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Event-by-event pre-equilibrium dynamics with conserved charges

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We use QCD effective kinetic theory to calculate far-from-equilibrium dynamics in the presence of quarks on an event-by-event basis within the KoMPoST framework. We present non-equilibrium response functions and dynamical evolution pertinent to the early time dynamics of heavy-ion collisions at the highest energies. The KoMPoST framework with conserved baryon, strangeness, and electric charges can then be readily implemented into a multistage model allowing for the initialization of a non-equilibrium charge current in hydrodynamic simulations. In the precision era of high energy heavy-ion collisions, it is imperative for models to capture first principles physics as faithfully as possible. The work presented here opens the door for new charge related observables which can further our understanding of the plasma produced in heavy-ion collisions, from a first principles perspective.

Category

Theory

Collaboration (if applicable)

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