

SYSTEM SIZE DEPENDENCE OF STRANGE HADRON ELLIPTIC FLOW FROM 200 GEV AU+AU and CU+CU COLLISIONS

Y. Lu^a for STAR collaboration

^aDept. of Modern Physics, USTC,
Hefei, Anhui, 230026, China, *luyan@ustc.edu.cn*

Collective flow reflects dynamical evolution in high-energy heavy ion collisions. In particular, the elliptic flow reflects early collision dynamics [1]. In Au+Au collisions at RHIC, two important insights have been extracted through the collective flow measurements: (i) the v_2 for all measured hadrons at low p_T region behave similar to the predictions by hydrodynamic models indicating possible early thermalization at RHIC; (ii) at the intermediate p_T region, the observed v_2 follows a scaling that depends on the number of quarks in a given hadron. This suggests that the coalescence as the underline mechanism for hadron formation and the development of partonic collectivity at RHIC. The colliding size dependence of v_2 will allow us to test the early thermalization hypothesis.

We present the results from a systematic analysis of the centrality dependence of strange hadron elliptic flow (v_2) measurement for K_S^0 , $\Lambda + \bar{\Lambda}$, $\Xi^- + \bar{\Xi}^+$ and $\Omega^- + \bar{\Omega}^+$ in Au+Au collisions at 200 GeV. In addition, we present the preliminary v_2 results of K_S^0 , ϕ and $\Lambda + \bar{\Lambda}$ from minimum bias Cu+Cu collisions at 200 GeV. For each centrality of Au+Au collisions at 200 GeV, we observe two scaling: (i) a $(m_T - m)$ scaling at low p_T region ($p_T < 2$ GeV/c); (ii) a number-of-quark scaling at intermediate p_T region (2 GeV/c $< p_T < 6$ GeV/c). No universal scaling with participant eccentricity (ε_{part}) amongst different collision centralities has been observed. As a function of centrality, an increase in the p_T -integrated v_2/ε_{part} has been observed, indicating stronger collective flow in more central collisions. For multi-strange hadron ϕ and $\Omega^- + \bar{\Omega}^+$, their v_2 is consistent with the $m_T - nq$ scaling. The Cu+Cu collisions results are compared with those from Au+Au collisions at a similar number of participants. We will also compare our data with results from hydrodynamic model calculations.

References

- [1] STAR Collaboration, *Nucl. Phys. A*, **757**, (2005) 102.