¹ Measurements of $K^{*0,\pm}$ mesons in Au+Au (BES-II) and ² Ru(Zr)+Ru(Zr) collisions at RHIC

Subhash Singha

Institute of Modern Physics Chinese Academy of Sciences, Lanzhou

4 Abstract

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The comparison between the production of short-lived resonances (e.g., K^*) to non-resonances 5 (e.g., K) is commonly employed to understand the role of re-scattering and regeneration 6 processes that occur during the late stages of hadronic interactions. Additionally, the neu-7 tral $(K^{*0}(d\bar{s}))$ and charged $(K^{*+}(u\bar{s}))$ vector mesons share similar mass and isospin, 8 but the magnetic moments of their constituent quarks differ by approximately a factor of q five. This distinction makes them a unique probe for studying medium effects and particle 10 production. 11 In this talk, we will present the mass, width, transverse momentum (p_T) spectra, yield 12

(dN/dy), and $\langle p_T \rangle$ of $K^{*0,\pm}$ mesons, utilizing data from the 2^{nd} phase of the RHIC Beam 13 Energy Scan (BES-II) program on Au+Au collisions at $\sqrt{s_{NN}} = 7.7 - 19.6$ GeV, and isobar 14 collisions (Ru+Ru and Zr+Zr) at $\sqrt{s_{NN}} = 200$ GeV. The high-statistics sample of isobar 15 collisions will enable precise and differential measurements of particles and anti-particles 16 $(K^{*0}, K^{*0}, \text{ and } K^{*\pm})$, separately. The results of the K^{*+}/K^{*0} ratio can be utilized to 17 probe isospin effects. Moreover, comparing the K^{*0}/K^{-} ratio between Au+Au and isobar 18 collisions can provide insights into the energy and system size dependence of hadronic 19 interactions. 20