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The characteristics of thermalization of boost-invariant plasma from holography

samedi 23 juillet 2011 09:30 (15 minutes)

We report on the evolution of boost-invariant N=4 super Yang-Mills plasma covering a large range of proper times starting from various nonequilibrium states at tau=0, through a transition to a hydrodynamic regime and following subsequent hydrodynamic expansion. The results are obtained through numerical solution of Einstein's equations for the dual geometries. Despite the very rich far from equilibrium evolution, we find surprising regularities in the form of simple phenomenological relations between initial entropy and total produced entropy, as well as between initial entropy and the temperature at thermalization. For 20 different initial conditions that we consider, hydrodynamics turns out to be applicable for proper times larger than at most 0.67 in units of inverse temperature at thermalization.

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Auteurs principaux: Dr HELLER, Michal (Universiteit van Amsterdam / Institute for Nuclear Studies); M. WITASZCZYK, Przemyslaw (Jagiellonian University); Prof. JANIK, Romuald (Jagiellonian University)

Orateur: Dr HELLER, Michal (Universiteit van Amsterdam / Institute for Nuclear Studies)

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