Contribution ID: **97** Type: **not specified**

Heavy-flavour production measurements in heavy-ion collisions with ALICE at the LHC

Monday, 3 September 2018 16:14 (18 minutes)

Heavy quarks are effective probes of the properties of the Quark-Gluon Plasma (QGP) created in ultra-relativistic heavy-ion collisions. Charm and beauty quarks are produced in hard scattering processes on timescales shorter than the QGP formation time due to their large masses and, thus, they experience the entire evolution of the medium interacting with its constituents via in-medium gluon radiation and collisional processes. The measurement of the nuclear modification factor (R_AA) of D mesons and heavy-flavour decay leptons can provide important information about the microscopic interactions of heavy quarks with the medium constituents, in particular on the colour-charge and parton-mass dependence of heavy-quark energy loss. Azimuthal anisotropy measurements give insight into the participation of low-momentum heavy quarks in the collective expansion of the system and their possible thermalization in the medium. At high transverse momentum, the path-length dependence of parton energy loss mechanisms can be tested. The possible modifications of heavy-quark
hadronisation in the medium and, in particular, the role of the recombination mechanism can be studied for charm via the comparison of D mesons without strange-quark content, D_s and charm baryons.
The latest results on R_AA and v_2 of D mesons and heavy-flavour decay electrons and muons in Pb-Pb collisions at sqrt{s_NN}=5.02 TeV with ALICE will be presented. The first Lambda_c-production measurement in Pb-Pb collisions will be shown as well. In addition, the R_AA of heavy-flavour hadron decay leptons in Xe-Xe collisions will be presented. The comparison of the results with model predictions will be discussed.

Selected session

Heavy Ion collisions and QCD phases

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Session Classification: Heavy Ion collisions and QCD phases