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Study of quarkonium production in p-A and AA collisions with ALICE at the LHC

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ALICE (A Large Ion Collider Experiment) is devoted to the study of heavy-ion collisions at the CERN Large Hadron Collider (LHC). It is predicted that a deconfined state of hadronic matter, the Quark-Gluon Plasma (QGP), is created at the large energy densities reached in such collisions. The production of heavy quarkonium ($c\bar{c}$ and $b\bar{b}$ bound states) appears modified in the presence of a QGP, if compared to scaled production measurements performed in pp collisions.

Previous measurements at lower energy showed a suppression of quarkonium states, which could be explained by the dissociation of the bound state due to the colour screening in the medium (a phenomenon analogous to the Debye screening for QED). However, the measurements of charmonium ($c\bar{c}$) production performed in Pb-Pb collisions at the LHC reveals the presence of regeneration phenomena occurring in the QGP or at the phase boundary.

The production of $c\bar{c}$ pairs is expected to be lower than the production of $b\bar{b}$ pairs, consequently regeneration phenomena are expected to be much smaller for bottomonia than for charmonia. Hence, the complementary studies of bottomonia and charmonia allow one to better understand the mechanisms affecting the quarkonium production in heavy-ion collisions at LHC energies.

In addition, production of quarkonium states is modified by Cold Nuclear Matter (CNM) effects, which can be estimated by studying p-A collisions.

In ALICE two rapidity ranges are accessible for quarkonium study, namely at mid rapidity ($|\eta_{\text{CMS}}| < 0.9$) in the e^+e^- decay channel and at forward rapidity ($2.5 < \eta_{\text{CMS}} < 4$) in the $\mu^+\mu^-$ decay channel, down to zero transverse momentum.

An overview of the latest ALICE results on Y and J/ψ production, in p-Pb and AA collisions, will be presented. A discussion of the results will be held, comparing the most recent results with previous measurements and theoretical predictions.

Selected session

Since the timetable no available (at least I cannot display it) I have no information to choose. I have no constraints on any of the days of the conference.

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Session Classification: Heavy Ion collisions and QCD phases