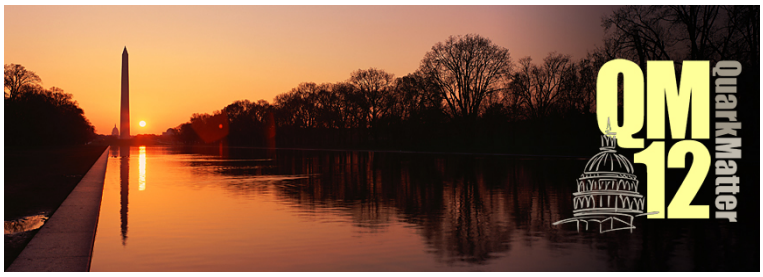

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Systematic Investigation of Partonic Collectivity through Centrality Dependence of Elliptic Flow of Multi-strange Hadrons in Au+Au collisions at 200 GeV in STAR

Wednesday 15 August 2012 10:10 (20 minutes)

One of the main goals of the STAR experiment at Relativistic Heavy Ion Collider (RHIC) is to study the properties of the QCD matter at extremely high energy and parton densities, created in the heavy-ion collisions. Understanding the partonic collectivity through the measurement of elliptic flow (v_2) of multi-strange hadrons (ϕ, Ξ and Ω) is believed to be a sensitive way to characterize the system created in the heavy-ion collisions. Multi-strange hadrons freeze-out close to the quark-hadron transition temperature predicted by lattice QCD. They also have small hadronic interaction cross sections. Hence, the multi-strange hadrons are expected to provide information from the partonic stage of the evolution in heavy-ion collisions. Furthermore, the multi-strange hadron anisotropic flow in heavy-ion collisions when compared to those from K^0_s and Λ, single strange valence quark carrying hadrons, will be useful for understanding the collective dynamics of the strange quarks.

In this presentation we will present the new results of elliptic flow of multi-strange hadrons (ϕ, Ξ and Ω) in Au+Au collisions at$\sqrt{s_{NN}}$= 200 GeV, using a high statistics data set collected in 2010 by the STAR experiment. Centrality dependence measurements of multi-strange hadron elliptic flow allow systematic investigation on how partonic collectivity is developed across different sizes of collision system. These results will be compared with the elliptic flow measurements of light hadrons $\pi^{\pm}$, $K^{\pm}$, $p(\bar{p})$, K^0_S and $\Lambda(\bar{\Lambda})$. The centrality evolution of the number of quark scaling of v_2 at the intermediate p_T will be presented. The effect of re-scattering at the late hadronic stage on elliptic flow will be addressed using the ϕ and p v_2 measurements at the low transverse momentum (p_T).

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