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Measurement of directed and elliptic flow of ϕ meson in $\sqrt{s_{NN}}$ = 3.0, 4.5 GeV Au+Au collisions at the STAR detector

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The ϕ vector mesons have much smaller hadronic cross section which makes them less influenced at late-stage interactions than other hadrons [1-4]. Thus their anisotropies like the elliptic flow should be small if the system is always in a hadronic phase. This, in turn, makes ϕ meson v_2 especially sensitive to the energy where quark-gluon plasma turns off. Measurements from STAR at 7.7 and 11.5 GeV have seen ϕ v_2 at highest transverse momentum close to zero [5] and ϕ directed flow, v_1, is consistent with zero [6] with conclusions limited by statistics. On the other hand, the closeness of ϕ mass to the nucleon and its s $\bar{s}$ constituent quarks makes them suitable to test the deviation of net-nucleon and net-meson v_1 at energies below 7.7 GeV where could be a breakdown of the assumption that s and $\bar{s}$ quarks have the same flow [6]. Measurements of directed and elliptic flow of ϕ vector meson at 3.0 and 4.5 GeV Au+Au collisions at STAR will be presented and compared with RHIC Beam Energy Scan results from 7.7-39 GeV. Measurements will have better precision with increased particle acceptance and 100 more statistics at 3.0 GeV compared to 4.5 GeV from the STAR fixed-target run. Physics implication related to the search for quark-gluon plasma turn-off will also be discussed.

[1] Y. Cheng et al., Phys. Rev. C, 68 (2003) 034910.
[2] A. Shor, Phys. Rev. Lett. 54 (1985) 1122.
[3] A. Sibirtsev et al., Eur. Phys. J. A, 29 (2006) 209.
[4] H. van Hecke, H. Sorge, and N. Xu, Phys. Rev. Lett. 81 (1998) 5764.
[5] L. Adamczyk et al., Phys. Rev. C 88 (2013) 014902.
[6] L. Adamczyk et al., Phys. Rev. Lett. 120 (2018) 062301.

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