

1 Strangeness production and probing energy
2 dependence of hadronic phase from BES at STAR

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5 Searches for the QCD critical point and the onset of deconfinement are
6 the main motivations of the Beam Energy Scan (BES) program at RHIC.
7 Strangeness production has been suggested as a sensitive probe to the early-time
8 dynamics of the deconfined matter. Due to the short lifetime, the production
9 of resonances, e.g. K^{*0} , provides a unique opportunity to study the effect of
10 rescattering and regeneration in the hadronic phase of heavy-ion collisions. The
11 BES Phase I (BES-I) data taken during 2010 and 2011 have indicated potential
12 changes of medium properties at low energies. However, the statistics collected
13 during BES-I are not sufficient to draw definite conclusions. Since 2018, STAR
14 has accumulated high statistics Au+Au datasets at various energies below 27
15 GeV during BES Phase II (BES-II) campaign.

16 Production of K_S^0 , Λ , Ξ , Ω and ϕ from BES-II Au+Au collisions at $\sqrt{s_{NN}} =$
17 27, 19.6, 14.6 and 3 GeV will be presented in this talk. The strange hadron
18 spectra, nuclear modification factors, particle ratios, rapidity density distribu-
19 tions, and centrality dependence will be reported. The physics implications on
20 the collision dynamics will be discussed. We will also report the mass, width
21 and invariant yields of K^{*0} using BES-I data ($\sqrt{s_{NN}} = 7.7-54.4$ GeV). The
22 average transverse momenta of K^{*0} and ϕ as well as the resonance to non-
23 resonance particle ratios will be shown and compared with the measurements
24 at SPS and LHC energies. The energy dependence of hadronic phase lifetime
25 will be studied.