Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Gluon pseudo-distributions at short distances: Forward case[1]
WAYNE MORRIS, Old Dominion University, IAN BALITSKY, ANATOLY RADYUSHKIN, Jefferson Lab/ODU, HADSTRUC COLLABORATION — We present the results that are necessary in the ongoing lattice calculations of the gluon parton distribution functions (PDFs) within the pseudo-PDF approach. We give a classification of possible two-gluon correlator functions and identify those that contain the invariant amplitude determining the gluon PDF in the light-cone $z^2 \to 0$ limit. One-loop calculations have been performed in the coordinate representation and in an explicitly gauge-invariant form. We made an effort to separate ultraviolet (UV) and infrared (IR) sources of the $\ln(z^2)$-dependence at short distances z^2. The UV terms cancel in the reduced Ioffe-time distribution (ITD), and we obtain the matching relation between the reduced ITD and the light-cone ITD. Using a kernel form, we get a direct connection between lattice data for the reduced ITD and the normalized gluon PDF. We also show that our results may be used for a rather straightforward calculation of the one-loop matching relations for quasi-PDFs.

Wayne Morris
Old Dominion University

Date submitted: 06 Jan 2021   Electronic form version 1.4