

## ALICE Results on Quarkonia and Open Heavy Flavours

ALICE is the LHC experiment dedicated to the heavy-ion physics at the Large Hadron Collider at CERN. Its aim is the study of the QCD matter at high energy densities, where the formation of the Quark-Gluon Plasma (QGP) is expected.

Heavy quarks (charm and beauty) constitute an important probe for QGP studies, since they are created in the hard scattering processes at the initial stages of the collision and their number is conserved in the partonic and hadronic phase of the medium evolution.

The sequential suppression of quarkonia (bound heavy quark-antiquark states) by colour screening has been suggested as a signature and thermometer of the QGP. However the first results in nucleus-nucleus collisions at the LHC suggest that the charmonium production in the QGP could be due to the interplay of the colour screening mechanism and the re(combination) of the abundantly produced  $c$ -bar quark pairs.

The measurement of open heavy flavours provides additional information, giving insight in the mechanisms of in-medium energy loss, propagation and hadronisation of heavy quarks.

Disentangling the medium-induced effects requires an accurate study of the so-called cold nuclear matter effects, which modify the heavy-quark production in proton-nucleus collisions with respect to proton-proton (pp) collisions.

Open heavy-flavour and quarkonium measurements in pp collisions are interesting not only as a reference for nucleus-nucleus and proton-nucleus results, but also because they provide an important test ground for both perturbative and non-perturbative aspects of QCD.

The ALICE experiment measured heavy-flavour and quarkonium production in pp, p-Pb and Pb-Pb collisions at different energies. An overview of the results will be presented, with an emphasis on the most recent results on run-2 data and the latest results from run-1. The comparison with the measurements at different collision energies and with available theoretical calculations will be discussed.

### I intend to submit my contribution for the proceedings

No

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