

Quarkonium production in proton-nucleus collisions at the LHC

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The study of quarkonium production in proton-nucleus collisions has been widely explored by all LHC experiment and represents a valuable tool in the investigation of cold nuclear matter (CNM) effects in relativistic heavy-ion collisions. Mechanisms such as the modification of the parton distribution functions in nuclei, the presence of a color glass condensate or the coherent energy loss of the $q\bar{q}$ pair in the medium have been employed to describe J/ψ and $\Upsilon(1S)$ production in proton-nucleus collisions. Moreover, final state mechanisms, possibly related to the presence of a dense medium, are required to explain the stronger suppression observed for more loosely bound quarkonium states (i.e. $\psi(2S)$). In addition to quarkonium production studies, p-Pb collisions provide a unique opportunity to explore collectivity in small systems, in particular through the measurement of the J/ψ v_2 , obtained using J/ψ -hadron correlations.

In this presentation the most recent quarkonium measurements in proton-nucleus collisions obtained by the four LHC experiments will be discussed. The results will be given at mid (ALICE, CMS, ATLAS) and forward (ALICE, LHCb) rapidity and as a function of the transverse momentum, centrality and multiplicity.

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