

# **$k_T$ Asymmetry in Longitudinally Polarized pp Collisions at PHENIX**

Douglas Fields *for the PHENIX Collaboration*

*University of New Mexico/RBRC*

Researchers in the PHENIX experiment at RHIC have developed a method for measuring the average net pair transverse momentum of hard scattered jets at central rapidity. The method is based on the azimuthal correlation between a leading high  $p_T$  neutral pion and another charged hadron. The widths of the resulting near- and far-side peaks can then be related to the fragmentation transverse momentum,  $j_T$  (the transverse momentum of the fragmented hadron relative to the hard-scattered parton) and the net pair transverse momentum,  $k_T$ . The net pair transverse momentum can be produced from parton intrinsic transverse momentum inside the proton, from soft gluon emission, or from next-to-leading order processes of the perturbative QCD. In addition, one could consider the possibility that spin-correlated transverse momentum (orbital angular momentum) may contribute to  $k_T$ . Spin-dependent parton transverse momentum adds to  $k_T$  an amount dependent upon the helicity combination of the colliding protons, and upon the impact parameter of the collision. However, integration over impact parameter should leave a residual effect that is dependent only on the helicity combination, a signal that is examined in the present data from past RHIC runs.