

DIS 2015

XXIII International Workshop on  
Deep-Inelastic Scattering and  
Related Subjects

Dallas, Texas  
April 27 – May 1, 2015



Contribution ID: 137

Type: not specified

## Constraining Sea Quark Distributions Through $W^\pm$ Cross Section Ratios Measured at STAR

*Wednesday, 29 April 2015 11:35 (25 minutes)*

Over the past several years the STAR experiment at RHIC has been contributing to our understanding of the proton structure. Through proton-proton collisions, STAR is well equipped to measure the  $e^\pm$  leptonic decays of  $W^\pm$  bosons in the mid-rapidity region ( $-1.1 \leq \eta \leq 1.1$ ) at  $\sqrt{s} = 500/510$  GeV. The  $W$  cross section ratio ( $W^+/W^-$ ) is sensitive to unpolarized  $u$ ,  $d$ ,  $\bar{u}$ , and  $\bar{d}$  quark distributions. At these kinematics STAR is able to measure the quark distributions near Bjorken- $x$  of 0.1. The RHIC runs in 2012 and 2013 at  $\sqrt{s} = 500/510$  GeV saw a significant increase in delivered luminosity from previous years. This resulted in using data samples of about 80 and 250  $\text{pb}^{-1}$  of integrated luminosity, respectively. The increased statistics will lead to a higher precision measurement of the  $W^+/W^-$  cross section ratio as well as its  $\eta$  dependence at mid-rapidity. Presented here is an update of the  $W$  cross section ratio analysis from the STAR 2012 and 2013 runs.

**Primary author:** Dr POSIK, Matthew (Temple University)

**Presenter:** Dr POSIK, Matthew (Temple University)

**Session Classification:** WG1 Structure Functions and Parton Densities

**Track Classification:** WG1 Structure Functions and Parton Densities