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Recent results on quarkonium suppression in pPb collisions at 8.16 TeV with CMS

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Final-state effects such as interactions with co-moving particles or quark coalescence can influence the hadronization dynamics of heavy quarks in nuclear collisions. To investigate these phenomena, we present new multi-differential measurements of the $\Upsilon(nS)/\Upsilon(1S)$ production ratios as functions of rapidity, transverse momentum, and charged-particle multiplicity in proton-lead (pPb) collisions at $\sqrt{s_{\mathrm{NN}}} = 8.16$ TeV with the CMS detector. These measurements probe higher multiplicities and achieve significantly improved precision compared to previous results at 5.02 TeV, and are further compared with the measurements in pp and PbPb collision systems. By comparing these relative bottomonium production ratios with recently measured $\psi(2S)/J/\psi$ ratios in the same system, we examine whether final-state effects manifest differently for charm and bottom quarks during the system's evolution. The results will provide new constraints on heavy-quark hadronization models in the nuclear collisions.

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