



Contribution ID: 46

Type: not specified

Charmonium production in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV and $\sqrt{s_{NN}} = 5.02$ TeV measured with ALICE at the LHC

Wednesday 14 September 2016 16:30 (20 minutes)

The production of charmonium states (for instance J/ψ and $\psi(2S)$) is one of the probes studied to investigate the properties of the Quark-Gluon Plasma (QGP) formed in high-energy heavy-ion collisions. Indeed, the presence of a deconfined medium should modify the charmonium production yield, due to the color screening of the charm quark anti-quark potential. Such a suppression was already observed in heavy-ion collisions at SPS and RHIC energies. In Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV at the LHC, a clear suppression of the J/ψ yield with respect to the one measured in binary-scaled pp collisions was observed, but much smaller than that at lower collision energies. This observation can be explained by the presence of a new production mechanism, the recombination of deconfined charm and anti-charm quarks during the hydrodynamical expansion of the QGP or at the hadronization stage. In this presentation, we will report on the results of the charmonium production in Pb-Pb collisions measured with the ALICE detector. In particular, we will focus on the new measurements obtained at $\sqrt{s_{NN}} = 5.02$ TeV for the J/ψ at forward rapidity in the dimuon channel and their comparison with previous measurements at lower energy and model calculations.

Summary

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Session Classification: Wednesday afternoon