

# Characterisation of heavy-quark propagation and thermalisation in QGP with ALICE

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Heavy quarks (charm and beauty) are useful probes for investigating the properties of the quark-gluon plasma (QGP) generated in ultrarelativistic heavy-ion collisions. Measurements of the nuclear modification factor  $R_{AA}$  of charm and beauty hadrons offer a means to characterize the in-medium energy loss of heavy quarks in the QGP. Insights into their participation in the medium collective motion are obtained through measurements of the elliptic-flow coefficient  $v_2$ . As heavy quarks traverse the QGP, the internal structure and energy of the resulting jet may be altered, while the parton shower can modify the plasma itself by injecting energy and momentum. Insights into these effects are obtained by measuring angular correlations involving heavy-flavour particles.

In this contribution, the latest findings from the LHC Pb-Pb Run 3 data are featured, showcasing the performance of  $v_2$  measurements for both charm mesons and baryons. Measurements of the  $R_{AA}$  of charm hadrons and  $D^0$ -tagged jets in Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV are shown, as well as the prompt- and non-prompt D meson  $v_2$  coefficients. These measurements are compared to model predictions that incorporate various implementations of heavy-quark interaction and hadronisation with the QGP constituents. Additionally, angular correlations of heavy-flavour decay electrons with charged particles, and their alterations due to the QGP presence are presented.

## Category

Experiment

## Collaboration

ALICE

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