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Medium-effects on heavy-flavour production in large and small systems

Tuesday 29 September 2015 10:00 (20 minutes)

Predictions obtained with the up-to-date version of our POWLANG transport code for heavy-flavour production in high-energy nuclear (A-A and now also p-A) collisions will be presented. To the usual Langevin evolution in the plasma we added a new modeling of the hadronization stage including the recombination with thermal partons from the medium at the decoupling hypersurface, to form colour-singlet strings eventually fragmented according to the Lund model implemented in PYTHIA. The additional radial and elliptic flow inherited by the heavy-flavour hadrons from the light quarks will affect the final observables, providing a better agreement with the experimental data for RAA and v_2 .

We will show how, with our setup, it is also possible to study more differential observables like various kind of azimuthal correlations: D-h, e-h – for which experimental data start getting available – but also D-Dbar or e+e-, not yet experimentally accessible but allowing in principle a more direct information on the decorrelation occurred at the partonic level. If the interaction with the medium tends to partially wash-out the initial Q-Qbar angular correlation, the elliptic flow acquired in the medium and at hadronization will tend to introduce a common correlation of all the heavy-flavour hadrons with the reaction plane, which will also contribute to the experimental signal.

Finally we will display the first results of our ongoing study on heavy-flavour observables in small systems, like the ones produced in p-Pb or d-Au collisions, trying to check whether the presence of a hot medium suggested by observables in the light sector (e.g. double ridge, elliptic flow...) can leave its fingerprints also in heavy-flavour signals.

On behalf of collaboration:

NONE

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