K^{*0} meson production in Au+Au collisions at high baryon densities from STAR BES-II experiments

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Abstract

Resonances can give us multiple ways to probe the properties of the QCD matter created in nucleus-nucleus collisions at different time scales. Due to a short lifetime of about 4 fm/c, K^{*0} will primarily decay inside the fireball formed after the collision. Their decay daughters may undergo various in-medium effects, such as rescattering and regeneration. The resonance to non-resonance yield ratio, K^{*0}/K, can help shed light on these in-medium effects. Study of the properties of K^{*0} can help us understand the lifetime and particle interactions during the hadronic phase.

In this poster, we will present measurements of K^{*0} production in Au+Au collisions at $\sqrt{s_{NN}}$ = 3.0, 3.2, 3.5, 3.9 and 4.5 GeV with the fixed-target mode from STAR BES-II experiment. The transverse momentum spectra, rapidity densities, and average transverse momentum of K^{*0} will be presented as functions of collision centrality and beam energy. The K^{*0}/K yield ratios will be presented for different collision centrality intervals and beam energies. These yield ratios will be compared to those obtained at higher collision energies and physics implications will be discussed.