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Measurement of an excess in the yield of J/ψ at very low p_T in Pb-Pb collisions at 5.02 TeV with ALICE

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In 2015, the ALICE collaboration reported the first excess in the yield of J/ψ at very low transverse momentum ($p_T < 0.3 \text{ GeV}/c$) in the forward rapidity region ($2.5 < y < 4$) in peripheral Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76 \text{ TeV}$ at the CERN LHC. [1] The coherent photo-production was proposed as the potential underlying physics mechanism. This mechanism is the main responsible for low- p_T J/ψ production in ultra-peripheral collisions but was never observed in more central collisions that are dominated by the hadronic interactions. If the photo-production is confirmed as the origin of the excess, this will open up fundamental questions on the nature of the coherence in collisions with nuclear overlap. Furthermore, the J/ψ from the coherent photo-production could become a new probe of the Quark and Gluon Plasma.

References

[1] ALICE Collaboration, J. Adam et al., "Measurement of an excess in the yield of J/ψ at very low p_T in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76 \text{ TeV}$ ", Phys.Rev.Lett.116(2016) 222301, arXiv:1509.08802 [nucl-ex].

Author: BUGNON, Ophélie

Orateur: BUGNON, Ophélie

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