

Event anisotropy v_2 of identified particles in Au+Au collisions at $\sqrt{s_{NN}} = 27$ and 54.4 GeV with STAR

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Elliptic flow is one of the most important observables in the relativistic heavy-ion collisions, which can allow us to access the collective properties of the expanding system. In this presentation, we will present elliptic flow of identified particles (π^\pm , K^\pm , $p(\bar{p})$, K_S^0 , $\Lambda(\bar{\Lambda})$, ϕ , $\Xi^-(\bar{\Xi}^+)$, $\Omega^-(\bar{\Omega}^+)$) at midrapidity ($|\eta| < 1$) as a function of transverse momentum in Au+Au collisions at $\sqrt{s_{NN}} = 27$ and 54.4 GeV in the STAR experiment. High precision test of the number of constituent quark scaling of v_2 and the v_2 difference between particles and antiparticles will be shown. The ϕ -meson and multistrange hadrons have small hadronic cross sections and freeze-out early from the medium, therefore can be used to study the energy dependence of partonic and hadronic interactions. Furthermore, the mass ordering of v_2 is expected to be violated between proton and ϕ -meson in the low p_T range ($p_T < 1.5$ GeV/c) [1] due to their different sensitivity to hadronic phase. These results provide us an opportunity to study the hadronic contributions on v_2 measurements as a function of collision energy and centrality.

References

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