

# Double Longitudinal Spin Asymmetries of Inclusive Charged Pion Production in Polarized p+p Collisions at 200 GeV

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A primary goal of the STAR Spin program at RHIC is the measurement of the polarized gluon distribution function  $\Delta G$ , which can be obtained from a global analysis incorporating measurements of the double spin asymmetry  $A_{LL}$  in various final state channels of polarized p+p collisions. Final states with large production cross sections such as inclusive jet and hadron production are analyzed as the program moves towards the measurement of  $A_{LL}$  in the theoretically clean channel of prompt photon production. The channels  $p+p \rightarrow \pi^{+/-} + X$  are unique in that the ordering of the measurements of  $A_{LL}$  in these two channels is sensitive to the sign of  $\Delta G$ . Moreover, STAR has already established the procedure for the identification of charged pions and the calculation of their production cross-sections over a broad kinematic range.

This contribution will present first measurements of double longitudinal spin asymmetries for inclusive charged pion production extracted from  $3 \text{ pb}^{-1}$  of data at  $\sqrt{s}=200 \text{ GeV}$  and 50% beam polarizations. The asymmetries are calculated over the transverse momentum region  $2 < p_T < 10 \text{ GeV}/c$  and compared with theoretical predictions incorporating several gluon polarization scenarios. A systematic bias introduced by the selection of charged pions from events satisfying electromagnetic energy triggers will be discussed and estimated using Monte Carlo.