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Type: **Experimental talk**

## Prompt and non-prompt $D_s^+$ production in pp and Pb-Pb with ALICE

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Measurements of  $D_s^+$  mesons originating from the hadronisation of a charm quark (prompt) and from beauty-hadron decays (non-prompt) offer a unique tool to study the hadronisation of both charm a-proton and heavy-ion collisions.

In this contribution, the latest results of the ALICE Collaboration on the production of prompt and non-prompt  $D_s^+$  in pp collisions at  $\sqrt{s} = 5.02$  TeV will be presented. Measurements of their production in pp collisions represent an important test for perturbative QCD calculations and provide information about the fragmentation of heavy quarks to strange heavy-flavour hadrons relative to that of heavy-flavour hadrons without strange-quark content.

The nuclear modification factor ( $R_{AA}$ ) in Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV and azimuthal anisotropy of prompt  $D_s^+$  will be also presented. The first measurement of  $D_s^+$   $R_{AA}$  will also compared to that of prompt  $D_s^+$  and non-prompt  $D^0$  mesons at central rapidity. The production of charm and beauty hadrons with strange-quark content is particularly interesting to study the hadronisation mechanisms of heavy-quarks in the QGP. In fact, if a fraction of heavy quarks hadronise via recombination with light-flavoured quarks in the medium, the production of charm and beauty hadrons with strange-quark content is expected to be enhanced with respect to that of non-strange hadrons, due to the abundant production of (anti)strange quarks in heavy-ion collisions compared to proton-proton (pp) collisions, where an extended QGP formation is not expected. In this context, the production of prompt  $D_s^+$  allows the study of the hadronisation of charm quarks, while that of non-prompt  $D_s^+$  mesons, of which about half originate from  $B_s^0$ -meson decays, is sensitive to the possible enhancement of beauty-strange meson production.

Finally, the expected performance for the measurement of non-prompt  $D_s^+$  mesons and that of  $B_s^0$  mesons with ALICE in the LHC Run 3 and Run 4 will be presented.

### Collaboration

ALICE

**Primary author:** CATALANO, Fabio (Politecnico e INFN Torino (IT))

**Presenter:** CATALANO, Fabio (Politecnico e INFN Torino (IT))

**Session Classification:** Heavy Flavor (Beauty)