



Contribution ID: 17

Type: parallel

Heavy-flavour correlations in pp, p-Pb and Pb-Pb collisions with ALICE

Wednesday, 6 August 2014 15:40 (20 minutes)

ALICE (A Large Ion Collider Experiment) is specifically optimized for the study of heavy-ion collisions at the LHC. In these collisions a state of matter consisting of deconfined quarks and gluons (Quark-Gluon Plasma) is formed. Due to their large masses, heavy quarks (charm and beauty) are predominantly produced in hard scattering processes in the initial phase of the collision, before the formation of the QGP. Therefore they are excellent probes to study the properties of the Quark-Gluon Plasma. While interacting with the medium, they lose energy via both collisional and radiative processes as supported by several measurements, among which is the observation of the strong suppression of D meson production for $p_T > 4$ GeV/c in central Pb-Pb collisions with respect to pp collisions.

Further insight into the effects of the medium on charm and beauty quarks can be obtained by measuring the angular correlations between heavy-flavour hadrons (or their decay products) and charged particles.

The comparison of the azimuthal correlations in pp and Pb-Pb collisions can provide deeper information on the processes by which heavy quarks lose energy in the QGP and can spot possible modifications to the charm parton shower and hadronisation in the presence of the medium. Beside providing the reference necessary for the interpretation of p-Pb and Pb-Pb results, the study of the azimuthal correlations in pp collisions can provide deeper insight into the heavy quark production mechanism and their hadronization. In addition, the study of the angular correlations between heavy-flavour decay electrons and charged particles in pp collisions allows also for a statistical separation of the charm and beauty contributions to the yield of heavy-flavour decay electrons.

In p-Pb collisions, double-ridge long range correlations were observed for light particles (pions, kaons and protons), that could originate from a collective behaviour of the system, as well as from gluon saturation in the initial state (Color Glass Condensate). This effect can be studied for heavier quarks via the correlation between heavy-flavour hadrons (or their decay electrons) and charged particles.

Results from the analyses of angular correlations of D mesons and charged particles and of heavy-flavour decay electrons and charged particles, performed using the data collected with ALICE in pp collisions at $\sqrt{s} = 7$ TeV, Pb-Pb at $\sqrt{s_{NN}} = 2.76$ TeV, and in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV along with comparison to the models will be presented in this contribution.

Primary author: KUMAR, Jitendra (IIT- Indian Institute of Technology (IN))

Presenter: KUMAR, Jitendra (IIT- Indian Institute of Technology (IN))

Session Classification: Jets