Erratum: Structure functions of deep inelastic scattering at intermediate x in quantum chromodynamics [JETP Lett. 42, No. 6, 266–268 (25 September 1985)]

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In the article by B. L. Ioffe, published in JETP Lett. Vol. 42, No. 6, the author missed the following two errors:

1. The sign of the contribution of the physical states, in particular, that of the proton, to the sum rules was determined incorrectly.

2. The contribution of the nondiagonal transitions $Wp \to WN^*$ (the diagram in Fig. 3) is in fact missing, since we are considering the imaginary part of the amplitude. We can therefore justify the use of Borel sum rule (without differentiation with respect to the Borel parameter $1/m^2$). As a result, we find the following expression, instead of Eq. (5):

$$F_2^{\nu p}(x) = e^{m^2/M^2} (\tilde{\lambda}_N^2 m^2)^{-1} x \left\{ M^8 E_3(z) 4(1-x)(2+2x-x^2) \right.$$
$$\left. - \frac{8}{9\pi} M^2 \alpha_s a^2 \left[-\left(\frac{7}{4} - \frac{x}{2}\right)\frac{1}{1-x} + 1 + 3x + \left(\frac{2x}{1-x} + 1 - x\right)\left(\ln\frac{2\nu}{M^2 x} + C\right)\right]\right\}.$$

[The continuum is written in the form $\int \rho(p^2)(p^2+s)^{-2} dp^2$.] The relatively small divergence from the function $x d_V(x)$ which was found earlier reduces primarily to the fact that the kink on the curve in Fig. 4 occurs earlier at large x, which improves the agreement with the experiment.