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Limiting attractors in heavy-ion collisions - the interplay between bottom-up and hydrodynamical attractors

We study the hydrodynamization process in the aftermath of ultrarelativistic heavy-ion collisions using effective kinetic theory simulations and different observables. For the pressure ratio P_T/P_L , we observe that its late-time evolution becomes universal in units of the kinetic relaxation time for sufficiently large couplings signaling the onset of a hydrodynamical attractor. In contrast, at weak couplings it converges earlier to a bottom-up attractor in terms of the thermalization time scale $\tau_{\text{BMSS}} = \alpha_s^{-13/5}/Q_s$. We interpret these as two limiting attractors. The dynamics of the occupancy of hard modes, the heavy-quark diffusion coefficient and the jet quenching parameter are better described by a bottom-up limiting attractor even for moderate couplings. Therefore, the previous conjecture that the hydrodynamical attractor governs the late-time approach towards hydrodynamization is not complete. Our results indicate that there is more than one attractor depending on the coupling and observable.

What kind of work does this abstract pertain to?

Theoretical

Which experiment is this abstract related to?

Other

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