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Constraining nPDFs with electroweak boson measurements in pPb collisions with the CMS detector

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Nuclear parton distribution functions (nPDFs) of quarks and antiquarks affect the production of electroweak bosons in proton-lead (pPb) collisions. In this presentation, the measurements of the neutral Drell-Yan (DY) process and of the W bosons are presented in pPb collision at the center of mass energy of 8.16 TeV with the CMS detector. The rapidity dependence of these processes is particularly sensitive to nPDFs, but further information can be gained by studying the mass dependence of DY production, measured for the first time in pPb collisions at 8.16 TeV, down to 15 GeV. In addition, differential measurements in the dimuon p_T or ϕ^* (an angular variable correlated with p_T measured for the first time in pPb) provide insights on soft gluon emission at low p_T . Comparisons to theory calculations show that these data are sensitive to the presence of nuclear modifications to the parton distributions in the lead nucleus, and can help improve and constrain theoretical calculations.

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