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Transverse Single Spin Asymmetries of charged hadrons at forward and backward rapidity from $p^\uparrow + p$, $p^\uparrow + \text{Al}$, and $p^\uparrow + \text{Au}$ collisions in PHENIX

Tuesday 28 March 2023 16:30 (20 minutes)

Transverse Single Spin Asymmetries (TSSAs) in transversely polarized proton-proton collisions ($p^\uparrow + p$) have been a fruitful source for studying the spin structure of the proton. In the 2015 RHIC data taking periods, collisions of polarized protons with nuclei ($p^\uparrow + A$) were studied for the first time. The measurements of TSSAs in $p^\uparrow + p$ and $p^\uparrow + A$ collisions can provide a unique opportunity to investigate the origin of TSSA in gluon-rich target nuclei and provide a tool to study nuclear effects in $p + A$ collisions. This presentation will report PHENIX results of TSSAs for charged hadrons (h^\pm) at forward and backward rapidity ($1.4 < |\eta| < 2.4$) over the transverse momentum range $1.25 < p_T < 7.0 \text{ GeV}/c$ and Feynman- x range ($-0.2 < x_F < 0.2$) from $p^\uparrow + p$, $p^\uparrow + \text{Al}$, and $p^\uparrow + \text{Au}$ collisions at $\sqrt{s_{NN}} = 200 \text{ GeV}$.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

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