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Charm quark momentum broadening in a non-equilibrium glasma

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One of the outstanding problems in thermal QCD is to understand how and whether the heavy quarks produced in the early stages thermalize in the medium formed in a heavy-ion collision (HIC). Recent sets of experimental data point to the fact that charm quarks show the same collectivity as light quarks. In this study, we perform classical-statistical lattice simulations for relativistic charm (representing a Dirac particle), to compute the momentum broadening and real-time spectral functions of heavy quarks in the presence of strongly populated gauge fields, as they exist in the early non-equilibrium stage of HICs.

Primary author(s) : PANDEY, Harshit (IMSc); Dr SCHLICHTING, Sören (Bielefeld University); SHARMA, Sayantan

Presenter(s) : PANDEY, Harshit (IMSc)

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