

Strangeness in Quark Matter 2019



Contribution ID: 24

Type: Poster

Measurement of D^0 meson R_{AA} and v_2 in Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ALICE

Tuesday 11 June 2019 18:45 (2 hours)

In the ultra-relativistic heavy-ion collisions at the CERN Large Hadron Collider (LHC), a state of matter, called Quark-Gluon Plasma (QGP), is created.

Heavy quarks, like charm and beauty, are a powerful tool to investigate the medium formed in these collisions. They are produced in hard partonic scattering processes, which occur on a timescale shorter than the QGP formation time. They propagate through the medium and interact with its constituents, thus probing the entire evolution of the system.

The measurement of the nuclear modification factor R_{AA} of D^0 mesons provides information on the interactions of charm quarks with the medium, in particular on their energy loss.

In addition, the study of the D^0 elliptic flow (v_2) can give further insight into the coupling of the charm quarks to the system.

The analysis of the v_2 is done with the Event-Shape Engineering (ESE) technique, which allows the classification of events belonging to the same centrality, according to the azimuthal anisotropy of soft particles produced in the collision. Thus it is possible to investigate the dependence of the charm-quark flow on the initial conditions and eccentricity of the system.

In this poster we present the latest measurement of the D^0 -meson R_{AA} obtained by analyzing the new data sample Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV collected at the end of 2018 with the ALICE detector. In addition, we will show the most recent results on the D^0 v_2 measured with the Event-Shape Engineering technique.

Collaboration name

ALICE Collaboration

Track

Heavy Flavour

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Session Classification: Poster session with "aperitivo"