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ψ(2S) production and nuclear modification factor in nucleus-nucleus collisions with 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 centrality and p_T dependence at the LHC. ψ(2S) production relative to J/ψ is one possible discriminator between the two different regeneration scenarios. At RHIC and at the LHC, there is so far no significant observation of the ψ(2S) in nucleus-nucleus collisions in central events at low transverse momentum, where regeneration is the dominating process. The combined Run 2 data set of ALICE allows to extract a significant ψ(2S) signal in such a kinematic region at forward rapidity in the dimuon decay channel. In this contribution, we present for the first time results on the ψ(2S)-to-J/ψ double ratio and the ψ(2S) nuclear modification factor in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV, calculated with respect to a new pp reference with improved precision. Results are compared with model calculations.

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Online

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