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Measurements of the correlation between electrons from heavy-avour hadron decays and light hadrons with ALICE at the LHC

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Relativistic heavy-ion collisions are a unique tool to study the properties of the Quark-Gluon Plasma (QGP) in the laboratory. For this purpose, several observables have been measured with ALICE at the LHC, where heavy-ion collisions can be investigated at the
highest energies available to date.
Heavy quarks, i.e. charm and beauty, are a powerful probe in such experiments. Due to their large masses, they are produced in initial hard parton collisions, and they propagate through the hot and dense medium created in the heavy-ion collision. One of the approaches to study heavy-quark production is to measure the electrons from
semi-leptonic decays of heavy-avour hadrons.
An important observable, in this context, is the two-particle correlation function in azimuth ($\Delta\varphi$) and in pseudorapidity ($\Delta\eta$) between electrons from heavy-avour hadron decays and light hadrons. The correlation close to $\Delta\varphi = 0$ and $\Delta\eta = 0$ is dominated by the "near-side" jet, where the electron and the associated hadron originate from the fragmentation of the same parton. The correlation around $\Delta\varphi = \pi$ reects the recoil jet and, therefore, it should be sensitive to the properties of the medium.
In the case of pp collisions ($\sqrt{s}$ = 2.76 TeV), the relative contributions from beauty and charm-hadron decays to the electron yield were extracted by comparing the measured $\Delta\varphi$ distribution with Monte Carlo simulations. Indeed, due to the decay kinematics, the width of the near-side peak is larger for beauty than charm hadron decays.
In this poster, the correlation functions of electrons from heavy-avour hadron decays and light charged hadrons will be shown for pp ($\sqrt{s}$ = 2.76 TeV), Pb-Pb ($\sqrt{sNN}$ = 2.76 TeV), and p-Pb collisions ($\sqrt{sNN}$ = 5.02 TeV).

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