

Abstract for an Invited Paper
for the HAW09 Meeting of
The American Physical Society

Transverse Spin Measurements at RHIC

MATTHIAS GROSSE PERDEKAMP, University of Illinois, Urbana Champaign

Large single transverse spin asymmetries, A_N , for inclusive hadron production were first observed by the E704 collaboration at Fermi National Laboratory in polarized proton-proton collisions at a center of mass energy of $\sqrt{s} = 20$ GeV. Different mechanisms have been suggested to explain the origin of large single transverse spin asymmetries in hard scattering processes: Collins has shown that correlations between transverse quark spin and transverse hadron momentum in the final state hadron fragmentation process can give rise to single transverse spin asymmetries. Alternatively, Sivers has identified correlations between the initial state transverse proton spin and the intrinsic transverse momentum of quarks as possible source for the observed single spin asymmetries. At RHIC large A_N for inclusive hadrons have been observed to persist at center of mass energies of 62.4 GeV and 200 GeV. In addition to precise measurements of A_N for inclusive hadrons new ideas have been explored to explicitly separate single spin asymmetries from the Collins and Sivers mechanisms through measurements at RHIC. Examples include Sivers asymmetries in back-to-back correlation of opposing jet hemispheres, Sivers asymmetries in Drell Yan and jet-photon production and Collins- like asymmetries in di-hadron interference fragmentation. Present status and future plans based on increased luminosity and detector upgrades at RHIC will be presented.