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# Unpolarized and linearly polarized gluon TMDs from the CGC

*Wednesday 21 November 2018 10:00 (25 minutes)*

In this talk, I elaborate on the way in which gluon transverse momentum dependent PDFs (TMDs) arise from the Color Glass Condensate (CGC). The latter is the effective theory that allows to calculate the nonlinear rapidity evolution of the gluon distribution at low-x in the presence of saturation. In particular, we use the CGC to compute the cross section for forward dijet or heavy-quark pair production in proton-nucleus collisions. In the so-called correlation limit, in which the jets or heavy-quarks are almost back-to-back, this cross section can be written in a TMD factorized form. For both processes, not one but many different gluon TMDs play a role, each characterized by a distinct Wilson line configuration, which guarantees gauge independence and is dependent on the underlying hard process. The different TMDs can be calculated analytically in the McLerran-Venugopalan (MV) model, and evolved numerically with the nonlinear JIMWLK equation. It is observed that, as is expected, all TMDs converge to the same unintegrated PDF (uPDF) in the linear or large-kt regime. Moreover, we note that in the case of heavy-quark production, also gluon TMDs play a role which encode the distribution of linearly polarized gluons inside the unpolarized nucleus. Finally, I comment on future developments, such as small-x gluon TMDs in multi particle production or in quarkonium studies.

**Author:** TAELS, Pieter (INFN Cagliari)

**Presenter:** TAELS, Pieter (INFN Cagliari)

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