Elliptic flow of strange and multi-strange hadrons in isobar collisions at $\sqrt{s_{\rm NN}}$ = 200 GeV at RHIC

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Abstract

Strange and multi-strange hadrons have a small hadronic cross-section compared to light hadrons, making them an excellent probe for understanding the initial stages of relativistic heavy-ion collisions and QCD dynamics. Isobar collisions, $^{96}_{44}$Ru+$^{96}_{44}$Ru and $^{96}_{40}$Zr+$^{96}_{40}$Zr, at $\sqrt{s_{\rm NN}}$ = 200 GeV have been performed at RHIC. These collisions are considered to be an effective way to minimize the flow-driven background contribution to search for the possibly small CME signal. The deformation parameters are different between the two species and flow measurements are highly sensitive to it. Elliptic flow measurements for these collisions also gives direct information about the initial state anisotropies. The collected datasets include approximately two billion events for each of the isobar species and provide a unique opportunity for statistics hungry measurements.

In this talk, we will present the elliptic flow (v_2) of K^0_s, Λ, $\bar{\Lambda}$, ϕ, Ξ^-, $\bar{\Xi}^+$, Ω^-, and $\bar{\Omega}^+$ at mid-rapidity ($|y| < 1.0$) for Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\rm NN}}$ = 200 GeV. The dependence of v_2 on centrality and transverse momentum (p_T) will be shown. The results will be compared with data from other collision systems like Cu+Cu, Au+Au, and U+U. The physics implications of such measurements in the context of nuclear deformation in isobars will be also discussed.