Non-singlet part of the longitudinal structure function F_L up to N^2LO

Maryam Soleymaninia[(a)], Ali N. Khorramian[(a,b)], S. Atashbar Tehrani[(b)]

[(a)] Physics Department, Semnan University, Semnan, Iran
[(b)] School of Particles and Accelerators, IPM (Institute for Studies in Theoretical Physics and Mathematics), P.O. Box 19395-5531, Tehran, Iran

The unpolarized longitudinal nucleon structure function F_L, measured in the deep inelastic lepton-nucleon scattering [1], is contained of three parts, singlet, non-singlet and gluon [2] . The aim of this paper is to perform a QCD analysis of the longitudinal heavy and light structure functions $F_L(x, Q^2)$ in the non-singlet part up to N^2LO. We use the light and heavy flavor Wilson coefficients [2] and distribution functions in Mellin space. Also we need to use the *Padé* approximation for N^2LO evolution.

[1] Nagano,f. t, H1 and Z1. Collaborations, arXiv:0808.3797 [hep-ph].

[2] I. Bierenbaum, J.Blumlein, S. Klein, 2007, hep-ph/0703285.

E-mail: maryam.soleimaninia@gmail.com