



Corrigendum

Corrigendum to “High-energy limit of quantum electrodynamics beyond Sudakov approximation” [Phys. Lett. B 745 (2015) 69]



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There is a sign misprint in the third line of Eq. (7) which should read $\phi^c(\eta, \xi) = \exp[-x\eta(\eta + 2\xi - 2)]$. In the analysis of the high-order corrections the double-logarithmic contribution due to the soft photon exchange between the soft and external electron lines, Fig. 2(d), has not been taken into account. This contribution results in an additional factor $\phi^d(\eta_2)\phi^d(\xi_1)$ in the integrand of Eq. (6), where $\phi^d(\eta) = \exp[-x(1 - \eta)^2]$. It changes the coefficients of the series (9). The corrected coefficients are listed in a new Table 1. The asymptotic behavior of $F_1^{(1)}$ at large x given by Eqs. (10), (11), (12) is modified. The numerical result for the function $f(x) = -3F_1^{(1)}$ is presented in Fig. 3. The function rapidly grows at $x \sim 1$ and then monotonically approaches the limit $f(\infty) = 1.33496\dots$ corresponding to $F_1^{(1)}(x = \infty) = -0.444988\dots$. Thus the power-suppressed amplitude is enhanced by the double-logarithmic corrections at high energy though the enhancement is not as significant as it was suggested by Eqs. (11), (12).

The main conclusions of the paper do not change.

Table 1

The normalized coefficients of the series (9) up to $n = 7$.

n	1	2	3	4	5	6	7
$(-1)^n n! c_n$	$\frac{29}{30}$	$\frac{257}{210}$	$\frac{1231}{630}$	$\frac{396581}{103950}$	$\frac{5531381}{630630}$	$\frac{72078311}{3153150}$	$\frac{4510839803}{68918850}$

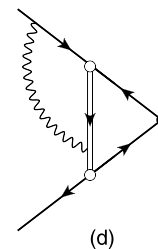


Fig. 2. Feynman diagram contributing to the double-logarithmic correction factor ϕ^d .

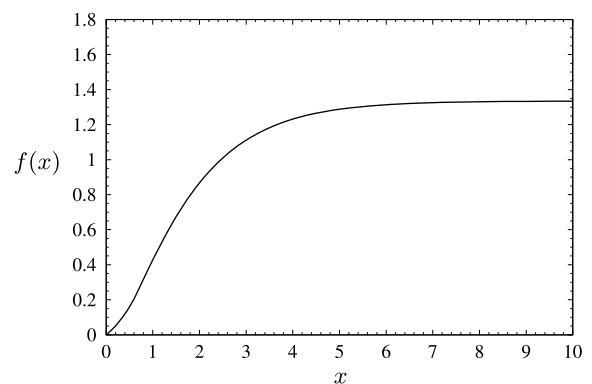


Fig. 3. The result of the numerical evaluation of the function $f(x) = -3F_1^{(1)}$.

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