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Recent measurements of the azimuthal anisotropy of prompt D^0 mesons in PbPb collisions with the CMS detector at the LHC

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In PbPb collisions at the LHC, heavy-flavor (charm and bottom) quarks are predominantly produced at the initial stages of the collision via hard scattering, and they evolve with the whole system. The D^0 mesons provide insights on the heavy-quarks and details about the system at initial stages, for example, the potential effects of strong electromagnetic (EM) fields created by collision participants and spectators. In this talk, measurements of the flow harmonics (v_2 and v_3) of D^0 ($\bar{u}c$) and \bar{D}^0 ($u\bar{c}$) mesons are presented as functions of rapidity (y), transverse momentum, and collision centrality for PbPb collisions at 5.02 TeV, using the large data samples collected by the CMS experiment during the LHC Run 2. The wide rapidity coverage ($|y| < 2$) of these new charm mesons measurements allow for a better understanding of the 3-dimensional evolution of the medium formed in heavy-ion collisions. To search for possible effects from strong EM fields created in PbPb collisions, measurements of Δv_2 between D^0 and \bar{D}^0 are presented as functions of rapidity. Finally, based on the scalar product method, a four-particle cumulant technique is employed to measure $D^0 v_2$ for the first time in PbPb collisions. These results strengthen the evidence of collective phenomena in large hadronic collision systems.

Collaboration (if applicable)

CMS

Track

Heavy Flavor and Quarkonia

Contribution type

Contributed Talk

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