Contribution ID: **208** Type: **Talk**

Investigating the CME in isobaric ($^{96}_{44}Ru$+$^{96}_{44}Ru$ and $^{96}_{40}Zr$+$^{96}_{40}Zr$) collisions at $\sqrt{s_{\rm NN}}$ = 200 GeV using Sliding Dumbbell Method with the STAR detector at RHIC

Tuesday 3 September 2024 17:45 (20 minutes)

The chiral imbalance, coupled with the presence of a strong magnetic field produced during heavy-ion collisions, results in charge separation along the magnetic field axis, a phenomenon known as the Chiral Magnetic Effect (CME). A novel technique, the Sliding Dumbbell Method (SDM) [1, 2] has been developed to investigate the CME with the RHIC's isobar program. The SDM facilitates the selection of events corresponding to various charge separations (f_{DbCS}) across the dumbbell. A partitioning of the charge separation distributions for each collision centrality into ten percentile bins is done in order to find potential CME-like events corresponding to the highest charge separation across the dumbbell. The study reports the results on CME sensitive γ-correlator ($\gamma = \langle\cos(\phi_a + \phi_b - 2\Psi_{RP})\rangle$) and δ-correlator ($\delta = \langle\cos(\phi_a - \phi_b)\rangle$) for each bin of f_{DbCS} in each collision centrality for isobaric collisions (Ru+Ru and Zr+Zr) at $\sqrt{s_{\rm NN}} = 200$ GeV measured with the STAR detector. Furthermore, the background scaled ratio ($\Delta\gamma_{Ru/Zr}/\Delta\gamma_{Bkg}$) will be presented to check for the expected enhancement of the CME in Ru+Ru collisions as compared to Zr+Zr collisions. Overall, this research aims to understand and detect the CME through an innovative experimental method.

References:

[1] J. Singh, A. Attri, and M. M. Aggarwal, Proceedings of the DAE Symp. on Nucl. Phys. 64, 830 (2019).
[2] J. Singh (for STAR Collaboration), Springer Proc. Phys. 304, 464 (2024).

Internet talk

Yes

Is this an abstract from experimental collaboration?

Yes

Name of experiment and experimental site

STAR Experiment at RHIC

Is the speaker for that presentation defined?

Yes

Details

Jagbir Singh (for the STAR Collaboration), Postdoctoral Fellow, Instituto de Alta Investigacion, Universidad de Tarapaca, Arica, Chile

Author: SINGH, Jagbir

Presenter: SINGH, Jagbir

Session Classification: Heavy Ion Collisions and Critical Phenomena

Track Classification: Main topics: Heavy Ion Collisions and Critical Phenomena