RHIC pC CNI Polarimeter: Status and Performance from the First Collider Run

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The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL) started its operation for the first polarized pp collisions in December, 2001. Fast and reliable measurements of the proton beam polarization is the primaxy key for the success in the RHIC spin project. The pC Coulomb Nuclear Interference (CNI) polarimeters have been developed for these measurements. During the run 2001-2002 they were put into practical use, after the experience from the successful commissioning in 2000.

The setup included silicon strip detectors, and the ultra thin carbon ribbon targets in both RHIC rings and a fast electronics system based on a special Wave Form Digitizer module (WFD) enabling us to measure the physics asymmetry within a minute without dead-time. These obtained asymmetries were immediately distributed to the physics experiments. The first statistically significant asymmetries at proton energy of 100GeV were observed at the very beginning of run period. Started by this big event, the regular measurements were carried out at every beam injection to RHIC ring (24GeV) and several times on the flat-top after acceleration to 100CeV in both rings for each fill. Throughout the run period, the pC CNI polarimeters were working beautifully and nearly a thousand polarization measurements were successfully taken. General status and performance of the pC CNI polarimeter will be presented and the off-line analysis results will be discussed.