

**Measurement of longitudinal single-spin asymmetries for W^\pm boson production
in polarized $p + p$ collisions at $\sqrt{s} = 510$ GeV at STAR**

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W^\pm boson production in longitudinally polarized $p + p$ collisions provides unique and clean access to the individual helicity polarizations of u / d quarks and anti-quarks. Due to maximal violation of parity, W bosons couple to left-handed quarks and right-handed anti-quarks and hence offer direct probes of their respective helicity distributions in the nucleon. These can be extracted from measured parity-violating longitudinal single-spin asymmetries, A_L , for $W^{-(+)}$ boson production as a function of decay lepton (positron) pseudo-rapidity η . The STAR experiment is well equipped to measure A_L for $W^{-(+)}$ boson production between $|\eta| < 1$. The published STAR A_L results (combination of 2011 and 2012 data) have been used by several theoretical analyses suggesting a significant impact in constraining the helicity distributions of anti- u and anti- d quarks. In 2013 the STAR experiment has collected a large data sample of $\sim 250 \text{ pb}^{-1}$ which is more than 3 times larger than the total integrated luminosity in 2012, at $\sqrt{s} = 510$ GeV with an average beam polarization of $\sim 54\%$, comparable to run 2012. The status of the 2013 A_L analysis will be discussed along with an overview of future plans.