

Abstract Submitted  
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**$W^\pm$  Boson Production Measurement at Mid-rapidity in the PHENIX Experiment** MIKHAIL STEPANOV, University of Massachusetts, Amherst, PHENIX COLLABORATION — The measurement of  $W^\pm$  production provides an important probe of the flavor-separated quark and antiquark helicity distributions in the proton. At mid-rapidity,  $|\eta| \leq 0.35$ , using the PHENIX central arm detectors we observe  $W^\pm$  boson decays through  $e^\pm$  channels in polarized  $p + p$  collisions at RHIC. In 2011, in 500 GeV  $p + p$  collisions, PHENIX recorded data with an improved beam polarization and increased integrated luminosity in comparison with the previous 2009 data set: the beam polarization was 48% and the integrated luminosity was  $16.7 \text{ pb}^{-1}$ . After the silicon VTX detector was installed in 2011, which led to an increased background from conversion in additional material, a supplementary analysis technique was developed to extract the signal. In 2012, PHENIX collected approximately  $30 \text{ pb}^{-1}$  of polarized  $p + p$  collisions at  $\sqrt{s} = 510 \text{ GeV}$  with the beam polarization of 52%; the silicon VTX detector was fully operational in 2012 and is ready to be used in the data analysis. The progress on extracting  $W$ -decay  $e^\pm$  single spin asymmetries using the 2011 and 2012 data sets will be presented.

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