

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

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Approximately fifty years ago, the polarization of  $\Lambda$  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  $\Lambda$  hyperons could provide insight into the underlying mechanisms of  $\Lambda$  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  $\pi/3 < |\Delta\phi| < \pi$ )  $\Lambda$  hyperon pairs were measured. We will discuss the implications of the measured spin-spin correlations in relation to the longstanding puzzle of  $\Lambda$  hyperon polarization, offering new insights into the hadronization of strange quarks.