



Avviso di Seminario

Martedì 28 Giugno 2005
h. 11:00 – Aula B

Dr. Alexei Prokudin
INFN – Sezione di Torino

The role of Cahn and Sivers effects in Deep Inelastic Scattering

The role of intrinsic k_T in inclusive and semi-inclusive Deep Inelastic Scattering processes ($\ell p \rightarrow \ell h X$) is studied with exact kinematics within QCD parton model at leading order; the dependence of the unpolarized cross section on the azimuthal angle between the leptonic and the hadron production plane (Cahn effect) is compared with data and used to estimate the average values of k_T both in quark distribution and fragmentation functions. The resulting picture is applied to the description of the weighted single spin asymmetry $A_{UT}^{\sin(\phi_\pi - \phi_S)}$ recently measured by the HERMES collaboration at DESY; this allows to extract some simple models for the quark Sivers functions. These are compared with the Sivers functions which succeed in describing the data on single transverse spin asymmetries in $p^\uparrow p \rightarrow \pi X$ processes; the two sets of functions might be consistent. The extracted Sivers functions give predictions for the COMPASS measurement of $A_{UT}^{\sin(\phi_\pi - \phi_S)}$ in agreement with recent preliminary data, while their contribution to HERMES $A_{UL}^{\sin\phi_\pi}$ is computed and found to be small. Predictions for $A_{UT}^{\sin(\phi_K - \phi_S)}$ for kaon production at HERMES are also given.

