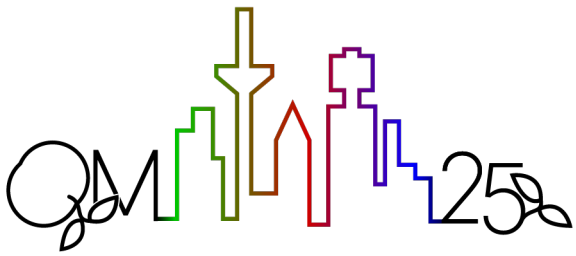

Contribution ID: **865** Type: **Oral**

Measurement of $\Lambda\,\bar{\Lambda}$ spin correlation in proton-proton collisions at STAR

Monday 7 April 2025 17:20 (20 minutes)

Approximately fifty years ago, the polarization of Λ hyperons produced in unpolarized proton-beryllium collisions was discovered, though the origin of this phenomenon remains elusive. Many studies indicate that final-state effects, particularly from hadronization, play a significant role. Recently, it has been proposed that spin correlations of Λ hyperons could provide insight into the underlying mechanisms of Λ polarization. In this talk, we report the first experimental measurements of $\Lambda\bar{\Lambda}$, $\Lambda\Lambda$, and $\bar{\Lambda}\bar{\Lambda}$ spin-spin correlations in p+p collisions at $\sqrt{s} = 200$ GeV, as recorded by the STAR experiment in 2012. Both short-range ($|\Delta y| < 0.5$ and $|\Delta\phi| < \pi/3$) and long-range ($0.5 < |\Delta y| < 2.0$, or $\pi/3 < |\Delta\phi| < \pi$) Λ hyperon pairs were measured. We will discuss the implications of the measured spin-spin correlations in relation to the longstanding puzzle of Λ hyperon polarization, offering new insights into the hadronization of strange quarks.

Category

Experiment

Collaboration (if applicable)

STAR

Author: VANEK, Jan (Brookhaven National Laboratory)

Presenter: VANEK, Jan (Brookhaven National Laboratory)

Session Classification: Parallel session 1

Track Classification: Chirality