

Anisotropic flow of (multi-)strange hadrons and ϕ mesons in Au+Au collisions at $\sqrt{s_{NN}} = 3 - 19.6$ GeV from STAR

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1 Directed and elliptic flow, v_1 and v_2 , are sensitive to dynamics of heavy-ion
2 collisions at the early stage of the system evolution and equation of state of the
3 medium. The hadronic interaction cross sections of multi-strange hadrons and
4 ϕ mesons are expected to be small and their freeze-out temperatures are close
5 to the quark-hadron transition temperature. Hence, these hadrons may provide
6 information primarily from the early stage of the high energy collisions and are
7 important for the study of QCD phase diagram at RHIC.

8 In the first phase of RHIC beam energy scan (BES-I), we observed that v_1
9 slopes (dv_1/dy) at mid-rapidity region for net-proton and net- Λ show a minimum
10 value when the collision energy is around $\sqrt{s_{NN}} = 10 - 20$ GeV [1]. The v_2 of
11 ϕ mesons seems lower than those of other particles at $\sqrt{s_{NN}} = 7.7$ and 11.5
12 GeV [2]. In this poster, with large statistics from the STAR fixed-target (FXT)
13 and second phase of RHIC beam energy scan (BES-II), we will present precise
14 measurements on v_1 and v_2 of K^\pm , K_S^0 , Λ , $\bar{\Lambda}$, Ξ , $\bar{\Xi}^+$, Ω , $\bar{\Omega}^+$, and ϕ mesons in
15 Au+Au collisions at $\sqrt{s_{NN}} = 3 - 19.6$ GeV from STAR.

16 References

- 17 [1] (STAR) L. Adamczyk *et al.*, Phys. Rev. Lett. **120**, 062301 (2018).
18 [2] (STAR) L. Adamczyk *et al.*, Phys. Rev. Lett. **110**, 142301 (2013).