

Measurement of azimuthal anisotropy for non-strange and strange hadrons in Au + Au collisions at $\sqrt{s_{NN}} = 27$ and 54.4 GeV from STAR

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1 Strange and multi-strange hadrons such as K_S^0 , $\Lambda(\bar{\Lambda})$, $\Xi^-(\bar{\Xi}^+)$, $\Omega^-(\bar{\Omega}^+)$ are sensitive probes of the hot dense
2 matter created at RHIC. These hadrons have small hadronic cross sections and freeze-out early from the medium,
3 therefore can be used to study the energy dependence of the partonic and hadronic phases. Furthermore, due to
4 their different sensitivity to hadronic phases, the mass ordering of v_n are expected to be violated between proton
5 and ϕ -meson in the low p_T range ($p_T < 1.5$ GeV/c) [1]. The STAR experiment recently took high statistics data
6 for Au + Au collisions at $\sqrt{s_{NN}}$ of 27 GeV (600M) and 54.4 GeV (1300M), which allow a precision test the mass
7 ordering and consistent quark scaling of v_n between various hadron species. The newly installed Event Plane
8 Detector (EPD) in the forward rapidity ($2.1 < |\eta| < 5.1$) provide an independent measurement of event plane with
9 less non-flow contributions. We present precision measurement of azimuthal anisotropy of identified particles
10 (π^\pm , K^\pm , $p(\bar{p})$, K_S^0 , $\Lambda(\bar{\Lambda})$, ϕ , $\Xi^-(\bar{\Xi}^+)$, $\Omega^-(\bar{\Omega}^+)$) as a function of transverse momentum and centrality in these
11 two energies and compare with results from other beam energies.

References

- [1] T. Hirano et al., Phys. Rev. C **77**, 044909 (2008). ; S. Takeuchi et al., Phys. Rev. C **92**, 044907 (2015).