Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

Dilepton production near partonic threshold in transversely polarized $\bar{p}p$ scatterings HIROSHI YOKOYA, Niigata University, HIROTAKA SHIMIZU, Hiroshima University & KEK, GEORGE STERMAN, SUNY, WERNER VOGELSANG, BNL & RIKEN BNL Research Center — Recently, it has been suggested that collisions of transversely polarized protons and antiprotons at the GSI could be used to determine the nucleon's transversity densities from measurements of the double-spin asymmetry for the Drell-Yan process. We investigate the QCD higher-order corrections, in this kinematic regime, in terms of available fixed-order contributions as well as of all-order soft-gluon resummations. We find these corrections are large, especially at large invariant mass regions. We examine the resummation formula with physically motivated cut-off which keep it away from the region where non-peturbative dynamics take place. We find that this reduce the large enhancements, moderately at lower scale collision, but rather at higher scale collisions. The unpolarized dilepton cross section for the GSI kinematics may therefore provide information on the relation of perturbative and nonperturbative dynamics in hadronic scattering. The spin asymmetry turns out to be rather robust, relatively insensitive to higher orders, resummation, and the cut-offs.

Hiroshi Yokoya
Niigata University

Date submitted: 25 May 2005 Electronic form version 1.4