Strange hadron production in d+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV using the STAR detector

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Strangeness production has been suggested as a sensitive probe to the early dynamics of the deconfined matter created in heavy-ion collisions. Ratios of particle yields involving strange particles are often utilized to study freeze-out properties of the nuclear matter, such as the strangeness chemical potential and the chemical freeze-out temperature. The d+Au collisions connect between Au+Au and pp collisions, and supply the baseline for the study of strangeness enhancement in the deconfined matter. The study of nuclear modification factors for strange hadrons in d+Au collisions can also help to understand Cronin-like effects.

In this work, we will present new measurements on the production of strange hadrons (${K_S}^0$, Λ, Ξ, Ω) for different rapidity intervals in d+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV, recorded by the STAR experiment in 2016. We will report transverse momentum ($p_{\rm T}$) spectra, $p_{\rm T}$ integrated yield dN/dy, average transverse momentum, yield ratios, nuclear modification factors, and rapidity asymmetry ($Y_{\rm asym}$) for those strange hadrons. The physics implications of the measurement on the collision dynamics will be discussed.