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Thermalization of a gluon plasma and the possible Bose-Einstein condensation

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Using the parton transport model BAMPS, the thermal equilibrium process for the dense gluon plasma produced in the early stages of ultra-relativistic heavy ion collisions is studied, under the Color Glass Condensate inspired initial conditions. The Bose enhancement effect's role in speeding up the growth of soft gluons is emphasized. Different initial conditions are implemented into the model and the results are discussed. We found that the potential gluon condensate must be taken into account when the initial gluons are overpopulated. With this consideration, we calculate the condensate growth and also the whole system's evolution.

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