of Ξ_c^+ baryon in pp collisions at $\sqrt{s}$ = 13.6 TeV, collected with ALICE detector, will be presented.
The Ξ_c^+ baryon is reconstructed via its hadronic decay channel, $\Xi_c^+ \rightarrow \Xi^-\pi^+\pi^+$, at midrapidity.
A machine learning-based background rejection approach exploiting Boosted Decision Tree (BDT) algorithm will be introduced.
The resulting p_T-differential production cross section of Ξ_c^+ baryon will be presented and compared with state-of-the-art models implementing different hadronization mechanisms.

Category

Experiment

Collaboration (if applicable)

ALICE Collaboration

Author: CHO, Jaeyoon (Inha University (KR))

Co-authors: KWEON, Min Jung (Inha University (KR)); KUCERA, Vit (Inha University (KR))

Presenter: CHO, Jaeyoon (Inha University (KR))

Session Classification: Poster session 2

Track Classification: Heavy flavor & quarkonia