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Open heavy-flavour production in Pb-Pb and Xe-Xe collisions measured with ALICE at the LHC

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Heavy quarks (charm and beauty) are effective probes of the properties of the Quark-Gluon Plasma (QGP) formed in high-energy heavy-ion collisions at the LHC. Produced mainly in initial hard parton scatterings on shorter time scales compared to the QGP formation time, they witness the full evolution of the system, interacting with the medium constituents and losing energy. The measurement of open-heavy-flavour hadron and jet production in heavy-ion collisions and the comparison (nuclear modification factor, $R_{\rm AA}$) with what expected from pp collisions give insight into the microscopic processes behind parton in-medium energy loss, in particular on its dependence on quark mass and colour charge, and on the interplay of elastic and radiative processes. At low transverse momentum the measurement of the relative abundances of different particle species, in particular non-strange D mesons, ${\rm D_s}^+$ mesons, and ${\Lambda_c}^+$ baryons, is fundamental to address the possible formation of hadrons via coalescence of charm quarks with medium quarks. The study of the heavy-flavour azimuthal anisotropy (elliptic flow, v_2) allows to constrain the path-length dependence of energy loss and, also thanks to the "Event-Shape Engineering"technique, the level of heavy-quark thermalisation and coupling to the system.

Open-heavy-flavour production is measured with ALICE over a wide rapidity range: at mid-rapidity via the full reconstruction of hadronic decay channels of non-strange D mesons, ${\rm D_s}^+$ mesons, and ${\Lambda_c}^+$ baryons, and via the identification of electrons from charm and beauty semi-leptonic decays. At forward rapidity heavy-flavour hadron decay muons are detected. The properties of heavy-flavour jets are investigated with angular correlation of heavy-flavour hadron decay electrons with charged particles, as well as by directly reconstruct charm jets tagged by the presence of a D meson among its constituents.

In this contribution new and most recent ALICE measurements of open heavy-flavour $R_{\rm AA}$ and v_2 in Pb-Pb and Xe-Xe collisions at the LHC will be presented. The comparison with measurements at different collision energies and with available theoretical calculations will be also discussed.

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