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

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The production of W bosons in longitudinally polarized proton-proton collisions at the Relativistic Heavy Ion Collider (RHIC) provides an ideal tool to study the spin-flavor structure of the proton, through the measurement of the parity-violating single-spin asymmetry, A_L . STAR has measured A_L for W boson production from datasets taken in 2011 and 2012 which provided significant constraints on the helicity distribution functions of \bar{u} and \bar{d} quarks. In 2013 the STAR experiment collected a large data sample of 250 pb^{-1} which is about three times larger than the total integrated luminosity from previous years. The final A_L results from the 2013 STAR data sample will be reported along with the combined results from the 2011–2013 data sets, and the impact of these results on the light sea quark helicity distribution functions.

Author: Dr KRAISHAN, Amani (Temple University)

Presenter: Dr KRAISHAN, Amani (Temple University)

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