

Multigluon correlations in the Color Glass Condensate

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At high energy and/or for large atomic numbers the wave-function of a generic hadron is dominated by gluon modes with soft longitudinal momenta and high occupation numbers, which can reach the state of saturation. This state, known as the Color Glass Condensate (CGC), is universal and can manifest itself in any hadronic process involving small- x partons, like deep inelastic scattering and proton-proton, proton-nucleus and nucleus-nucleus collisions at the LHC. The CGC effective theory describes the ensemble of multigluon correlations at small x , which evolve with energy according to a renormalization group equation, the JIMWLK equation. After a quick review of the theory of the CGC, we focus on recent progress in solving the JIMWLK equation and thus obtaining explicit, analytic solutions for the multigluon correlations at high energy. Although approximate, these solutions are in fact very accurate, as demonstrated by their comparison to numerical solutions to the JIMWLK equation in all the cases where the latter are known.

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