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Particle production and azimuthal anisotropy of strange hadrons in U+U collisions at STAR

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The primary goal of relativistic heavy-ion collisions is to seek and characterize a new state of nuclear matter, called the quark-gluon plasma (QGP), where quarks and gluons are deconfined due to the high temperature and energy density achieved in such collisions. Measurements of invariant yield of strange hadrons can provide information about the particle production mechanism and transport coefficients for the system formed in heavy-ion collisions. The higher order flow coefficients can help in constraining the initial conditions of hydrodynamic simulations for a precise extraction of transport properties.

U+U collisions are believed to produce higher energy density and number of particles than what is achievable in collisions of spherical nuclei like Au+Au or Pb+Pb at the same incident energy. For a given impact parameter of collision the initial eccentricity are different for Au+Au and different configuration of U+U collisions. Therefore, In addition to higher energy density and number of particles, U+U collisions can be use to constrain initial conditions in heavy-ion collisions. In this work, we will present transverse momentum (p_T) spectra of K^0_s, $\Lambda(\bar{\Lambda})$, $\Xi(\bar{\Xi})$ and $\Omega(\bar{\Omega})$ in U+U collisions at $\sqrt{s_{NN}} = 193$ GeV in the STAR experiment at RHIC. We will also present centrality and transverse momentum dependence of flow coefficients v_n (n = 2, 3, 4) of strange hadrons (K^0_s, Λ and ϕ) at mid-rapidity ($|\eta| < 1.0$). The mass dependence of these v_n coefficients will be shown. A systematic comparison of the results with Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV will be presented.

List of tracks

Strangeness production at low baryon densities

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