

Erratum: Next-to-Next-to-Leading-Order QCD Corrections to Pion Electromagnetic Form Factors [Phys. Rev. Lett. 132, 201901 (2024)]

L. B. Chen, W. Chen , F. Feng, and Y. Jia

(Received 12 May 2025; published 4 June 2025)

DOI: [10.1103/pl5b-blv5](https://doi.org/10.1103/pl5b-blv5)

The published version of this work contains a mistake. The renormalized two-loop form factor $Q^2 F^{(2)}(u, v)$ in Eq. (13) is missing some finite pieces, which leads to the incorrect expression of the two-loop hard-scattering kernel $T^{(2)}(x, y)$, and consequently the entries related to $T_{mn}^{(2)}$ in Table I and Eq. (18) need modification. This error can be traced to the omission of some finite terms that arise from the lower order amplitudes upon conducting the QCD coupling constant renormalization under the minimal subtraction scheme.

Equation (18) should be modified to the following:

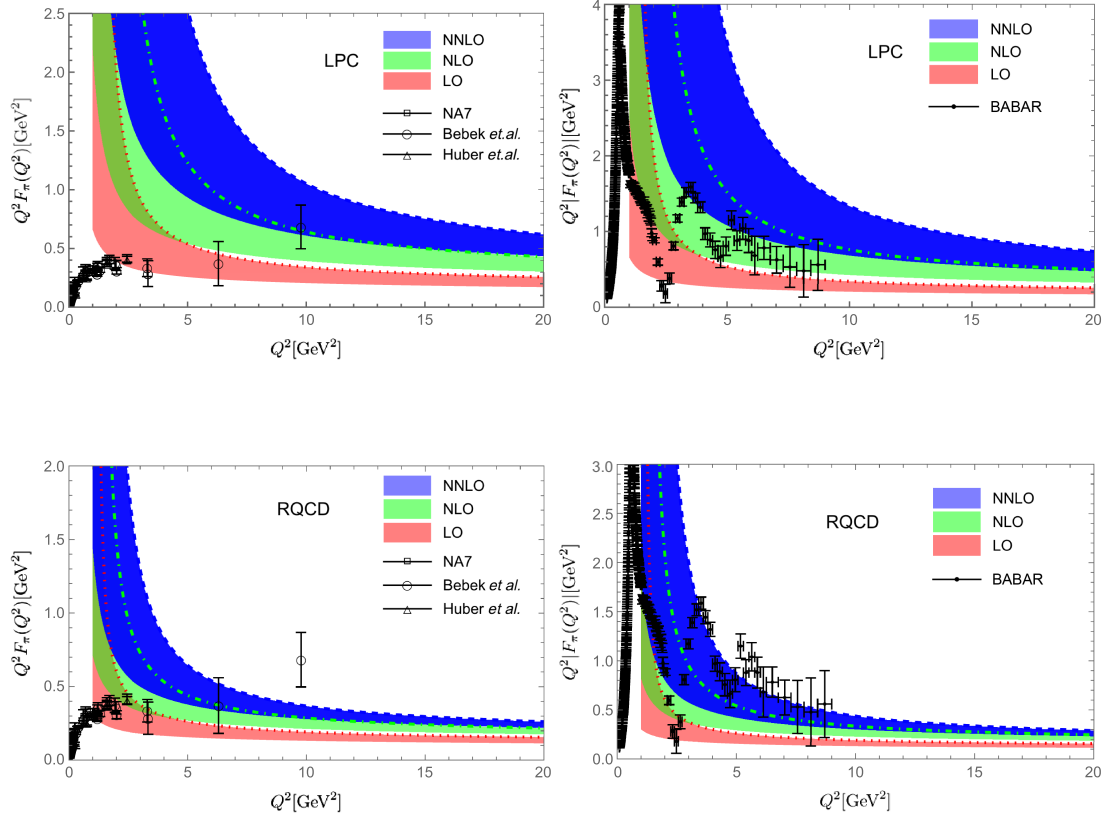
$$T_{00}^{(2)} = \frac{729L_\mu^2}{16} - \left(8\zeta_3 + \frac{35\pi^2}{6} - \frac{2961}{8}\right)L_\mu + 205\zeta_5 - \frac{3\pi^4}{20} - \frac{651\zeta_3}{2} - \frac{275\pi^2}{24} + 821.$$

Table I should be modified to the following:

TABLE I. The numerical values for $T_{mn}^{(1)} = c_1 L_\mu + c_2$ and $T_{mn}^{(2)} = d_1 L_\mu^2 + d_2 L_\mu + d_3$, with $0 \leq m, n \leq 6$.

(m,n)	c_1	c_2	d_1	d_2	d_3
(0,0)	20.25	59.25	45.5625	302.936	514.600
(0,2)	32.75	112.473	96.4306	735.637	1498.75
(0,4)	38.45	147.638	125.390	1049.88	2346.49
(0,6)	42.2571	174.359	146.743	1306.76	3103.33
(2,2)	45.25	192.871	164.660	1513.95	3690.60
(2,4)	50.95	240.181	201.536	2024.03	5371.58
(2,6)	54.7571	274.974	228.176	2424.45	6796.36
(4,4)	56.65	292.970	242.021	2640.85	7589.17
(4,6)	60.4571	331.411	271.074	3118.35	9432.36
(6,6)	64.2643	372.282	301.736	3651.19	11598.1

Figures 1 and 2 are also replotted as follows. We note that the updated next-to-next-to-leading-order predictions have hardly changed with respect to the ones in the preceding version.



The corresponding modifications to the asymptotic expressions of the two-loop hard-scattering kernel can be found in the updated Supplemental Material.