乞掲示

理化学研究所原子核セミナー　*2005. 8. 8*

講師 ： **Mr. Kazuya Aoki and Mr. Kohei Shoji**
(Kyoto University)

題目 ： Trigger Upgrade for high momentum muons to study the spin-flavor structure of the proton at RHIC-PHENIX.

∗ The seminar will be given in *English.*

日時 ： 2005 年 8 月 8 日 (Mon.)　14:00 –

場所 ： RIKEN Main Bldg. 2F Seminar Room

Abstract

One of the major goals of RHIC-PHENIX experiment is to deepen our understanding of the spin structure of the proton. Although proton is one of the very fundamental particles, its structure, especially the spin structure, is largely unknown. Proton has spin 1/2 and it was thought that quarks, which are the constituents of the protons, are responsible for the proton's spin. But in 80's EMC experiment has discovered that quarks carry only $\sim 30\%$ of the proton's spin. It has been suggested that gluons, which "glue" quarks and make up a proton, together with the orbital angular momentum can explain the rest of the proton's spin. The EMC result also implied that sea the quarks, which has been thought to have no quantum number, might have spin contributions to proton.

We are going to measure the sea quark contributions separately in a clear way for the first time. It can be done by measuring the parity violating single spin asymmetry of W boson production in polarized pp collisions. PHENIX has two muon arms in the forward region ($1.2 < |\eta| < 2.4$) which has the ability to detect W boson production through decay muons. But we need a trigger to select W events. Without it we loose most of the precious signals and the measurement would be impossible. High momentum muons ($P_T > 20$ GeV/c) are dominated by W boson decay thus momentum selection would make suitable trigger algorithm for this case.

K.Aoki will talk about the method to measure the sea quark spin contribution, the idea of the trigger upgrade of the PHENIX muon arms. K. Shoji will talk about the current status of the development of the triggering device.

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