

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Modeling the proton structure functions: from deep inelastic scattering to the resonance region¹ SERGEY KULAGIN, VLAD BARINOV, INR of RAS, Moscow — We develop a phenomenological model of the proton inelastic structure functions applicable for both the deep inelastic scattering (DIS) and the nucleon resonance region. In the DIS region we compute the structure functions in terms of the parton distributions with higher-twist corrections which are determined from a global QCD fit. The resonance region is addressed in terms of Breit-Wiegner contributions from the $\Delta(1232)$ resonance, $N(1440)$ Roper resonance and three effective resonances for the second and the third resonance regions. The nonresonance background is described using an extrapolation of the DIS structure functions into the region of low invariant masses of produced states W as well as low invariant momentum transfer Q . We independently treat the transverse, F_T , and the longitudinal, F_L , structure function and determine the model parameters from a fit to the proton differential cross section data. We demonstrate a very good performance of the model by comparing our predictions with a number of measurements of the structure functions F_2 and $R = F_L/F_T$ in the resonance and the DIS region.

¹This work was partially supported by the BASIS Foundation for the Development of Theoretical Physics and Mathematics.

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Date submitted: 01 Jul 2020

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