

“STAR Measurement of  $\Lambda$ -p Correlation in Search for the Chiral Vortical Effect in Au+Au Collisions at  $\sqrt{s_{\text{NN}}} = 27$  GeV”, Brian Chan, UCLA, for the STAR Collaboration

## 1 Abstract

Quantum Chromodynamics (QCD) allows for the formation of parity-odd domains inside the Quark-Gluon Plasma (QGP). The proposed Chiral Magnetic Effect (CME) is supposed to lead to charge separation along the direction of magnetic field created by spectator protons in the collision. Analogous to CME, theoretical calculations of the Chiral Vortical Effect (CVE) predict a difference in baryon-baryon versus baryon-antibaryon correlations along the direction of the vorticity. We will present the current status of measurements of  $\Lambda$ -proton azimuthal correlations in Au+Au collisions at  $\sqrt{s_{\text{NN}}} = 27$  GeV collected in 2018 with STAR detector to investigate the CVE predictions. Specifically, the  $\gamma_{112} = \langle \cos(\phi_1 + \phi_2 - 2\Psi_{\text{RP}}) \rangle$  correlator is used to detect the signal of CVE, while  $\gamma_{132} = \langle \cos(\phi_1 - 3\phi_2 + 2\Psi_{\text{RP}}) \rangle$  is used to model the background. We will also show the corresponding  $\gamma$  correlator normalized by the expected flow background, which facilitates comparison with various models and across different colliding systems. The physics implications of our measurements will be discussed.