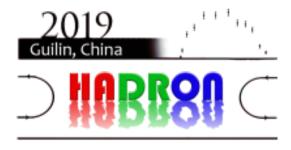
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## Measurement of Longitudinal Spin Asymmetries for Weak Boson Production at STAR

Sunday, 18 August 2019 16:40 (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  $W\to e\nu$  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 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 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.

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