Contribution ID: **221** Type: **3c) Heavy-flavours and quarkonia (POSTER FROM TALK)**

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

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-photonic 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 RAA, v2, v3 and v4 as well as their multiparticle cumulants for various colliding systems and energies (Au-Au collisions at 200 GeV, Pb-Pb collisions at 5.02 TeV and Xe-Xe collisions at 5.44 TeV) and compare them to the latest experimental data [3,4]. We investigate the v2{4}/v2{2} ratio as a function of centrality, known to be a probe of the initial conditions and flow fluctuations in the soft sector [5], for different initial conditions (MCKLN vs Trento), system geometries and sizes (coming from colliding Pb, spherical and deformed Xe ions), equations of state and freeze out temperatures. We also study the correlations and decorrelations of the heavy meson and all charged particle flows for different harmonics and centralities. We finally compare our predictions with ALICE measurements of D meson v2 vs bulk q2 in Pb-Pb collisions at 5.02 TeV [6].

[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, Phys. Rev. C96 (2017) no.6, 064903 [arXiv:1611.02965].
[3] See R. Katz's poster at QM 2018, https://indico.cern.ch/event/656452/contributions/2888820/attachments/1648705/2635972/poster_katz
[4] See also DAB-Mod vs ATLAS data comparison in Measurement of the suppression and azimuthal anisotropy of muons from heavy-flavour decays in Pb+Pb collisions at √sNN = 2.76 TeV with the ATLAS detector [arXiv:1805.05220v1].
[5] P. Alba, V. Mantovani Sarti, J. Noronha, J. Noronha-Hostler, P. Parotto, I. Portillo Vazquez, and C. Ratti [arXiv:1711.05207v2].
[6] ALICE collaboration, presentation at QM 2017, https://indico.cern.ch/event/576735/contributions/2565849/.

Summary

Primary author: Dr KATZ, Roland (University of São Paulo)

Co-authors: Dr PRADO, Caio (Central China Normal University (CN)); Prof. NORONHA-HOSTLER, Jacquelyn (Rutgers University); ALARCON DO PASSO SUAIDE, Alexandre (Universidade de Sao Paulo (BR)); NORONHA, Jorge (University of Sao Paulo); GAMEIRO MUNHOZ, Marcelo (Universidade de Sao Paulo (BR))

Presenter: Dr KATZ, Roland (University of São Paulo)

Session Classification: Poster Session