Contribution ID: **76**   Type: **not specified**

JIMWLK evolution for multi-particle production in Langevin form

Thursday 12 September 2013 14:50 (20 minutes)

We study multi-particle production with rapidity correlations in proton-nucleus collisions at high energy in the Color Glass Condensate framework. The high-energy evolution responsible for such correlations is governed by a generalization of the JIMWLK equation describing the simultaneous evolution of the strong nuclear color fields in the direct amplitude and the complex conjugate amplitude. This functional equation can be used to derive ordinary evolution equations for the cross-sections for particle production but the ensuing equations appear to be too complicated to be useful in practice, even at large Nc. We propose an alternative formulation based on a Langevin process, which is better suited for numerical implementations, and we present the stochastic equations appropriate for two gluon production.

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Session Classification: Parallel talks - Session 1B