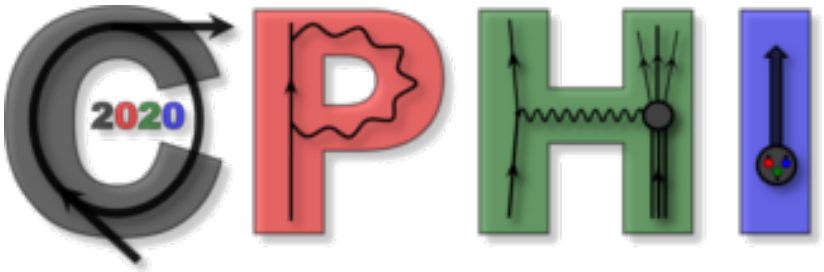

Contribution ID: **54** Type: **not specified**

Transverse Single Spin Asymmetries in the $pp \to p\pi^0 X$ Process at STAR

Tuesday 4 February 2020 10:15 (25 minutes)

A significant sample of $pp \to p\pi^0 X$ events has been observed at STAR in $\sqrt{s} = 200$ GeV transversely polarized pp collisions, with an isolated π^0 detected in the forward pseudorapidity range $2.65 < \eta < 3.9$, along with the forward-going proton p, which scatters near the beamline into Roman Pot detectors. The sum of the π^0 and the scattered proton energies is consistent with the incident proton energy of 100 GeV, indicating that no further particles are produced in this direction. It is postulated that the forward incident proton may have fluctuated into a $p + \pi^0$ system, with the π^0 angular momentum correlated with the initial proton spin. The $p + \pi^0$ system scatters off the other beam proton and separates such that the π^0 has a transverse momentum of $\sim$2 GeV/c and the proton has a transverse momentum of $\sim$0.2 GeV/c. The other beam proton shatters into the remnant particles X, all in the backward direction. Correlations between the π^0 and scattered proton will be presented, along with single spin asymmetries which depend on the azimuthal angles of both the pion and the proton. This is the first time that spin asymmetries have been explored for this process, and a model to explain their azimuthal dependence is needed.

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