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Observation of a J/psi yield enhancement at very low pT in Pb-Pb collisions at 2.76 TeV

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We report on the first measurement of an excess in the yield of J/psi at very low transverse momentum with respect to expectations from hadronic production, performed by ALICE at the LHC in Pb-Pb collisions at 2.76 TeV. Remarkably, the measured nuclear modification factor of J/ψ in the rapidity range 2.5<y<4.0 reaches about 7 (2) for Pb-Pb collisions in the p_{T} range 0-300 MeV/c and in the 70–90% (50–70%) centrality class. The excess is observed at very low p_{T}, below 300 MeV/c, evoking the p_{T} distribution of J/ψ coherent photoproduction measured in ultra peripheral Pb-Pb collisions.
The J/ψ production cross section associated with the observed enhancement in the yield is obtained under the hypothesis that coherent photoproduction is the underlying physics mechanism.
If this hypothesis is confirmed, the observation of J/ψ coherent photo-production in Pb-Pb collisions at impact parameters smaller than twice the nuclear radius opens new theoretical and experimental challenges. Furthermore, such a new quarkonium production mechanism could become a novel probe of the QGP at LHC energies.

On behalf of collaboration:

ALICE

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