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The exclusive photoproduction and hadronic production of Υ in hadronic heavy-ion collisions

Summary

Recently, significant excesses of J/ψ yield at very low transverse momentum ($p_T < 0.3$ GeV/c) were observed by the ALICE and STAR experiment, which points to evidence of coherent photon products in hadronic heavy-ion collisions (HHICs). Besides, the previous study [PRC 89(2014)025201] shows that the photon-nucleus contribution is increasingly important for heavy quarkonia as the Υ states. Assuming coherent photoproduction is the underlying mechanism for the J/ψ excess, the coherently produced Υ from photoproduction in HHICs cannot be neglected either.

In this talk, I will present the model calculations for $\Upsilon(1S)$ yields in Pb+Pb collisions at the LHC energies considering the coherent, incoherent and hadronic production, and compare the theoretical results with recent measurements from the CMS Collaboration on $\Upsilon(1S)$ production at $\sqrt{s_{NN}} = 2.76$ TeV and 5.02 TeV. Besides, predictions for the next LHC run at 5.5 TeV will also be shown.

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