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Heavy flavour dynamics in event-by-event viscous hydrodynamic backgrounds

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Heavy flavour probes provide important information about the in-medium properties of the quark gluon plasma produced in heavy-ion collisions. In this work, we investigate the effects of (2+1)d event-by-event fluctuating hydrodynamic backgrounds on the nuclear suppression factor and momentum anisotropies of heavy flavour mesons and non-photon electrons [1,2]. Using the state-of-the-art D and B mesons modular simulation code (the so-called “DAB-Mod”), updated recently with heavy-light quark coalescence, we perform a systematic comparison of different transport equations, including a few energy loss models - with and without energy loss fluctuations - and a relativistic Langevin model with different drag parametrisations. We present the resulting D and B mesons R_{AA} , v_2 , v_3 and v_4 as well as their multiparticle cumulants, in Au-Au collisions at 200 GeV and Pb-Pb collisions at 2.76 TeV and 5.02 TeV, and compare them to the latest experimental data. We also study the linearity of the resulting heavy meson and soft hadron flow correlations, as new experimental observables that could provide greater insight into flow fluctuations, and compare for the first time our predictions with ALICE preliminary measurements of D meson v_2 vs q_2 in Pb-Pb collisions at 5.02 TeV [3].

[1] C. Prado, J. Noronha-Hostler, R. Katz, A. Suaide, J. Noronha and M. Munhoz, Nucl. Phys. A **967** (2017) 664-667 [arXiv:1704.04654].

[2] C. Prado, J. Noronha-Hostler, R. Katz, A. Suaide, J. Noronha and M. Munhoz, accepted in Phys. Rev. C [arXiv:1611.02965].

[3] ALICE collaboration, presentation at QM 2017, <https://indico.cern.ch/event/576735/contributions/2565849/>.

Content type

Theory

Collaboration

Centralised submission by Collaboration

Presenter name already specified

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