

## Single muon production in transversely polarized p+p collisions at $\sqrt{s}=200$ GeV in the PHENIX experiment"

Hideyuki Kobayashi (for the PHENIX Collaboration)  
RIKEN BNL Research Center

The PHENIX experiment at RHIC has accumulated transversely polarized proton proton collision data at  $\sqrt{s}=200$  GeV during the second period of RHIC operation in 2001 and 2002 (RHIC Run2). The south muon arm (one of the two PHENIX muon detectors) has been operational during Run2 for the first time. Many single muon and dimuon events have been observed. Single muon production is dominated by pion and kaon (light quark hadron) decays but it also contains contributions from heavy flavor productions.

It is interesting to look at the transverse spin asymmetry ( $A_N$ ) of the light quark hadron production because (1) the transverse spin dependent parton distribution ( $\Delta q$ ) has never been measured and (2) a spin dependent fragmentation process (Collins effect) may contribute to form the spin asymmetry  $A_N$ .

Selecting events with a high transverse momentum muon ( $p_T > 2$  GeV) should enhance the signal of the contribution from heavy quark hadrons. Events with heavy quark hadrons are expected to be more sensitive to the gluon distribution in the proton, allowing us to measure the spin dependent gluon distribution.

The single muon production by the PHENIX south muon detector will be reported and feature of subsequent transverse spin asymmetry analysis will be discussed.