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WW gluon distributions and quark pair asymmetries in eA collisions

Summary

In high energy scatterings, one of the most intriguing scientific goals to be achieved is to map/explore the three-dimensional structure of nucleon/nuclei. The three-dimensional (one dimensional part is the longitudinal one and the other part is transverse momentum dependent (TMD)) parton distributions, known as TMD PDFs. In general, TMD PDFs are process dependent and should be constrained by measuring physical observables at the current and future facilities. Among the various TMDs, it has been proposed that the WW gluon distributions can be directly probed in DIS dijet or heavy quark pair process [1,2].

In this talk, we will show that the detailed study on the asymmetries of quark pair in eA collisions under the framework of color glass condensate, in this study, we also include the so-called Parton shower effect, known as Sudakov effect. Numerical results show that both the Sudakov and saturation effect can suppress the azimuthal correlation of the pair. In particular, results show that saturation effect dominant the suppression when the target becomes heavier.

[1]. F. Dominguez, C. Marquet, B.-W. Xiao, and F. Yuan, Phys. Rev. D83, 105005 (2011).

[2]. A. Metz and J. Zhou, Phys. Rev. D84, 051503 (2011).

Primary author: ZHAO, Ye-Yin (Central China Normal University)

Co-authors: Dr XU, Ming-Mei (CCNU); WU, Yuanfang (Central China Normal University)

Presenter: ZHAO, Ye-Yin (Central China Normal University)