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Measurement of W boson production in Pb+Pb at 5.02 TeV with the ATLAS detector

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The W boson is a short lived particle which does not interact strongly. Thus its production rate measured in lepton decay channels can be compared between lead-lead and proton-proton collisions as a direct test of both binary collision scaling and the possible modification of parton distribution functions (nPDF) due to nuclear effects. The ATLAS detector has recorded 0.49 nb⁻¹ of lead-lead collision data at the center-of-mass energy of 5.02 TeV, where W boson production yield is increased by a factor of eight relative to the available Run 1 data at 2.76 TeV. This study presents W⁺ and W⁻ boson production yields measured differentially in lepton pseudorapidity and as a function of centrality, as well as the pseudorapidity dependence of the lepton charge asymmetry.

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