Contribution ID: **473** Type: **Oral**

Probe parton propagation in heavy-ion collisions with ALICE heavy-flavour measurements (remote)

Tuesday, 5 September 2023 09:10 (20 minutes)

Heavy quarks (charm and beauty) are valuable probes for investigating the properties of the quark-gluon plasma (QGP) formed in ultra-relativistic heavy-ion collisions, as they are mainly produced through hard-scattering processes prior to the formation of the QGP, and their number is conserved during the subsequent QGP evolution. Measurements of the nuclear modification factor $R_{\rm AA}$ of charm and beauty hadrons allow the characterisation of the in-medium energy loss of heavy quarks while traversing the QGP. Information on their diffusion and degree of participation in the medium collective motion can be obtained by measuring the elliptic-flow coefficient v_2 of heavy-flavour particles. Complementary insights into heavy-quark fragmentation and energy redistribution can be obtained by measuring angular correlations involving heavy-flavour particles.

In this contribution, the newly published results on the non-prompt v_2 coefficient of $\rm D^0$ mesons in Pb–Pb collisions at $\sqrt{s_{\rm NN}} = 5.02$ TeV will be shown and compared to measurements of prompt D-meson v_2 in the same system. These will be supplemented by recent results of the v_2 of heavy-flavour decay muons in p–Pb collisions at $\sqrt{s_{\rm NN}} = 5.02$ TeV, providing new insights into possible collective effects in smaller systems. The recent final results of the heavy-flavour decay electron $R_{\rm AA}$ in Pb–Pb collisions at $\sqrt{s_{\rm NN}} = 5.02$ TeV will also be reported, together with measurements of prompt and non-prompt D mesons and $\Lambda_{\rm c}^{+}$ baryons. New Pb-Pb results of angular correlations of heavy-flavour decay electrons with charged particles in the same collision system will also be discussed. In view of a better understanding of the in-medium heavy-quark dynamics, the reported ALICE measurements will be compared to predictions from models including different implementations of heavy-quark interaction and hadronisation with the QGP constituents.

Category

Experiment

Collaboration (if applicable)

ALICE

Primary author: SINGH, Ravindra (Indian Institute of Technology Indore (IN))

Presenter: SINGH, Ravindra (Indian Institute of Technology Indore (IN))

Session Classification: Heavy Flavor

Track Classification: Heavy Flavor