

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

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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. The STAR experiment is well equipped to measure $W^{-(+)}$ boson production in the electron (positron) decay mode. The published 2012 A_L results from the STAR experiment have been used by several theoretical analyses suggesting a large difference in the helicity distributions of anti- u and anti- d quarks. In 2013 the STAR experiment has collected a large data sample of $\sim 250 \text{ pb}^{-1}$ at $\sqrt{s} = 510$ GeV with an average beam polarization of $\sim 54\%$, which is more than 3 times larger than the total integrated luminosity in 2012. The status of the 2013 A_L analysis will be discussed along with an overview of future plans.