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Studio della produzione di J/psi e Z in collisioni piombo--piombo a LHC con l'esperimento ATLAS

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Using the ATLAS detector, a centrality-dependent suppression has been observed in the yield of J/psi mesons produced in the collisions of lead ions at the Large Hadron Collider. In a sample of minimum-bias lead-lead collisions at a nucleon-nucleon centre of mass energy $\sqrt{s} = 2.76$ TeV, corresponding to an integrated luminosity of about 6.7 ub^{-1} , J/psi mesons are reconstructed via their decays to $\mu^+\mu^-$ pairs. The measured J/psi yield, normalized to the number of binary nucleon-nucleon collisions, is found to significantly decrease from peripheral to central collisions. The centrality dependence is found to be qualitatively similar to the trends observed at previous, lower energy experiments. The same sample is used to reconstruct Z bosons in the $\mu^+\mu^-$ final state, and a total of 38 candidates are selected in the mass window of 66 to 116 GeV. The relative Z yields as a function of centrality are also presented, although no conclusion can be inferred about their scaling with the number of binary collisions, because of limited statistics. This analysis provides the first results on J/psi and Z production in lead-lead collisions at the LHC.

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