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## event by event correlations between light and heavy mesons

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Heavy mesons are one of the few probes which allow for studying the properties of a plasma of quarks and gluons (QGP) created in ultra-relativistic heavy ion collisions. To do this we have to follow the heavy quarks from their production point through the QGP up to the final rescattering of heavy mesons with hadrons after the hadronization.

The interaction of heavy quarks in the QGP is calculated in pQCD with a running coupling constant and including elastic as well as radiative collisions (arXiv 1307.5270). Due to event by event fluctuations the interaction of heavy mesons in the hadronic phase depends on the light quarks/mesons which are produced simultaneously with the heavy quarks during the initial phase of the heavy ion reaction. Therefore the observables of the heavy and light hadrons are correlated and both have to be studied simultaneously.

Combining the event generator EPOS with our Heavy Quark approach we can for the first time present event-by-event results simultaneously for the light and heavy meson sector and overcome by this uncertainties of the heavy quark observables due to the ambiguities in the plasma expansion (arXiv:1102.1114).

We will present detailed studies for pA in which also a (small) plasma is created to explore cold nuclear matter effects and an analysis of AA collisions, simultaneously in the light and heavy mesons sector to show which information about the elementary interaction between heavy quarks and partons is contained in the presently available data.

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