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Strange hadron production in Au+Au collisions at $\sqrt{s_{NN}}=54.4$ GeV

The RHIC Beam Energy Scan (BES) program was proposed to study the Quantum Chromodynamics phase transition and to locate the onset of deconfinement. As a sensitive probe to the transition from the hadron gas to the Quark-Gluon Plasma, the particle ratios of strange hadrons are measured to study the properties of nuclear matter and extract the chemical freeze-out parameters [1,2].

Recently, the production of strange hadrons ($K_s^0, \Lambda, \Lambda^-, \Xi^-, \Xi^+, \Omega^-, \Omega^+$, and ϕ) at mid-rapidity ($|y| < 0.5$) in Au+Au collisions at $\sqrt{s_{NN}}=54.4$ GeV were measured by the STAR experiment at RHIC. In this talk, transverse momentum spectra, nuclear modification factor R_{cp} , baryon-to-meson ratio, as well as the overall integrated yields of these strange hadrons at $\sqrt{s_{NN}}=54.4$ GeV are presented. In particular, the multi-strange baryon-to-meson ratio $N(\Omega^- + \Omega^+) / [2N(\phi)]$ at $\sqrt{s_{NN}}=54.4$ GeV is studied and compared to previous measurements at other BES energies [3]. The strange-hadron-to-pion ratios versus charged hadron multiplicity are also studied and compared to the measurements in heavy-ion collisions at higher energies.

[1] Phys. Rev. C 102, 034909 (2020)

[2] Phys. Rev. C 96, 044904 (2017)

[3] Phys. Rev. C 93, 021903(R) (2016)

Topics

STAR+NICA+CBM Experiments

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