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Background-subtraction procedure for the measurement of the elliptic flow of heavy-flavour decay electrons in ALICE

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In ultra-relativistic heavy-ion collisions, charm and beauty quarks are a sensitive tool to probe the flavour and mass dependence of the parton interaction with the medium created in such interactions, the Quark-Gluon Plasma.

The level of thermalization of heavy quarks can be studied via the azimuthal anisotropy of their emission in the transverse plane, the elliptic flow v2, at low transverse momentum. At high pt, v2 provides insight on the path length dependence of parton energy-loss.

One channel to measure the heavy-flavour v2 is semi-electronic decays of hadrons carrying a charm or a beauty quark.

ALICE recorded Pb-Pb collisions at 2.76 TeV at the end of 2010 and 2011.

The presented poster will focus on the method to subtract the background electron contribution in the measurement of the elliptic flow of heavy-flavour decay electrons in Pb-Pb collisions at 2.76 TeV with ALICE at mid-rapidity.

The elliptic flow of inclusive electrons is measured with the event plane method. At high pt the contribution of electrons from heavy-flavour decays is expected to be dominant, whereas at low pt most electrons come from Dalitz decays of pi0 and gamma conversions in the detector material. A Monte Carlo simulation, based on the measured elliptic flow and pt distributions of the main background sources, is performed to estimate the contribution from known background electrons. The knowledge of the ratio of inclusive electrons to the known background electrons allows to subtract the background cocktail from the inclusive electron v2 and obtain the heavy flavour decay electron v2.

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