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Strange Hadron (K^0_S and Λ) Production in Fixed-Target Al+Au collisions at \sqrtsNN\,\, = 4.9 GeV and Au+Au collisions at \sqrtsNN\,\, = 4.5 GeV in STAR

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STAR has collected data from \sqrtsNN\,\, = 39 GeV down to \sqrtsNN\,\, = 7.7 GeV Au+Au collisions to complete the BES-I program in 2014. The motivations of this program include looking for the turn-off of signatures of the Quark-Gluon plasma (QGP), searching for the possible QCD critical point and studying the nature of the phase transition between hadronic and partonic matter. According to the results from the NA49 experiment at CERN, the onset of deconfinement may occur at \sqrtsNN\,\, $\approx$ 7 GeV, the low end of the BES range. In 2015, Au+Au and Al+Au fixed-target (FXT) test runs were conducted at \sqrtsNN\,\, = 4.5 GeV and \sqrtsNN\,\, = 4.9 GeV respectively. The fixed-target program proposes to extend the μ_B range from 420 MeV (\sqrtsNN\,\, = 7.7 GeV) to about 720 MeV (\sqrtsNN\,\, = 3.0 GeV).

In this talk, first physics results of the production of strange hadrons K^0_S and Λ from Al+Au fixed-target collisions at \sqrtsNN\,\, = 4.9 GeV, as well as from Au+Au fixed-target collisions at \sqrtsNN\,\, = 4.5 GeV, will be systematically presented and compared. These results demonstrate that STAR has good particle identification capabilities for fixed-target configuration and can efficiently reconstruct the fixed-target events. We will report the spectra, yield and particle ratios of these strange hadrons. The physics implications on the collision dynamics will also be discussed. These results will also be compared with the published results from similar collision energies. The implications of these results on the future STAR fixed-target physics program will be discussed.

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