ϕ-meson production in Au + Au collisions at $\sqrt{s_{\rm NN}} = 3\,\text{GeV}$ from STAR

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ϕ-meson is the lightest bound state of strange quarks($s\bar{s}$). It has relatively small hadronic interaction cross sections, therefore ϕ-meson is considered to be a sensitive probe of the earlier dynamics in the heavy-ion collision. Recent measurements by HADES and FOPI on subthreshold ϕ-meson production show a larger ϕ/K^- ratio compared to the results at higher energies[1, 2], and this larger ϕ/K^- ratio cannot be described by thermal model calculations with Grand Canonical Ensemble for strangeness.

In this presentation, we will report on our first measurements of ϕ-meson production in Au+Au collisions at $\sqrt{s_{\rm NN}} = 3$ GeV with energy just above the NN threshold. The data were taken in 2018 by the STAR experiment with Fixed Target configuration. ϕ-mesons are measured through their hadronic decay channel, $\phi \to K^- + K^+$. After being corrected for the detector acceptance and tracking efficiencies, invariant yields of ϕ-mesons as well as ϕ/K^- ratio are presented in several centrality intervals and the results will compared to model calculations.

References

[1] J. .Adamczewski-Musch *et al.* (HADES Collaboration), Phys. Let. **B 778**, (2018) 403-407.

[2] P. Gasik *et al.* (FOPI Collaboration), Eur. Phys. J. **A 52**, (2016) 177.