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Measurement of collective flow of $D_{\mathrm{s}}^{\pm}$ and D^0 meson with CMS at 5.02 TeV

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The interaction of heavy quarks with the quark-gluon plasma (QGP) affects their azimuthal distribution and transverse momentum (p_{T}) spectrum. Hence, azimuthal anisotropy coefficients (v_n) and nuclear modification factors (R_{AA}) of heavy flavor hadrons are vital probes to study QGP properties. This talk presents the first measurements of the elliptic (v_2) and triangular (v_3) flow coefficients of $D_s^{\pm}$ mesons in lead-lead (PbPb) collisions at a center-of-mass energy of 5.02 TeV with the CMS experiment. These measurements are performed as a function of transverse momentum in different centrality classes, significantly increasing precision and expanding the kinematic range compared to existing results. The wide kinematic range and direct comparison with non-strange D mesons allow for the investigation of various charm quark flow generation mechanisms, particularly hadronization processes. Additionally, the first-ever $D_s^{\pm}$ meson v_3 measurement can probe the impact of initial states.

Category

Experiment

Collaboration

CMS

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