ERRATA

Erratum: “Deep Inelastic Scattering: Q^2 Dependence of Structure Functions” [Physics of Particles and Nuclei 38, 1 (2007)]

A. V. Kotikov

Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, 141980 Russia

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1. The captions for Figs. 2 and 4 should contain: “The diagrams are multiplied by a factor of 2 because of the opposite direction of a fermion. The diagram (a) should also be doubled because of crossing symmetry.”

2. In Eqs. (46), (49), (52), (56), (58), (59), and (95) of the original version of the paper there are misprints. They should have the form

$$B_{L,n}^{(1)NS} = \frac{4C_F}{(n+1)}(1 + \varepsilon[S_1 + 1]), \quad (46)$$

$$B_{L,n}^{(1)G} = \frac{16T_F}{(n+1)(n+2)}(1 + \varepsilon[S_1 + 1]), \quad (49)$$

$$R_{L,n}^{(2)NS}(\Sigma) = 2C_F \left[3S_1^2 - S_2 + S_1 \left(\frac{19}{6} - \frac{2}{n} \right) + \frac{205}{36} - \frac{131}{6n} - \frac{13}{6(n+1)} + \frac{2n+1}{n^2(n+1)^2} \right]$$

$$+ (2C_F - C_A) \left[8K_2S_1 - 8K_{2,1} + 4K_3 - 4S_3 + 12\zeta(3) - 8K_2 \left(1 + \frac{1}{n(n+1)} + \frac{3}{(n-2)(n+3)} \right) \right] \quad (52)$$

$$- \frac{23}{3}S_1 - \frac{215}{18} + \frac{111}{3n} + \frac{11}{3(n+1)} + \frac{18}{(n-2)(n+3)} \left] - \frac{4}{3}T_F \left[S_1 + \frac{19}{6} - \frac{1}{n} - \frac{1}{(n+1)} \right],$$

$$R_{L,n}^{(1)PS}(\Sigma) = \frac{8T_F}{(n+1)(n+2)} \left[S_1 \left(-2 - \frac{8}{(n-1)} + \frac{4}{n} \right) - 3 - \frac{16}{3(n-1)} - \frac{1}{n} + \frac{1}{(n+1)} + \frac{4}{3(n+2)} - \frac{2}{n^2} \right], \quad (56)$$

$$R_{L,n}^{(1)PS}(\overline{MS}) = R_{L,n}^{(1)PS}(\overline{MS}) + \frac{8T_F}{(n+1)(n+2)} \left[S_1 \left(-1 - \frac{4}{(n-1)} + \frac{2}{n} \right) - 2 - \frac{4}{3(n-1)} - \frac{3}{n} + \frac{1}{(n+1)} + \frac{4}{3(n+2)} - \frac{2}{n^2} \right], \quad (58)$$

$$R_{L,n}^{(2)G}(\Sigma) = 2C_A \left[3S_1^2 - S_2 + 2K_2 + S_1 \left(5 - \frac{4}{n(n-1)} - \frac{6}{(n+1)} + \frac{2}{(n+2)} \right) - 1 - \frac{2}{3(n-1)} - \frac{1}{n} - \frac{1}{(n+1)} + \frac{8}{3(n+2)} - \frac{2}{n^2} + \frac{2}{(n+1)^2} - \frac{4}{(n+2)^2} \right] \quad (59)$$

$$- 2C_F \left[2K_2 \left(1 + \frac{4}{(n-2)(n+3)} \right) + 2S_1 \left(1 + \frac{1}{n(n+1)} \right) - \frac{2n+1}{2n(n+1)} - \frac{6}{(n-2)(n+3)} + \frac{2n+1}{n^2(n+1)^2} \right],$$

$$d_1 = \frac{16f}{27/\beta_0}. \quad (95)$$

The substitutions do not have any effect on the results of the paper.

3. Before Eqs. (58) and (61) must be added: “(and the prescription A (see [21]).)”

4. The end of the first paragraph of the second column on page 11 should read as “... were derived in [30, 31].”

5. The following replacements must be made:

(1) $\alpha \rightarrow \xi$ in Eq. (36),

(2) $\bar{B}_L^{(1)G} \rightarrow \bar{B}_L^{(1)S}$ before Eq. (57),

(3) $\gamma_{NS}^{(0)n} \rightarrow \gamma_{SG}^{(0)n}$ before Eq. (60),

(4) $a_s \rightarrow \bar{a}_s$ after Eq. (63) and in the r.h.s. of Eq. (64),

(5) $a_R \rightarrow \bar{a}_R$ before Eqs. (68) and (69),

(6) $a_1 \rightarrow \bar{a}_1$ and $a_2 \rightarrow \bar{a}_2$ after Eq. (69),

(7) “(see (54))” $\rightarrow$ “(see (53))” before Eq. (73),

(8) “function of x ” $\rightarrow$ “function of z ” and $\beta^{(0)i} \rightarrow \beta^{(i)}$ after Eq. (73),

(9) $\gamma_{ab}(z, \bar{a}_s) \rightarrow \gamma_{ab}(x, \bar{a}_s)$ after Eq. (76),

