Contribution ID: **477** Type: **Contributed Talk**

Quarkonium production and gluon TMDs at the EIC

Tuesday, 13 April 2021 10:37 (18 minutes)

Transverse momentum dependent parton distribution functions (TMDs) are extensions of the well- known collinear PDFs. They contain, apart from the usual x- and scale dependence, also information on the intrinsic transverse momentum carried by the parton, and on the spin correlations.
Experimentally, not so much is known about gluon TMDs, since they are subleading with respect to their quark counterparts in the few processes for which TMD factorization is proven (Drell-Yan, SIDIS). This problem is bypassed by studying quarkonium, to which the gluon distributions in the proton couple already at leading order.
In this seminar, I will review two recent studies [1,2] where inclusive and associated quarkonium electroproduction is put forward as a probe of the proton gluon TMDs. I will then elaborate on subtleties [3] that arise, related to the transverse-momentum dependence of the so-called long distance matrix elements (LDMEs), which encode the nonperturbative information on the hadronization of the heavy-quark pair.
[1] A. Bacchetta, D. Boer, C. Pisano, and P. Taels, Gluon TMDs and NRQCD matrix elements in production at an EIC, Eur. Phys. J. C 80 (2020) 72
[2] U. D'Alesio, F. Murgia, C. Pisano, and P. Taels, Azimuthal asymmetries in semi-inclusive J/ψ+jet production at an EIC, Phys. Rev. D 100 (2019) 094016
[3] D. Boer, U. D'Alesio, F. Murgia, C. Pisano, and P. Taels, J/ψ meson production in SIDIS: matching high and low transverse momentum, JHEP 09 (2020) 40

Primary author: TAELS, Pieter (Ecole Polytechnique)

Co-authors: BOER, Daniel (University of Groningen); PISANO, Cristian; BACCHETTA, Alessandro (University of Pavia and INFN); MURGIA, Francesco (INFN Cagliari); D'ALESIO, Umbero (INFN and University of Cagliari)

Presenter: TAELS, Pieter (Ecole Polytechnique)

Session Classification: QCD with Heavy Flavors and Hadronic Final States

Track Classification: QCD with Heavy Flavors and Hadronic Final States