Erratum

Erratum: Anomalous components of the photon structure functions [Phys. Rev. D 19, 2046 (1979)]

R. J. DeWitt, L. M. Jones, J. D. Sullivan, D. E. Willen, and H. W. Wyld, Jr.

The quark and gluon definitions used in our paper correspond to a rather unconventional normalization. In order to bring them into agreement with the customary definitions which correspond to distributions *summed* over color, factors of [3] need to be inserted in a few places. The modified equations then read

$$\frac{dq^i(x,t)}{dt}=[3]\epsilon_i^2\frac{\alpha_\gamma}{2\pi}a(x)+\frac{\alpha_s(t)}{2\pi}\int_x^1\frac{dy}{y}\left[P_{qq}\left(\frac{x}{y}\right)q^i(y,t)+P_{qG}\left(\frac{x}{y}\right)G(y,t)\right], \tag{21}$$

$$P_{q\gamma}(z)=[3]2P_{qG}(z), \tag{26}$$

$$q^i(x,t)=[3]\frac{\alpha_\gamma}{2\pi}h^i(x)t\left[1+O\left(\frac{1}{t}\right)\right], \tag{32}$$

$$G(x,t)=[3]\frac{\alpha_\gamma}{2\pi}h^G(x)t\left[1+O\left(\frac{1}{t}\right)\right], \tag{33}$$

$$F_L(x,t)=\sum_{i=1}^{2f}[3]\epsilon_i^4\frac{\alpha_\gamma}{2\pi}xc(x)+\frac{\alpha_s(t)}{2\pi}x\int_x^1\frac{dy}{y}\sum_{i=1}^{2f}\epsilon_i^2\left[\frac{8}{3}\left(\frac{x}{y}\right)q^i(y,t)+2\frac{x}{y}\left(1-\frac{x}{y}\right)G(y,t)\right]. \tag{49}$$

Note that all other equations in the paper remain unchanged and that all of the figures and conclusions are correct as published. The authors wish to thank J. Owens for pointing out the above normalization problem.

In addition, the authors wish to mention that as printed Eqs. (23) and (25) each lack one contribution. These terms have no effect on the particular calculations performed in the paper (they correspond to higher-order corrections in α_γ), but may be necessary if the equations are applied to other cases. These equations should read

$$\frac{d\tilde{q}^i(x,t)}{dt}=\frac{1}{2\pi}\int_x^1\frac{dy}{y}\left[\alpha_s(t)P_{qq}\left(\frac{x}{y}\right)\tilde{q}^i(y,t)+\alpha_s(t)P_{qG}\left(\frac{x}{y}\right)\tilde{G}(y,t)\right.$$
$$\left.+\alpha_\gamma(t)P_{q\gamma}\left(\frac{x}{y}\right)\epsilon_i^2\tilde{\Gamma}(y,t)+\alpha_\gamma(t)P_{qq}\left(\frac{x}{y}\right)\tfrac{3}{4}\epsilon_i^2\tilde{q}^i(y,t)\right] \tag{23}$$

and

$$\frac{d\tilde{\Gamma}(x,t)}{dt}=\frac{1}{2\pi}\int_x^1\frac{dy}{y}\left[\alpha_\gamma(t)P_{\gamma q}\left(\frac{x}{y}\right)\sum_{i=1}^{2f}\epsilon_i^2\tilde{q}^i(y,t)+\alpha_\gamma(t)P_{\gamma\gamma}\left(\frac{x}{y}\right)\left(\sum_{i=1}^{2f}\epsilon_i^2\right)\tilde{\Gamma}(y,t)\right], \tag{25}$$

where

$$P_{\gamma\gamma}(z)=-\delta(z-1).$$

When these terms are included, momentum conservation is guaranteed.

Note finally that Eq. (45) should carry the caveat that it applies to systems with an equal number of charge $\frac{2}{3}$ and charge $-\frac{1}{3}$ quarks (even f).