

Centrality and transverse momentum dependence of J/ψ production in Pb-Pb collisions at $\sqrt{s_{NN}}=5.02$ TeV at mid-rapidity with ALICE

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ALICE at the Large Hadron Collider (LHC) provides unique capabilities to study charmonium production at low transverse momenta. In the early and hottest phase of nucleus-nucleus collisions the formation of a Quark-Gluon Plasma (QGP) is expected. Several QGP induced effects, such as the suppression of charmonium states due to color screening and/or an enhancement due to (re)combination of uncorrelated charm and anti-charm quarks, can play a role. While a suppression of J/ψ with respect to binary-scaled pp collisions was indeed observed in heavy-ion collisions at lower energies, recent measurements in Pb-Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV indicate that (re)combination seems to dominate the J/ψ yield in the low p_T region at LHC energies.

At central rapidity, corresponding to the range $|y| < 0.9$, J/ψ are reconstructed down to zero p_T via their decay into two electrons. This kinematic selection also enables the measurement of coherent J/ψ photo-production at very low transverse momentum, similar to the measurements done in ultra-peripheral collisions, where the nuclei interact only electromagnetically.

In this talk we will present new results on the inclusive J/ψ nuclear modification factor R_{AA} as a function of centrality and transverse momentum in Pb-Pb collisions at $\sqrt{s_{NN}}=5.02$ TeV. In addition we will present the centrality dependent J/ψ photo-production cross-section. The p_T distribution shape and the p_T -integrated yields in the typical region for coherent production will be shown and compared to model expectations.

List of tracks

Heavy-flavour (open and hidden)

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Session Classification: Parallel Heavy flavour

Track Classification: Heavy-flavour (open and hidden)