

# Scaling behaviors of heavy flavor meson suppression and flow in different nuclear collision systems at the LHC

*Tuesday 25 April 2023 17:00 (20 minutes)*

We explore the system size dependence of heavy-quark-QGP interaction by studying the HF meson suppression and elliptic flow in four different collisions at the LHC. Within an advanced Langevin-hydrodynamics framework, we provide a reasonable description of the D meson RAA and  $v_2$  in Pb-Pb collisions, as well as predictions for both D and B meson observables in other collision systems yet to be measured. We find a clear hierarchy for the heavy meson suppression with respect to the size of the colliding nuclei, while their  $v_2$  relies on both the system size and the geometric anisotropy of the QGP. Sizable suppression and flow are predicted for both D and B mesons in O-O collisions, which serve as a crucial bridge of jet quenching between large and small collision systems. Scaling behaviors between different collision systems are shown for the heavy meson RAA, and the bulk eccentricity rescaled heavy meson  $v_2$ , both as functions of the number of participant nucleons in heavy-ion collisions.

## Theory / experiment

Theory

## Group or collaboration name

**Primary authors:** LI, Shu-Qing; XING, Wen-Jing (Shandong university); WU, Xiang-Yu; CAO, Shanshan (Shandong University); QIN, Guang-You (Central China Normal University)

**Presenter:** LI, Shu-Qing

**Session Classification:** Poster Session

**Track Classification:** Heavy quarks and quarkonia