

Abstract

We present the results of our QCD analysis for non-singlet unpolarized quark distributions and structure function $F_2(x, Q^2)$ up to N³LO. In this regards 4-loop anomalous dimension can be obtain from the Pad\`e approximations. The analysis is based on the Jacobi polynomials expansion of the structure function. New parametrization are derived for the non-singlet quark distributions for the kinematic wide range of x and Q^2 . The higher twist contributions of $F_2^{\{p,d\}}(x, Q^2)$ are extracted in the large x region in N³LO analysis. The values of Λ_{QCD} and $a_s(M_z^2)$ are determined.