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D^0 -meson Elliptic Flow Measurement in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV from STAR

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A recent result from the STAR experiment shows that in 10-40% central Au+Au collisions at the top RHIC energy the elliptic flow (v_2) of the D^0 -meson follows the Number-of-Constituent-Quark scaling in the same way as it does for light flavor hadrons. This suggests that charm quarks have gained sufficiently large collectivity through their interactions with the Quark-Gluon Plasma (QGP). It is of great interest to see whether this scaling holds in more peripheral collisions, which will shed more lights on how charm quarks interact with the QGP and gain collectivity.

In this poster, we present the centrality and transverse momentum dependences of the D^0 -meson v_2 measured in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV by the STAR experiment. The measurement is based on the combined datasets recorded in 2014 and 2016, which yield about a factor of 3 times of the statistics compared to the previously published results. In order to better understand the non-flow contribution in peripheral collisions, the azimuthal anisotropy parameter v_2 is measured as a function of the pseudo-rapidity gap between the D^0 -meson and tracks used for reconstructing the event plane. The results will be compared to those of light hadrons in various centrality intervals and physics implications will be discussed.

Content type

Experiment

Collaboration

STAR

Centralised submission by Collaboration

Presenter name already specified

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