Expansion and hadronization of a quark-meson plasma

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Abstract

Using the SU(3) version of the Nambu-Jona-Lasinio model (with and without vector coupling) we construct a transport theory for studying the expansion of a quark-antiquark plasma and the chiral phase transition .The thermodynamical properties of the mesons (in-medium mass , lifetime , hadronization cross section) can well be defined in the framework of the NJL lagrangian.

We solve numerically the transport equation derived from the NJL model. The evolution of the system towards equilibrium is first studied in a box . In a second approach , we study the free expansion and hadronization of this plasma.

We discuss how close the system remains to equilibrium during the expansion, the expansion time scales , as well as the formation of mesons during the expansion, including strangeness.

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