Contribution ID: **560** Type: **Poster Presentation**

Systematic Searches of CMW from Heavy-Ion Collisions at STAR

Monday 4 November 2019 17:40 (20 minutes)

The Chiral Magnetic Wave (CMW) was predicted to arise from the interplay of the chiral magnetic effect and the chiral separation effect, which can lead to the formation of electric quadrupole moment in heavy-ion collisions. This electric quadrupole moment can produce charge asymmetry dependence of the elliptic flow (v_2) for charged particles: $v_2(\pm) - v_2(\mp) = \mp r_2 \times A_{\rm ch}$, where $r_2 = \frac{q_e}{\hat{\rho}_e}$.

In this poster, we will present the STAR measurements of the slope parameter (r_2) from different colliding systems: Au+Au at 200, 54.4 and 27 GeV, Cu+Cu and Cu+Au at 200 GeV. Two approaches, Q-Cumulant ($v_2\{2\}$ and $v_2\{4\}$) and event-plane ($v_2(EP)$) methods, are used to measure v_2 of $\pi^{\pm}$ at low transverse momenta in order to evaluate the non-flow contributions in the v_2 measurement. $v_2\{2\}$ and $v_2(EP)$ with pseudorapidity gaps can reduce the short-range non-flow contributions. $v_2\{4\}$ can suppress non-flow contributions and is believed to be more sensitive to the reaction plane (and hence the magnetic field). Thus $v_2\{4\}$ can be more sensitive to the CMW dynamics. The centrality dependence of r_2 will be compared across different collision systems and beam energies. Physics implications on the search of the CMW and the background dynamics from our systematic studies will be discussed.

Author: Ms SERGEEVA, Maria (UCLA)

Presenter: Ms SERGEEVA, Maria (UCLA)

Session Classification: Poster Session

Track Classification: Chirality, vorticity and spin polarization