

## The impact of memory on heavy quarks dynamics in hot QCD medium.

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Heavy quarks (HQs) are considered as effective probes to study the evolution of the quark-gluon plasma (QGP). We study the dynamics of HQs in a hot QCD medium with a time-correlated noise,  $\eta$ . We have introduced the effect of memory through  $\eta$  and the dissipative force in the Generalized Langevin equation (GLV). We assume that the time correlations of the colored noise decay exponentially with time, called the memory time,  $\tau$ . We have explored the effect of non-zero values of  $\tau$  on the nuclear modification factor,  $R_{AA}$ , and transverse momentum broadening,  $\sigma_p$  of the HQs within the QGP medium. We find that overall memory slows down the momentum evolution of heavy quarks; In fact, transverse momentum broadening and the formation of  $R_{AA}$  are slowed down by memory and the thermalization time of the heavy quarks becomes larger. We will discuss the potential impact on other observables.

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