

Abstract Submitted  
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**Constraining the Sea Quark Distributions Through  $W^\pm$  Cross Section Ratio Measurements at STAR** MATTHEW POSIK, Temple Univ, STAR COLLABORATION — Over the years, extractions of parton distribution functions (PDFs) have become more precise, however there are still regions where more data are needed to improve constraints. One such distribution is the sea quark distribution near the valence region, in particular the  $\bar{d}/\bar{u}$  distribution. Currently, measurements in the high- $x$  region still have large uncertainties and suggest different trends for this distribution. The charged  $W$  cross section ratio is sensitive to the unpolarized sea quark distributions and could be used to help constrain the  $\bar{d}/\bar{u}$  distribution. Through  $pp$  collisions, the STAR experiment at RHIC, is well equipped to measure the  $e^\pm$  leptonic decays of  $W^\pm$  bosons in the mid-rapidity range ( $|\eta| \leq 1$ ) at  $\sqrt{s} = 500/510$  GeV. At these kinematics STAR is sensitive to quark distributions near Bjorken- $x$  of 0.16. STAR can also extend the sea quark sensitivity to higher  $x$  by measuring the leptonic decays in the forward rapidity range  $1.1 < \eta < 2.0$ . STAR runs from 2011 through 2013 have collected about  $350 \text{ pb}^{-1}$  of data. Presented here are preliminary results for the 2011-2012  $W$  cross section ratios ( $\sim 100 \text{ pb}^{-1}$ ), and an update on the 2013  $W$  cross section analysis ( $\sim 250 \text{ pb}^{-1}$ ).

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