

Chiral Magnetic Effect search from isobar running at RHIC

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Abstract

Finding the experimental signatures of the local CP violation in the strong interaction is one of the major interests in high-energy physics. Chiral Magnetic Effect (CME) is predicted to occur in the heavy-ion collisions. Although some non-zero results of CME sensitive observables have been obtained at both RHIC and LHC energies in the past decades, search for conclusive evidence of CME is still ongoing, which requires careful consideration of the charge-dependent backgrounds.

Recently, the STAR experiment has reported the latest studies [1, 2] at $\sqrt{s_{NN}} = 200$ GeV with two isobaric collision systems, $^{96}_{44}\text{Ru} + ^{96}_{44}\text{Ru}$ and $^{96}_{40}\text{Zr} + ^{96}_{40}\text{Zr}$. A blind analysis has been applied to minimize the possible unconscious bias. In this talk, we will present the findings from the isobar blind analysis. Some future outlooks will be briefly discussed.

References

- [1] J. Adam, et al. STAR Collaboration, Methods for a blind analysis of isobar data collected by the STAR collaboration. *Nuclear Science and Techniques*, **32**, 48 (2021)
- [2] J. Adam, et al. STAR Collaboration, Search for the Chiral Magnetic Effect with Isobar Collisions at $\sqrt{s_{NN}} = 200$ GeV by the STAR Collaboration at RHIC, *Physical Review C*, **105**, 014901 (2021).