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Measurements of the correlation between heavy-flavour decay electrons and charged particles in pp, p-Pb and Pb-Pb collisions with ALICE at the LHC

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The aim of relativistic heavy-ion collisions is to investigate the properties of the Quark-Gluon Plasma (QGP), a deconfined state of strongly-interacting matter. The characterisation of the QGP via the measurements of several observables is the main purpose of the ALICE detector at the CERN LHC.

Heavy quarks, i.e. charm and beauty, are a very useful tool in this context. Due to their large masses, they are produced in initial hard parton-parton scattering processes at the very early stages of the collision. Therefore, they experience the whole medium evolution and carry information on the QGP properties.

The production of open heavy-flavour hadrons can be measured with ALICE via their hadronic and semi-electronic decays at mid-rapidity and via their semi-muonic decays at forward rapidity. In this poster emphasis will be put on the measurements of the correlation, in azimuth ($\Delta\varphi$) and pseudorapidity ($\Delta\eta$), between the electrons from heavy-flavour hadron decays and the charged particles produced in the collision.

The comparison of the correlation in pp, p-Pb and Pb-Pb collisions, at various centralities, can provide information on the medium properties. Particularly, correlations of long-range in $\Delta\eta$ were recently observed in high-multiplicity p-Pb collisions at the LHC energies. Furthermore, in pp collisions, the relative contributions of beauty and charm decays to the total electron yield can be evaluated by comparing the measured correlation function with the predictions from PYTHIA simulations.

Measurements of the correlation function between electrons and charged particles in pp ($\sqrt{s} = 2.76$ and 7 TeV), Pb-Pb ($\sqrt{s_{NN}} = 2.76$ TeV), and p-Pb collisions ($\sqrt{s_{NN}} = 5.02$ TeV) will be presented.

On behalf of collaboration:

ALICE

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