

Measurements of electrons from heavy-flavour decays in pp, p-Pb and Pb-Pb collisions with ALICE at the LHC

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Heavy-ion collisions at the LHC provide an opportunity to investigate the properties of QCD matter at high temperatures and energy densities, where a transition to a Quark-Gluon Plasma state is expected to occur. In order to study the QGP properties, a given observable is often measured in different collision systems (pp, p-Pb and Pb-Pb) and multiplicity classes.

Heavy quarks, i. e. charm and beauty, are a powerful probe for this state of matter. Due to their large masses, they are produced in initial hard parton scattering processes, and they propagate through the hot and dense medium created in the collision of heavy ions. Heavy-flavour hadrons can be studied via the measurement of electrons from their semi-electronic decays.

ALICE has excellent capabilities for heavy-flavour measurements employing several sub-systems providing high resolution vertex and track reconstruction, as well as particle identification in a wide momentum range.

In this contribution, measurements of the nuclear modification factors (R_{pPb} and RAA) and of the elliptic flow v_2 , of heavy-flavour decay electrons, will be presented as a function of p_T . The nuclear modification factor is the ratio of the electron transverse momentum spectrum measured in Pb-Pb (p-Pb) collisions to that in pp collisions, scaled by the number of binary nucleon-nucleon collisions. The elliptic flow v_2 is the second Fourier coefficient of the azimuthal distribution of particle momenta in the transverse plane with respect to the reaction plane.

Furthermore, studies of the correlation between these electrons and unidentified charged particles in pp ($\sqrt{s} = 2.76$ TeV), p-Pb ($\sqrt{s_{NN}} = 5.02$ TeV) and Pb-Pb ($\sqrt{s_{NN}} = 2.76$ TeV) collisions will be reported.

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