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## Investigating charm-quark dynamics in the QGP via the charm-hadron elliptic flow in Pb–Pb collisions with ALICE

*Monday 7 April 2025 18:00 (20 minutes)*

Heavy quarks (charm and beauty) are useful probes for investigating the properties of the quark-gluon plasma (QGP) generated in ultra-relativistic heavy-ion collisions. Their participation in the collective motion of the medium can be assessed by measuring the charm-hadron elliptic-flow coefficient  $v_2$ , originating from the initial-state spatial asymmetry in non-central heavy-ion collisions. These measurements provide fundamental inputs to constrain theoretical models describing the charm-quark transport in the QGP, as well as its possible thermalization in the medium. In addition, the comparison between meson and baryon  $v_2$  can provide further insights into medium-induced phenomena, such as the radial flow and the charm-quark hadronization via coalescence.

In this contribution, the first measurements of  $D^0$ -,  $D^+$ -,  $D_s^+$ -meson and  $\Lambda_c^+$ -baryon  $v_2$  in different centrality intervals of Pb–Pb collisions at  $\sqrt{s_{NN}} = 5.36$  TeV collected by the ALICE experiment during the LHC Run 3 are shown. The measurements are compared to model predictions that incorporate various implementations of heavy-quark interaction and hadronization with the QGP constituents. Moreover, the measurement of the  $D^0$ -meson elliptic flow in pp collisions is presented.

### Category

Experiment

### Collaboration (if applicable)

ALICE

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