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# Nonperturbative properties of overoccupied gluonic plasmas

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In ultrarelativistic heavy-ion collisions a quark-gluon plasma is created. Its pre-equilibrium evolution includes some fascinating phenomena of QCD. Focusing on the regime when gluonic occupation numbers are large, which can be achieved in the high energy and weak coupling limit, classical-statistical lattice simulations can be used to extract nonperturbative information on the dynamics. In this talk, we will focus on spectral functions and condensation phenomena in overoccupied gluonic plasmas. We find that spectral functions for different spatial dimensions exhibit quasiparticle excitations at all momenta, while partially showing deviations from perturbative expectations. Our results point towards an effective kinetic theory description even for extremely anisotropic systems. We also find that the large density of gluons can lead to the formation of a gauge-invariant condensate, which we identify using spatial Wilson loops. This reveals intriguing similarities to recent discoveries of condensation phenomena out of equilibrium in table-top experiments with ultracold Bose gases.

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