Contribution ID: **129**   Type: **Parallel Session Talk**

One-loop corrections to multiscale effective vertices in the EFT for Multi-Regge processes in QCD

Tuesday 9 April 2019 14:20 (20 minutes)

The gauge-invariant EFT for Multi-Regge processes in QCD [1,2] has bee introduced to facilitate the computation of NLO corrections in the BFKL approach. The main difficulty in this approach is the appearance of rapidity divergences (RDs) in loop integrals, which are not regularized by dimensional regularization and require separate regularization, see Ref. [3] for more details. We will discuss the technique of calculation of one-loop quantities with more than one scale of virtuality in this approach. New results to be presented include:

1)general analysis of the conditions of appearance of RDs,

2)results for rapidity-divergent scalar integrals with two scales of virtuality,

3)one-loop corrections to effective vertices of scattering of virtual photon on Reggeized quark and one-loop correction for the Green's function with external Reggeized and QCD gluons with insertion of gauge-invariant operator $F_{\mu\nu}F^{\mu\nu}$. Last results will be applied in the NLO calculation of DIS structure functions in the Parton Reggeization Approach [4,5].

[1] L. N. Lipatov, Nucl. Phys. B452 (1995) 369–400. doi:

10.1016/0550-3213(95)00390-E.

[2] L. N. Lipatov, M. I. Vyazovsky, Nucl. Phys. B597

(2001) 399–409. doi:10.1016/S0550-3213(00)00709-4.

[3] M. Nefedov, V. Saleev, Mod. Phys. Lett. A32 (2017) 1750207.

doi:10.1142/S0217732317502078.

[4] M. Nefedov, V. Saleev, EPJ Web Conf. 158 (2017) 03011. doi:10.1051/epjconf/201715803011.

[5] M. Nefedov, V. Saleev, EPJ Web Conf. 191 (2018) 04007.

doi:10.1051/epjconf/201819104007.

Author: Dr NEFEDOV, Maxim (Samara State University)

Presenter: Dr NEFEDOV, Maxim (Samara State University)

Session Classification: WG2: Small-x and Diffraction

Track Classification: WG2: Low-x and Diffraction