

Measurement of Longitudinal Single-Spin Asymmetry for W Boson Production in Polarized Proton-Proton Collisions at $\sqrt{s} = 510$ GeV at STAR

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The production of W^\pm bosons in longitudinally polarized $p + p$ collisions at RHIC provides a direct probe for the spin-flavor structure of the proton through the parity-violating single-spin asymmetry, A_L . At STAR, the leptonic decay channel $W \rightarrow e\nu$ can be effectively measured with the electromagnetic calorimeters and time projection chamber. STAR has measured the $A_L(W)$ as a function of the decay-lepton's pseudorapidity from datasets taken in 2011 and 2012, which has provided significant constraints on the helicity-dependent PDFs of \bar{u} and \bar{d} quarks. In 2013 the STAR experiment collected an integrated luminosity of ~ 300 pb⁻¹ at $\sqrt{s} = 510$ GeV with an average beam polarization of $\sim 56\%$, which is more than three times larger than the total integrated luminosity of previous years. The status of the $W A_L$ analysis for the dataset collected in 2013 will be reported.