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Nuclear Theory

Dynamical equilibration in strongly-interacting parton-hadron matter

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(Submitted on 31 Dec 2010)

We study the kinetic and chemical equilibration in 'infinite' parton-hadron matter within the Parton-Hadron-String Dynamics transport approach, which is based on a dynamical quasiparticle model for partons matched to reproduce lattice-QCD results - including the partonic equation of state - in thermodynamic equilibrium. The 'infinite' matter is simulated within a cubic box with periodic boundary conditions initialized at different baryon density (or chemical potential) and energy density. The transition from initially pure partonic matter to hadronic degrees of freedom (or vice versa) occurs dynamically by interactions. Different thermodynamical distributions of the strongly-interacting quark-gluon plasma (sQGP) are addressed and discussed.

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