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Feasibility study for the measurement of the elliptic azimuthal anisotropy of electrons from semileptonic decays of beauty hadrons in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV with ALICE

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In heavy-ion collisions at ultrarelativistic energies a sufficiently high temperature can be reached to form the Quark-Gluon Plasma (QGP), a deconfined state of strongly-interacting matter. Heavy quarks, i.e. charm and beauty, serve as a sensitive probe of the QGP properties since they are predominantly produced in initial hard scattering processes and interact with the hot and dense medium.

The elliptic azimuthal anisotropy (v_2) of electrons from heavy-flavour hadron decays in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV, measured by the ALICE collaboration, has been used to probe the properties of the QGP. The measurement of v_2 of heavy-flavour decay electrons at low transverse momentum tests whether heavy quarks take part in the collective expansion of the deconfined medium. In addition, the measurement of v_2 of heavy-flavour decay electrons at high transverse momentum carries information on the path-length dependence of the heavy-quark energy loss within the QGP.

We present a way to subtract the contribution of the charm decay electron v_2 from the heavy-flavour decay electron v_2 .

The resulting v_2 of electrons from beauty-hadron decays is derived from the elliptic azimuthal anisotropy of heavy-flavour decay electrons and prompt D mesons measured in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV. In the near future, the significant increase of the luminosity at the LHC, as well as the ALICE detector upgrades, will increase the potential of this analysis.

On behalf of collaboration:

ALICE

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