

[Poster] Searching for the chiral magnetic effect using the back-to-back opposite-sign pair observable in STAR

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Abstract

The chiral magnetic effect (CME) is extensively studied in heavy-ion collisions at RHIC and LHC. In the commonly used $\Delta\gamma$ observable, both the close pairs and the back-to-back pairs are included. Many backgrounds contribute to the close pairs (e.g. resonance decays, jet correlations), whereas the back-to-back pairs are relatively free of those backgrounds. Thus, in this poster, we use a new observable which only focuses on the back-to-back pairs, namely, the relative back-to-back opposite-sign (OS) over same-sign (SS) pair excess as a function of the pair azimuthal orientation with respect to the harmonic plane. We use a toy model and AMPT simulations to demonstrate its sensitivity to the CME and insensitivity to backgrounds. We report results from the analysis applying this observable to the STAR Au+Au data at $\sqrt{s_{\text{NN}}} = 200$ GeV.

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