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Heavy-flavour elliptic flow in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV measured with ALICE at the LHC

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The main purpose of ALICE at the LHC is to investigate the properties of the deconfined state of strongly-interacting matter produced in high-energy heavy-ion collisions. Since heavy quarks, i.e. charm and beauty, are produced on a shorter time scale with respect to the hot fireball, they are suited to probe the interaction dynamics inside the medium.

The ALICE collaboration has measured the production of open heavy-flavour hadrons via their hadronic and semi-electronic decays at mid-rapidity and via the semi-muonic decay channel at forward rapidity in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV. The azimuthal distribution of heavy-flavour hadrons reflects the initial spatial anisotropy of the heavy-ion collision in case of sufficient re-scattering of the heavy quarks in the hot and dense matter. Therefore the heavy-flavour elliptic flow, the second harmonic in the Fourier expansion of the particle azimuthal distribution, is an observable sensitive to the degree of thermalization of charm and beauty quarks in the medium at low $p_{\rm T}$, as well as to the path length dependence of the energy loss of heavy quarks at high $p_{\rm T}$.

The elliptic flow measurements are presented for prompt charm mesons, i.e $\rm D^0$, $\rm D^+$, $\rm D^{*+}$, and heavy-flavour decay electrons at mid-rapidity, as well as for heavy-flavour decay muons at forward rapidity in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV for various centrality intervals. The results will be compared with corresponding measurements of other hadron species. Results of the D-meson nuclear modification factor measured in the direction of the reaction plane and orthogonal to it will be also shown. Comparisons with model calculations will be discussed.

On behalf of collaboration:

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