XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: **310** Type: **Contributed Talk**

Structure of chromomagnetic fields in the glasma

Monday, 19 May 2014 15:20 (20 minutes)

The initial stage of a heavy ion collision is dominated by nonperturbatively strong chromoelectric and -magnetic fields. The properties of these fields can be calculated numerically using the CGC description of the small x degrees of freedom of the colliding nuclei. The spatial Wilson loop provides a gauge invariant observable to probe the dynamics of the longitudinal chromomagnetic field. This talk describes the results from a recent real time lattice calculation (arXiv:1401.4124) of the area-dependence of the expectation value of the spatial Wilson loop.

We consider ensembles of gauge field configurations generated from the MV-model classical Gaussian effective action as well as solutions of the JIMWLK high-energy renormalization group equation with fixed and running coupling. The initial fields exhibit domain-like structure over distance scales of the order of the saturation scale. At later times universal scaling emerges at large distances for all ensembles, with a nontrivial critical exponent. A similar behavior has earlier been seen in calculations of the gluon transverse momentum spectrum, which becomes independent of the initial spectrum of gauge fields (i.e. the initial unintegrated gluon distribution) for momenta less than the saturation scale. Finally, we compare the results for the Wilson loop to the two-point correlator of magnetic fields.

On behalf of collaboration:

None

Author: LAPPI, Tuomas (University of Jyvaskyla)

Co-authors: DUMITRU, Adrian (Baruch College (City University of New York)); Dr NARA, Yasushi (Akita International University)

Presenter: LAPPI, Tuomas (University of Jyvaskyla)

Session Classification: Approach to equilibrium

Track Classification: Approach to Equilibrium