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## Measurements of $D_s^\pm$ -meson $R_{CP}$ and $v_2$ in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV in STAR

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Heavy quarks are considered as an excellent probe for the early dynamics in heavy-ion collisions. Among all open charm mesons,  $D_s^+$  ( $c\bar{s}$ ) and  $D_s^-$  ( $\bar{c}s$ ) mesons play a unique role to quantify heavy quark diffusion and hadronization in heavy-ion collisions, because of their valence quark compositions. Also, like multi-strange hadrons,  $D_s^\pm$  mesons are expected to freeze out early and have smaller hadronic interaction cross-section

compared with other  $D$  mesons. Therefore, the elliptic flow ( $v_2$ ) of  $D_s^\pm$  is considered to be a better measure of the partonic contribution to the charm hadron  $v_2$  than that of  $D^0$  or  $D^\pm$ . The new Heavy Flavor Tracker detector, which has been installed recently in the STAR experiment, provides a unique opportunity to reconstruct  $D_s^\pm$  via displaced vertices at RHIC at  $\sqrt{s_{NN}} = 200$  GeV.

We will present the first measurement of the nuclear modification factor  $R_{CP}$  and  $v_2$  of  $D_s^\pm$  in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV.

These results will be compared with those of other open charm mesons and strange mesons to determine how the (possibly) strangeness equilibrated partonic matter affects the  $D_s^\pm$  meson production. They will also be compared with measurements at the LHC energy to study the energy dependence of the above mentioned phenomena.

### On behalf of collaboration:

STAR

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