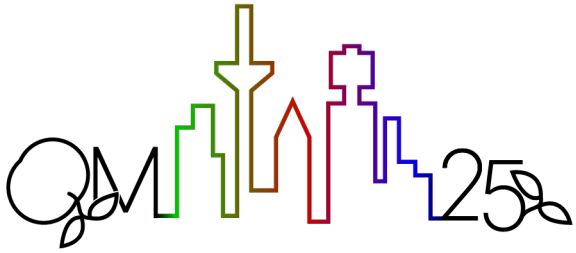

Contribution ID: **19** Type: **Poster**

Heavy flavor angular correlations as a direct probe of the glasma

We study the impact of the glasma initial pre-equilibrium stage of heavy-ion collisions on heavy quarks spectra and correlations. Our main finding is that the effect of glasma on the nuclear modification factor R_{AA} for the heavy quark transverse momentum spectrum is moderate, while $c\overline{c}$ angular correlations are strongly affected by the glasma [1]. Such correlations are relevant for the experimentally measurable $D\overline{D}$ angular correlations.

We numerically evaluate the classical transport equations for heavy quarks in the glasma fields, which in turn are obtained from a numerical solution of the classical field equations of motion [2]. Within this approach, we simulate the transport of $Q\overline{Q}$ pairs produced back-to-back in the glasma fields and extract their two particle correlations $\mathcal{C}(\Delta\phi, \Delta\eta)$. We focus on the azimuthal correlations $\mathcal{C}(\Delta\phi)$ and evaluate the decorrelation width $\sigma_{\Delta\phi}$ as a function of the initial quark p_T and Glasma saturation momentum Q_s. We find that pairs with moderate p_T in a glasma with sufficiently large Q_s values exhibit a noticeable decorrelation already during the glasma stage. Further, we investigate how heavy quark p_T-spectra, initialized according to the FONLL heavy quark production cross section, are affected by the glasma fields. The strong glasma fields cause a shift in the initial spectra from low to higher p_T. Nevertheless, this effect on R_{AA} is moderate in comparison with the nPDF contribution to the input FONLL spectra.

[1] D. Avramescu, V. Greco, T. Lappi, H. Mäntysaari, D. Müller - 2409.10565 and 2409.10564
[2] D. Avramescu, V. Băran, V. Greco, A. Ipp, D. Müller, M. Ruggieri - Phys. Rev. D 107, 114021

Category

Theory

Collaboration (if applicable)

Author: AVRAMESCU, Dana (University of Jyväskylä)

Co-authors: GRECO, Vincenzo; LAPPI, Tuomas; Dr MÄNTYSAARI, Heikki (University of Jyväskylä); Dr MUELLER, David (TU Wien)

Presenter: AVRAMESCU, Dana (University of Jyväskylä)

Session Classification: Poster session 2

Track Classification: Heavy flavor & quarkonia