

W Boson Production in Polarized p+p Collisions at RHIC

The production of W bosons in longitudinally polarized p+p collisions at RHIC provides a new means of studying the spin-flavor asymmetries of the proton sea quark distributions. W bosons are produced in $\bar{u}d(\bar{d}u)$ collisions and can be detected through their leptonic decays where only the charged lepton is detected. Precise tracking information, provided by the STAR Time Projection Chamber (TPC) at mid-rapidity, allows for a determination of the charge sign of the high pT $e^{-(+)}$. The large acceptance of the TPC and Electromagnetic Calorimeters is well suited to place isolation requirements on the $e^{-(+)}$ and to veto on the away side energy, which reduces the large QCD background by several orders of magnitude, yielding a clean W signal. Preliminary results for the W production cross section and parity-violating single-spin asymmetry A_L from the STAR Collaborations 2009 data at $\sqrt{s} = 500$ GeV, as well as future projections of the STAR W spin program at mid-rapidity and forward rapidity, will be presented.

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