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Calculation of Gluon Distribution Functions in Leading Order by Regge-like Behavior at Low-x

G.R. Boroun

Physics Department, Razi University, Kermanshah 67149, Iran
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Abstract: An approximate analytical form of the gluon distribution function from the derivative F_2 proton structure function data at low-x assuming the Regge-like behavior of the gluon distribution function at this limit is presented. In this method, we calculate λ and C parameters for each low-x value at several Q^2 values using the scaling violation of the F_2 proton structure function. For low-x, λ is found to be independent of x within the experimental accuracy. We make use of the leading order Altarelli-Parisi (A-P) evolution equations in our analysis. To test the validity of our new determined gluon distribution functions, we compare them with the QCD parton distribution functions at low-x region.

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Key words: Regge-like behavior, DGLAP equation for gluon, low x

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