



Contribution ID: 576

Type: **Oral**

Measurements of prompt and nonprompt D^0 mesons production and collective flow with CMS at 5.02 TeV

Wednesday 6 September 2023 16:30 (20 minutes)

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 important probes of the QGP. However, a simultaneous modeling of v_n and R_{AA} is still challenging. This talk reports the first nonprompt D^0 measurements of the azimuthal anisotropy elliptic (v_2) and triangular (v_3) coefficients in large systems, using lead-lead (PbPb) collisions at $\sqrt{s_{NN}} = 5.02$ TeV, collected with the CMS apparatus. The measurements are performed as a function of transverse momentum, spanning 1–30 GeV/c, in three centrality classes, from central to midcentral collisions. Compared to the prompt D^0 results, the nonprompt D^0 v_2 flow coefficients are systematically lower and show less dependence on particle p_T and centrality. An indication of nonzero v_3 coefficient of the nonprompt D^0 is observed. The wide p_T range enables the study of various flow generation mechanisms, like diffusion at low p_T and path-dependent parton energy loss at low and high p_T , respectively. In addition, measurements of both prompt and nonprompt D^0 mesons cross sections in PbPb and proton-proton collisions, as well as R_{AA} , will be shown. The results will be compared to theoretical predictions.

Category

Experiment

Collaboration (if applicable)

CMS

Author: STOJANOVIC, Milan (Purdue University (US))

Presenter: STOJANOVIC, Milan (Purdue University (US))

Session Classification: Heavy Flavor

Track Classification: Heavy Flavor