(10) “the DGLAP and BFKL approaches.” $\longrightarrow$ “the DGLAP and BFKL approaches (see, for example, [135]).” in the footnote 20,

(11) “(compare [76])” $\longrightarrow$ “(contrary to [76])” in the third item of page 19,

(12) “(138) for $F_2(x, Q^2)$ ” $\longrightarrow$ “(138) directly for $F_2(x, Q^2)$ ” after Eq. (140),

(13) “given in [95]” $\longrightarrow$ “given in [102]” at the end of the subsection 6.2,

(14) “Section 3.6” $\longrightarrow$ “Section 5.6” at the beginning of the subsection 6.3,

(15) “... found experimentally.” $\longrightarrow$ “... found experimentally (see, for example, section 5.3).” at the end of the second paragraph of subsection 6.3,

(16) “region of x .” $\longrightarrow$ “region of x (see [118]).” in the footnote 28,

(17) “The kernel difference involves” $\longrightarrow$ “The kernel difference $\gamma_{SS} - \gamma_{SS}^*$ involves” in the second paragraph after Eq. (171),

(18) “a few values of Q^2 [124]” $\longrightarrow$ “a few values of Q^2 [125]” in the caption of Table 4.

(19) references [2], [3], [6], [5], and [4] by [130], [131], [132], [133], and [134], respectively, in Table 4.

(20) “E154 data was processed” $\longrightarrow$ “E154 data [132, 133] was processed” in the caption of Fig. 13.

(21) “the SM and E154 collaborations” $\longrightarrow$ “the SM and E154 collaborations (see [130]–[133])” in the second item after Eq. (173),

(22) “SMC data.” $\longrightarrow$ “SMC data [130].” in the caption of Fig. 14.

(23) “The different types of SIPT” $\longrightarrow$ “The various types of SIPT” at the third paragraph of Conclusion,

(24) $1/\tilde{\delta}_V \longrightarrow 1/\tilde{\delta}_M$ at the end of Appendix.

6. Paragraph 4 on page 14 should read “These values were obtained by BCDMS [56] and EMC [57].¹⁵ We extract $R(x, Q^2)$ in the leading order ($\sim\alpha_s$) and the two-loop approximation ($\sim\alpha_s^2$), in the latter case using both approaches: the usual one and the one obtained with the help of SIPT.¹⁶”

7. The second paragraph of subsection 6.6.1 should read “Indeed, at $x \longrightarrow 1$, the structure functions F_1 and

g_1 have a similar Q^2 dependence (identical in the leading order). For instance, in the leading order, where the Callan-Gross relation $x F_1 = F_2$ holds, the large x behavior of F_1 is given by Eqs. (144) and (149). The structure function g_1 has similar asymptotic behavior because the anomalous dimensions $\gamma_{NS}^{(0)}(n)$ and $\gamma_{SS}^{(0)}(n)$ are the same for the spin-dependent and spin-independent cases (the noncomputable parameters A_{0NS} , A_{0S} and A_0^{NS} , A_0^S can be different³¹). Therefore, we have $A_1 \longrightarrow 1$ independent of Q^2 as $x \longrightarrow 1$.”

8. Before the Appendix must be added: *Acknowledgments*. The author is grateful to A.P. Bakulev, D.I. Kazakov, L.N. Lipatov, S.V. Mikhailov, D.V. Shirkov, and O.V. Teryaev for useful discussions and also to A.Yu. Illarionov, A.L. Kataev, V.G. Krivokhizhin, G. Parente, and A.V. Sidorov for collaborations.

9. The references [71] and [72] should have the form:

71. A.V. Kotikov and L.N. Lipatov, Nucl. Phys. B **582**, 19 (2000); Nucl. Phys. B **661**, 19 (2003).

72. A.V. Kotikov et al., Eur. Phys. J. C **26**, 51 (2002); Eur. Phys. J. C **27**, 219 (2003); J. Exp. Theor. Phys. **101**, 811 (2005) [Zh. Eksp. Teor. Fiz. **128**, 938 (2005)].

10. The reference [126] should be added by the paper:

A. Airapetian et al. (HERMES Collab.), Phys. Rev. Lett. **94**, 012002 (2005).

11. The reference [127] should have the form:

127. E.S. Ageev et al. (COMPASS Collab.), Preprint CERN-PH-EP-2006-031 (hep-ex/0610068).

12. The references [130–135] should be added:

130. D. Adams et al. (SM Collab.), Phys. Rev. D **56**, 5330 (1997).

131. D. Adams et al. (SM Collab.), Phys. Lett. B **396**, 338 (1997).

132. K. Abe et al. (E154 Collab.), Phys. Lett. B **405**, 180 (1997).

133. K. Abe et al. (E154 Collab.), Phys. Rev. Lett. **79**, 26 (1997).

134. K. Abe et al. (E143 Collab.), Phys. Rev. D **58**, 112003 (1998).

135. Bo Andersson et al. (Small x Collab.), Eur. Phys. J. C **25**, 77 (2002).