



Contribution ID: 692

Type: Contributed Talk

Charge asymmetry dependency of π/K anisotropic flow in U+U and Au+Au collisions at STAR

Tuesday 20 May 2014 10:00 (20 minutes)

Theoretical studies [1] indicate that in relativistic heavy collisions a chiral magnetic wave at finite baryon density could induce an electric quadrupole moment, which will lead to a difference in elliptic flow of hadrons with opposite charge. The magnitude of this difference is predicted to be proportional to the charge asymmetry A_{ch} , defined as $A_{ch} \equiv \langle (N_+ - N_-) / (N_+ + N_-) \rangle$. Charge-asymmetry dependency of the pion elliptic flow has been observed in Au+Au collisions at the STAR experiment. On the other hand, it is argued that the local charge conservation at freeze-out, together with the characteristic shape of $v_2(\eta)$ and $v_2(p_T)$, may also contribute to elliptic flow splitting as a function of A_{ch} . This can be manifested by implementing the corresponding measurement for higher flow harmonics v_3 [2].

Here, we present STAR's measurements of v_2 and v_3 for charged pions and kaons at low transverse momentum range ($0.15 < p_T < 0.5$ GeV/c), as a function of event charge asymmetry (A_{ch}) in both U+U collisions at $\sqrt{s_{NN}} = 193$ GeV and Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. Our measurements for both collision systems serve as important consistency checks for the phenomena suggested as the consequence of the chiral magnetic wave.

[1] Burnier Y, Kharzeev D E, Liao J and Yee H U 2011 *Phys.Rev.Lett* **107** 052303

[2] Bzdak A and Bozek P 2013 *PhysicsLettersB* **726** 239-243

On behalf of collaboration:

STAR

Author: SHOU, Qi-Ye (SINAP, BNL)

Presenter: SHOU, Qi-Ye (SINAP, BNL)

Session Classification: QCD phase diagram

Track Classification: QCD Phase Diagram