

Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

A search for the magnetic field in the QGP by STAR JOSEPH ADAMS, Ohio State University, STAR COLLABORATION — Lambda polarization $\bar{P}_{\Lambda/\bar{\Lambda}}$ was measured by the STAR collaboration, confirming the existence of extremely large vorticities within the Quark Gluon Plasma (QGP). Additionally suggested is an enhanced $\bar{P}_{\bar{\Lambda}}$ relative to \bar{P}_{Λ} across all beam energies; however, the statistics are too limited to make a significant measurement. No such splitting is observed in the high-statistics $\sqrt{s_{\text{NN}}} = 200$ GeV data set, but this splitting is expected increase at lower beam energies. Such a splitting in polarization would be consistent with the effects of hyperon magnetic-moment coupling with the magnetic field sustained in the QGP; it would have far-reaching consequences important to magnetic-field-dependent observables such as the chiral magnetic effect and would set the scale on the conductivity of the QGP. Recently, STAR has taken a high-statistics data set at $\sqrt{s_{\text{NN}}} = 27$ GeV which is considered suitable to study the splitting between \bar{P}_{Λ} and $\bar{P}_{\bar{\Lambda}}$ since it includes the recently installed Event-Plane Detector (EPD), leading to a significantly increased event-plane resolution. We will present the measurement of this splitting and discuss its implications.

Joseph Adams
Ohio State University

Date submitted: 01 Jul 2019

Electronic form version 1.4