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$\psi(2S)$ production in Pb-Pb in ALICE

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Charmonium production is a probe sensitive to deconfinement in nucleus-nucleus collisions. The production of J/ψ via regeneration within the QGP or at the phase boundary has been identified as an important ingredient for the description of the observed J/ψ nuclear modification factor at the LHC. The $\psi(2S)$ production relative to J/ψ is a possible discriminator between the two different scenarios. Studies of $\psi(2S)$ production in central nucleus-nucleus collisions at low transverse momentum (p_T) are crucial, in particular at the LHC, where regeneration might be dominant. For the first time, a significant $\psi(2S)$ signal is extracted in such a kinematic region at forward rapidity in the dimuon decay channel. This measurement relies on the recently published $\psi(2S)$ cross section measured in pp collisions at $\sqrt{s_{NN}} = 5.02$ TeV with an unprecedented precision compared to previous ALICE results.

In this contribution, we present newly published results on the $\psi(2S)$ -to- J/ψ (double) ratio and the $\psi(2S)$ nuclear modification factor in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. Results are reported as a function of centrality and p_T in the region $p_T < 12$ GeV/c and are compared to available NA50 and CMS measurements. Comparisons to transport and statistical hadronization model predictions are also provided to shed light on charmonium states recombination mechanism.

Experiment/Theory

ALICE

Affiliation

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Sitzung Einordnung: Parallel: Heavy Flavours & Quarkonia

Track Klassifizierung: Heavy flavor and quarkonia