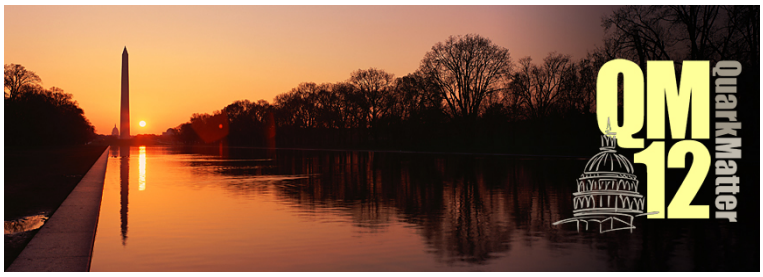

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Thermalization and Possible Bose-Einstein Condensation in Over-populated Glasma

Friday, 17 August 2012 14:00 (20 minutes)

We report on a recently proposed scenario for thermalization of hot QCD matter after the "Little Bang" in heavy ion collisions. A distinctive feature of the pre-equilibrium system (the Glasma) is the high over-population of phase space for gluons, which we argue plays a central role for the thermalization of the Quark-Gluon Plasma. In particular, the over-population (1) coherently amplifies scattering by $1/\alpha_s$ and makes the system behave as a strongly interacting fluid despite being out of equilibrium at weak coupling, (2) may lead to the dynamical, albeit transient formation of a Bose-Einstein condensate over the course of thermalization. A further distinctive feature of our scenario is that the initially single scale (Q_s) of Glasma develops into a hierarchy of scales, with the IR scale and the UV separated by coupling α_s, precisely as in equilibrium thermal field theory. We demonstrate these features by solving the Boltzmann equation in the small angle approximation and in the regime where the occupation numbers are large. Finally, we address possible phenomenological consequences of our scenario.

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