

## Production and anisotropy of charm and beauty hadrons in heavy-ion collisions: constraining QGP transport properties with ALICE data

The ALICE experiment aims at investigating the properties of strongly-interacting matter in extreme conditions of temperature and energy density where the quark-gluon plasma (QGP) is formed. Heavy quarks (charm and beauty quarks), mostly produced via hard partonic scattering processes in the very early stage of the collisions, are efficient probes of the properties and dynamics of the QGP through its full evolution.

The measurement of the nuclear modification factor ( $R_{AA}$ ) of open heavy-flavour hadrons can provide important information about the properties of the parton in-medium energy loss, while the measurement of the elliptic flow ( $v_2$ ) at low transverse momentum gives insight into the participation of the heavy quarks in the collective expansion of the system and their possible thermalisation in the medium. These two observables can also help us to understand possible modifications of the heavy-quark hadronisation in the medium. Finally, the comparison to theoretical calculations of heavy-quark transport in a hydrodynamically expanding medium helps to constrain the medium parameters, such as the heavy-quark spatial diffusion coefficient

In this talk, the prompt and non-prompt D-meson  $R_{AA}$  and  $v_2$  measurements in Pb-Pb collisions at  $\sqrt{s_{NN}}=5.02$  TeV with ALICE will be presented.

### Submitted on behalf of a Collaboration?

Yes

**Author:** Mr ZHANG, Biao (Central China Normal University CCNU (CN))

**Co-author:** Mr BIAO, Zhang

**Presenters:** Mr ZHANG, Biao (Central China Normal University CCNU (CN)); Mr BIAO, Zhang

**Session Classification:** Poster session and Reception

**Track Classification:** WG4: QCD with Heavy Flavours and Hadronic Final States