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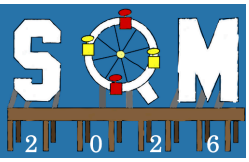

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Charm quark and QGP interactions through the spectra and anisotropic flow of D0 over the widest pT interval using Event-Shape Engineering at CMS

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The charm quark is formed almost exclusively during the initial stages of the collision, and a significant fraction of the charm quarks fragment into the D^0 meson, the lightest open-charm hadron. We can gain insights into the interactions between the charm quark and the quark-gluon plasma (QGP) medium by studying the production and the flow of D^0 mesons in heavy-ion collisions. We study the effect of the initial shape of the collision system on the elliptic flow (v_2) of promptly produced D^0 using event-shape engineering (ESE) in PbPb collisions at 5.02 TeV, at CMS. A correlation between the initial shape anisotropy, accessed via the low-p_{T} charged hadron v_2, with the D^0 v_2 would suggest that the flow gets driven by the interactions between the charm quark and the QGP and comparison with theoretical predictions allow us to unravel the mechanism behind the generation of v_2. We also study the anisotropic flow of nonprompt D^0 produced due to the decay of the bottom quarks. These studies provide further insights into the QGP interactions with heavy quarks like charm and bottom in heavy-ion collisions in different p_T regions ranging from 2–30 GeV/c, the widest ever performed with ESE, and centralities between 0–50\%.

Authors: CMS COLLABORATION; CHANDRA, Soumik (Purdue University)

Presenter: CHANDRA, Soumik (Purdue University)

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