



Contribution ID: 82

Type: **Parallel**

## Measurement of Longitudinal Spin Asymmetries for Weak Boson Production at STAR

*Sunday, August 18, 2019 4:40 PM (20 minutes)*

The production of  $W^\pm$  bosons in longitudinally polarized proton-proton 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-electron'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  $\sim 250 \text{ pb}^{-1}$  at  $\sqrt{s} = 510 \text{ GeV}$  with an average beam polarization of  $\sim 56\%$ , which is more than three times larger than the total integrated luminosity of previous years. The final results from 2013 dataset for  $W$ -boson  $A_L$  as well as for  $Z$ -boson  $A_L$  and  $W$ -boson double-spin asymmetry  $A_{LL}$  will be reported. Also the impacts of STAR data on our knowledge of the sea-quark spin-flavor structure of the proton will be discussed.

**Primary author:** ZHANG, Jinlong (Stony Brook University)

**Presenter:** ZHANG, Jinlong (Stony Brook University)

**Session Classification:** Session 6: QCD and hadron structure

**Track Classification:** Session 6: QCD and hadron structure