

## Measurements of W boson production in p-Pb collisions at the LHC with ALICE

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ALICE (A Large Ion Collider Experiment) is designed and optimized to study ultra-relativistic heavy-ion collisions, in which a hot and dense, strongly-interacting medium is created. W bosons are produced in hard scattering processes and interact weakly with the medium formed in heavy-ion collisions. Thus, these electroweak bosons are suitable references for processes which are heavily affected by the medium. In proton-nucleus collisions the production of W bosons is suitable to study the modification of parton distribution functions in the nucleus and to test the validity of binary collision scaling. The latter is studied by measuring the yield of W bosons in different intervals of event activity. The production of W bosons is studied in p-Pb collisions at a center-of-mass energy of  $\sqrt{s_{NN}} = 5.02$  TeV with the ALICE muon spectrometer at forward ( $2.03 < y_{\text{cms}}^{\mu} < 3.53$ ) and backward rapidity ( $-4.46 < y_{\text{cms}}^{\mu} < -2.96$ ). The W-boson signal is extracted from the inclusive single muon differential  $p_T$  spectrum. Recent results are discussed, and the measured cross sections are compared to perturbative Quantum Chromodynamics calculations at next-to-leading order.

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