



Contribution ID: 59

Type: **Talk**

Heavy-flavour jet properties and correlations from small to large systems measured by ALICE

Tuesday 14 June 2022 14:20 (20 minutes)

The early production of heavy-flavour partons makes them an excellent probe of the dynamical evolution of QCD systems. Jets tagged by the presence of a heavy-flavour hadron give access to the kinematics of the heavy partons, and along with correlation measurements involving heavy-flavour hadrons allow for comparisons of their production, propagation and fragmentation across different systems. The properties of heavy-flavour parton showers are driven by the large dead cone of heavy quarks, the presence of which is directly measured for the first time, using jets tagged with a fully reconstructed D^0 meson amongst their constituents, in pp collisions. Whilst traversing the QGP, these partons are expected to lose energy through interactions with the medium, at a different rate to their inclusive counterparts. To constrain the energy loss in the QGP, measurements of the nuclear modification factor of D^0 meson-tagged jets are presented in the 0 – 10% most central Pb-Pb collisions. Properties of heavy-flavour jets are also investigated in small systems through measurements of the production and substructure of jets tagged with D^0 mesons or electrons originating from heavy-flavour decays. Measurements of the fragmentation function and radial shape of jets containing a Λ_c^+ , probing different dimensions of the hadronisation dynamics of charmed baryons, are also presented in pp collisions. Additionally, measurements of D^0 -hadron correlations and the correlation of electrons from heavy-flavour decays with hadrons are presented, in both pp and p-Pb collisions, probing the impact of cold nuclear effects and providing a baseline for future Pb-Pb measurements.

Present via

Offline

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Session Classification: PA-Heavy-flavor and Quarkonia

Track Classification: Heavy-flavor and Quarkonia