

Abstract Submitted  
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**$\phi$ -meson production in Au + Au collisions at  $\sqrt{s_{\text{NN}}} = 3$  GeV from STAR** GUANNAN XIE, Lawrence Berkeley National Laboratory, STAR COLLABORATION COLLABORATION — The  $\phi$ -meson is the lightest bound state of strange quarks( $s\bar{s}$ ). It has a relatively small hadronic interaction cross-section, therefore  $\phi$ -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  $\phi$ -meson production show a larger  $\phi/K^-$  ratio compared to the results at higher energies[1,2], and this larger  $\phi/K^-$  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  $\phi$ -meson production in Au+Au collisions at  $\sqrt{s_{\text{NN}}} = 3$  GeV of energy just above the NN threshold. The data were taken in 2018 by the STAR experiment with Fixed Target configuration.  $\phi$ -mesons are measured through their hadronic decay channel,  $\phi \rightarrow K^- + K^+$ . After being corrected for the detector acceptance and tracking efficiencies, invariant yields and directed flow of  $\phi$ -mesons as well as  $\phi/K^-$  ratio are presented in several centrality intervals and the results will be compared to model calculations. [1], HADES, Phys. Let. B 778, (2018) 403-407. [2], FOPI, Eur. Phys. J. A 52, (2016) 177.

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