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Charmonium production measured in PbPb and pp collisions by CMS

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CMS is fully equipped to measure hard probes in the di-muon decay channel in the high multiplicity environment of nucleus-nucleus collisions. Such probes are especially relevant for studying the quark gluon plasma since they are produced at early times and propagate through the medium, mapping its evolution. In particular, the $J\psi$ production in heavy ion collisions has been studied at different energies and with different collision systems without yet giving a global picture that is fully understood. Measuring the charmonium production at the LHC energies in PbPb collisions will help constraining predictions, in particular those expecting high recombination of prompt J/
$jpsi$s or suppression in hot medium. We will review CMS J/\psi measurements in pp collisions at $\sqrt{s_{NN}} =$ 7~TeV, which allow precision studies of quarkonia production and serve as a reference for the observation of hot nuclear effects. CMS is able to distinguish non-prompt J/ψ from prompt J/ψ in PbPb collisions, and will present the prompt J/ψ production cross-section in PbPb inclusively and as a function of transverse momentum, rapidity and number of nucleons participating in the collision. Finally, we compare the B fraction measured in PbPb collisions with that measured in pp at various energies.

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