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Heavy-quark diffusion coefficient in out-of-equilibrium plasmas

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We study the heavy-quark momentum diffusion coefficient in gluon plasmas in a self-similar regime using real-time lattice techniques. We observe that the time-evolution of the momentum diffusion coefficient is consistent with a $t^{-5/7}$ power law, as predicted by HTL perturbation theory and self-similarity. Using HTL with our recently acquired data on the spectral function of over-occupied gluodynamics, we find that the main contribution to the diffusion coefficient arises from the longitudinal Landau damping in the spectral function and study further features of the signal. Finding consistent results between lattice simulations and HTL results is an important step forward in understanding the evolution of the diffusion coefficient at initial stages.

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