Warsaw University of Technology

ALICE

Open charm angular correlation studies at LHC energies

Barbara Chytła
Warsaw University of Technology, Warsaw, Poland

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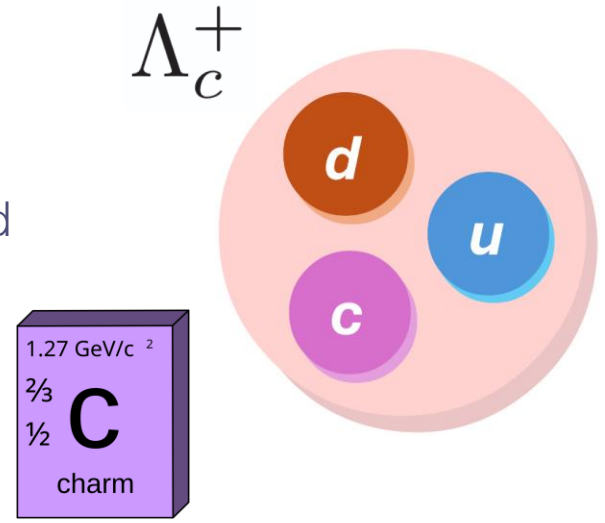
Motivation

- The QGP produced in heavy-ion collisions is tiny and very short-lived – – so how can we study this system?
- Heavy quarks, like charm, because of their large masses, are produced at the early stage of a collision, before the formation of QGP.

➡ *They witness the whole evolution of the system!*



$$D^0 \rightarrow K^- \pi^+$$

$$D^+ \rightarrow K^- \pi^+ \pi^+$$

$$\Lambda_c^+ \rightarrow p K^- \pi^+$$

- High masses also influence quark production and fragmentation processes in unique ways.

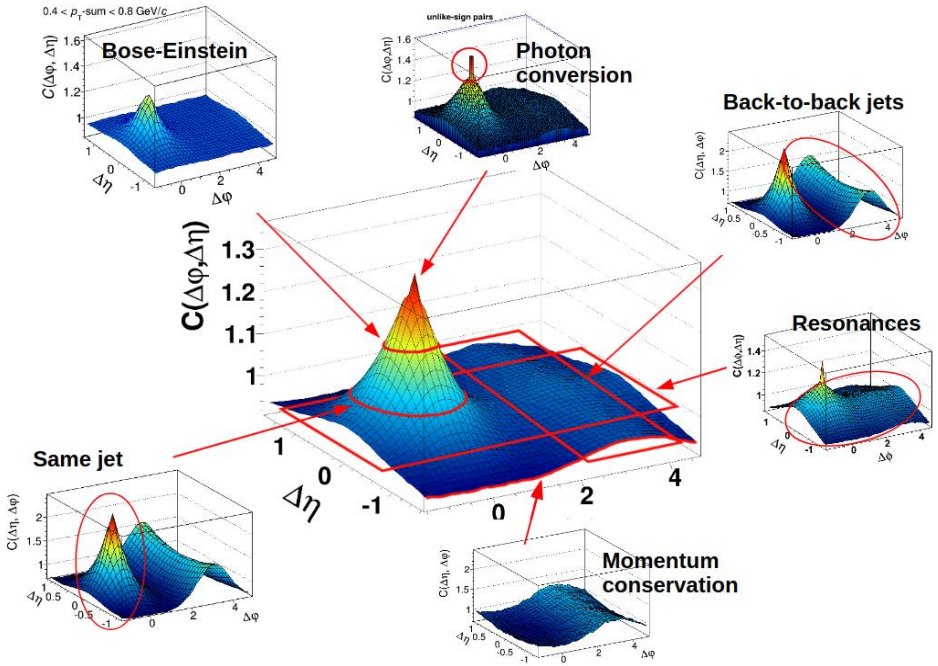
➡ Analyzing *angular correlations* between Λ_c and other charged particles allows us to gain information about the various stages for *Λ_c baryon and particle production*.

Analysis method

Angular correlations :

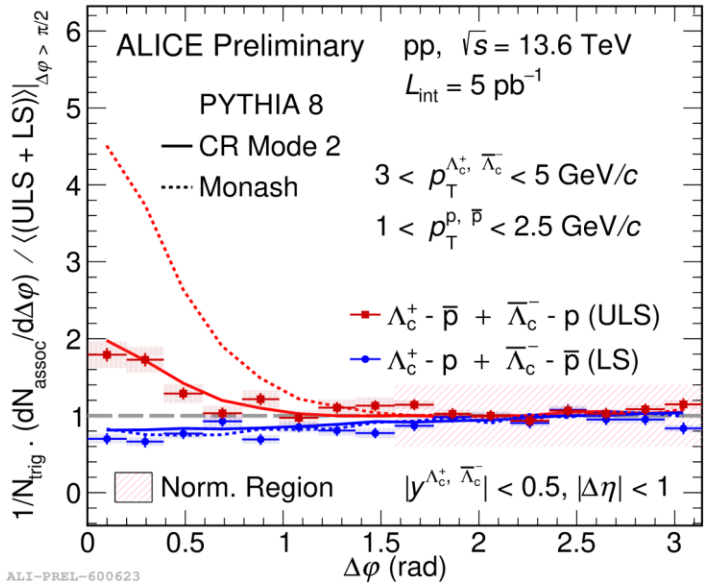
$$C(\Delta\eta, \Delta\varphi) = \frac{S(\Delta\eta, \Delta\varphi)}{B(\Delta\eta, \Delta\varphi)}$$

$$\Delta\eta = \eta_1 - \eta_2 \qquad \Delta\varphi = \varphi_1 - \varphi_2$$



Results

The upgrade of ALICE ITS has allowed to more accurately reconstruct the Λ_c baryon in the low p_T region.



Outlook:

- Extension to lower Λ_c p_T ranges,
- comparison with more MC models.