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Heavy quark diffusion in the hot QCD matter

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The heavy quarks (HQs) are considered to be effective probes to study the evolution of the QGP. We study the dynamics of HQs in a hot QCD medium with a time-correlated noise, η. We have introduced the effect of memory through η and the dissipative force in the Generalized Langevin equation. We supposed 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, RAA, and transverse momentum broadening, \sigma_p of the HQs within the QGP medium. We will also discuss the diffusion of HQs in the pre-equilibrium phase, the Glasma phase, within the framework of the Wong equation and its impact on heavy quark RAA and v2.

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