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Bose Einstein Condensation from a Gluon Transport Equation

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We present a novel numerical scheme to solve the QCD Boltzmann equation in the small-scattering angle approximation, for the quenched limit of QCD. Using this we can investigate the evolution of spatially homogeneous systems of gluons distributed isotropically in momentum space.

We numerically confirm results of Blaizot et al, in particular that for certain "overpopulated" initial conditions, a transient Bose-Einstein condensate emerges during equilibriation in a finite time. We further analyse the dynamics of the formation of this condensate.

The scheme can be extended to systems with cylindrically symmetric momentum distributions, in order to investigate the effects of anisotropy. In particular we compare the rates at which isotropization and equilibriation occur. We also compare our results from the small-scattering angle scheme to the relaxation-time approximation.

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