

Inclusive π^0 Production in Polarized pp Collisions Using the STAR Endcap Calorimeter

Jason C. Webb, for the STAR Collaboration

*Valparaiso University
Neils Science Center
1610 Campus Drive East
Valparaiso, Indiana 46383 USA*

The two-spin helicity asymmetry for inclusive π^0 production in polarized proton-proton collisions probes the gluon's contribution to the spin of the nucleon with sensitivity comparable to that attainable with full jet reconstruction¹. Measurements of $A_{LL}(\pi^0)$ at larger rapidity provide information about a different mix of partonic subprocesses and are subject to different theoretical and experimental uncertainties than midrapidity jet measurements. The STAR Endcap Electromagnetic calorimeter² provides the capability to reconstruct high- p_T π^0 decays over a pseudorapidity range $1 < \eta < 2$, with full azimuthal coverage, utilizing a fine-grained Shower-Maximum detector to reconstruct the position and energy sharing of the daughter photons. Data with longitudinally polarized beams were accumulated in 2005 (sampled luminosity of 3 pb^{-1} with beam polarizations $\approx 45\text{-}50\%$) and in 2006 (sampled luminosity approx 6 pb^{-1} with beam polarizations $\approx 60\%$) following the installation of additional shielding to reduce beam-related backgrounds. We present preliminary results from the 2005 data and report the current status of the 2006 analysis.

¹ B. Jager, M. Stratmann and W. Vogelsang, Phys. Rev. D **70**, 034010 (2004) [arXiv:hep-ph/0404057].

² K. H. Ackermann *et al.* [STAR Collaboration], Nucl. Instrum. Meth. A **499**, 624 (2003).