

Erratum: Extraction of partonic transverse momentum distributions from semi-inclusive deep-inelastic scattering, Drell–Yan and Z-boson production

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We report some corrections to formulas and tables presented in the original article [1], to which we refer for definitions and further details.

The expression for the Sudakov exponent S , written in eq. (2.30), is missing an overall factor $1/2$. The correct expression should read:

$$S(\mu_b^2, Q^2) = -\frac{1}{2} \int_{\mu_b^2}^{Q^2} \frac{d\mu^2}{\mu^2} \left[A(\alpha_S(\mu^2)) \ln\left(\frac{Q^2}{\mu^2}\right) + B(\alpha_S(\mu^2)) \right]. \quad (2.30)$$

Following this correction, it is also necessary to multiply the exponent g_K by a factor $1/2$ in eqs. (2.28) and (2.29). The expressions for the evolved TMD functions then become

$$\tilde{f}_1^a(x, \xi_T^2; Q^2) = f_1^a(x; \mu_b^2) e^{S(\mu_b^2, Q^2)} e^{\frac{1}{2}g_K(\xi_T) \ln(Q^2/Q_0^2)} \tilde{f}_{1\text{NP}}^a(x, \xi_T^2), \quad (2.28)$$

$$\tilde{D}_1^{a \rightarrow h}(z, \xi_T^2; Q^2) = D_1^{a \rightarrow h}(z; \mu_b^2) e^{S(\mu_b^2, Q^2)} e^{\frac{1}{2}g_K(\xi_T) \ln(Q^2/Q_0^2)} \tilde{D}_{1\text{NP}}^{a \rightarrow h}(z, \xi_T^2). \quad (2.29)$$

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TMD PDFs	N_1 [GeV ²]	α	σ		λ [GeV ⁻²]	
All replicas	0.28 ± 0.06	2.95 ± 0.05	0.17 ± 0.02		0.86 ± 0.78	
Replica 105	0.285	2.98	0.173		0.39	
TMD FFs	N_3 [GeV ²]	β	γ	δ	λ_F [GeV ⁻²]	N_4 [GeV ²]
All replicas	0.21 ± 0.01	1.65 ± 0.49	2.28 ± 0.46	0.14 ± 0.07	5.50 ± 1.23	0.03 ± 0.01
Replica 105	0.212	2.10	2.52	0.094	5.29	0.033

Table 1. 68% confidence intervals of best-fit values for parametrizations of TMDs at $Q = 1$ GeV.

There are two errors in table 11, which presents the best-fit values of TMD parametrizations. The name of the columns “ δ ” and “ γ ” should be switched and the values of the parameter N_4 should be divided by a factor 4. The correct version of the table is presented in table 1.

We remark that all the corrections discussed here are only typos and are not present in the code used for the analysis. Consequently, they do not affect the numerical results presented in the original article [1],

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References

- [1] A. Bacchetta et al., *Extraction of partonic transverse momentum distributions from semi-inclusive deep-inelastic scattering, Drell-Yan and Z-boson production*, *JHEP* **06** (2017) 081 [[arXiv:1703.10157](https://arxiv.org/abs/1703.10157)].