Extraction of Structure Function and Gluon Distribution Function at Low-x from Cross Section Derivative by Regge Behavior

G.R. Boroun

Physics Department, Razi University, Kermanshah 67149, Iran

Abstract: An approximation method based on Regge behavior is presented. This new method relates the reduced cross section derivative and the structure function Regge behavior at low x. With the use of this approximation method, the C and λ parameters are calculated from the HERA reduced cross section data taken at low-x. Also, we calculate the structure functions F_2 (x,Q^2) even for low-x values, which have not been investigated. To test the validity of calculated structure functions, we find the gluon distribution function in the Leading order approximation based on Regge behaviour of structure function and compare to the NLO QCD fit to H1 data and NLO parton distribution function.

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