

K_t-factorization and dijet production in pA collisions

Thursday 15 November 2012 13:30 (25 minutes)

A complete calculation of dijet production in various processes will be presented in this talk. It is well-known that k_t factorization is violated in dijet production in hadron-hadron collision. However, we found that one can reach an effective k_t factorization in pA collision by modifying the nucleus parton distribution. In addition, we find that there are two fundamental unintegrated gluon distributions in high density QCD. The first unintegrated gluon distribution, defined as the Fourier transform of the color-dipole amplitude, can be probed in the direct photon-jet correlation in pA collisions; whereas the second unintegrated gluon distribution, which measures the number density of gluons inside the target nucleus, can be directly measured in DIS dijet production. Dijet production cross section in pA collision depends on both gluon distributions through convolutions. We conduct two independent calculations (one is in CGC formalism and the other uses TMD approach.) for all of above processes. We find these two calculations agree perfectly. These calculations have shown important impacts on the present RHIC and LHC (upcoming pA run) as well as future EIC and LHeC. In the end, I will present a comprehensive comparison between our numerical results and the forward dihadron production data from STAR as well as some predictions for EIC.

Keywords

Dijet, low-x gluon distribution, factorization

Author: XIAO, Bowen (Central China Normal University)

Co-authors: MARQUET, Cyrille; DOMINGUEZ, Fabio (IPhT Saclay); YUAN, Feng (LBNL)

Presenter: XIAO, Bowen (Central China Normal University)

Session Classification: Parallel 1B (Chair Ju Hwan Kang)