

# Quarkonia production in ALICE

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Heavy quarkonium states are expected to provide essential information on the properties of the high-density strongly-interacting system formed in the early stages of heavy-ion collisions. In particular the  $J/\psi$  suppression, in heavy-ion collisions, via color screening mechanism, can be seen as a direct effect of deconfinement. During 25 years, the  $J/\psi$  suppression has been extensively studied at the SPS and at RHIC. It was indeed clearly observed but to a level surprisingly

similar despite the large difference in the center of mass energy at the two accelerators.

At the same time, new mechanisms of  $J/\psi$  regeneration via recombination of charm and anti-charm quarks were also proposed. The measurement of  $J/\psi$  suppression is especially promising at the Large Hadron Collider where the high energy density of the medium and the large number of charm quarks pairs produced in central Pb-Pb collisions should help to disentangle between the different suppression and recombination scenarios.

ALICE is the LHC experiment mainly dedicated to the study of nucleus-nucleus collisions. At forward rapidity ( $2.5 < y < 4$ ), the  $J/\psi$  production is measured in the Muon Spectrometer, via the  $\mu^+ \mu^-$  decay channel, down to zero transverse momentum.

After a brief description of the apparatus, the analysis of the inclusive  $J/\psi$  production in Pb-Pb collisions at a center of mass energy of  $\sqrt{s_{NN}} = 2.76$  TeV will be discussed. Results on the nuclear modification factor ( $R_{AA}$ ) dependence on the collision centrality will be shown.

Thanks to the large statistics collected in 2011, preliminary results on  $R_{AA}$  as a function of transverse momentum and rapidity will also be presented.

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