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## J/Psi suppression and elliptic flow measurement in p-Pb collisions

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We present measurements of the charmonium nuclear modification factor and the second-order azimuthal anisotropy Fourier coefficient  $v_2$  of inclusive  $J/\psi$  in p-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  and 8.16 TeV.

The  $J/\psi$  nuclear modification factor, measured as a function of rapidity, transverse momentum and event activity in p-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV has shown a sizeable kinematic dependence within a fair agreement with theoretical models including nuclear shadowing and energy loss. On the contrary, additional mechanisms, related to final state interactions, are needed to describe the stronger suppression observed in the production of the loosely bound  $\psi(2S)$  state in Run-1 data. Preliminary Run-2 results on the charmonia production in p-Pb collisions will be presented and compared to Run-1 results and to theoretical calculations.

The measurement of the inclusive  $J/\psi$   $v_2$  is done via a study of the angular correlations between forward and backward  $J/\psi$  and mid-rapidity charged particles. We observe a strong indication of long-range correlations, reminiscent to the double-ridge structures previously discovered in two-particle correlations at mid and forward rapidity. The corresponding  $v_2$  in the transverse momentum range between 3 and 6 GeV/c are found to be non-zero with various degrees of significance depending on the rapidity and the collision energy. The sizeable measured  $v_2$  at high transverse momentum is comparable to the one already observed in Pb-Pb collisions, suggesting a common mechanism which will be discussed in view of possible implications for the theoretical models of  $J/\psi$  production.

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