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Measurement of W and Z boson production in 5 TeV pp, p+Pb and Pb+Pb collisions with the ATLAS detector

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W and Z bosons are short lived and do not interact strongly. Thus their production yields, observed via dilepton decay channels in proton-lead and lead-lead collisions, provide direct tests of both binary collision scaling and the nuclear modification of parton distribution functions (nPDF). Proton-lead collisions further provide an excellent opportunity to test nPDFs. The ATLAS detector has a broad acceptance in the muon and electron channels, with excellent performance even in the high occupancy environment of central heavy-ion collisions. ATLAS has recorded 520 μb^{-1} of lead-lead data at the new center-of-mass energy of 5.02 TeV. Weak-boson production yields are expected to increase by a factor of eight relative to the available Run 1 data at 2.76 TeV. In addition the data can be compared directly to the 29 nb $^{-1}$ of proton-lead data collected in Run 1. In this talk, W and Z boson production yields, and lepton charge asymmetries from W decays, are presented differentially in rapidity and transverse momentum as a function of centrality in lead-lead and proton-lead collisions.

Summary

Presentation type

Oral

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