

Erratum

Erratum: Multiple exchange and high-energy fixed-angle scattering
[Phys. Rev. D 11, 150 (1975)].

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Our final result for the double gluon exchange in the limit $s, t, u \gg m^2$, $t/s, u/s, t/u$ fixed, Eq. (2.18), is correct. The conclusions we draw from it are incorrect. To see this, one must use the identity [good to $O(m/\sqrt{s})$]

$$\begin{aligned} \bar{u}(p_3)\gamma^\mu u(p_1)\bar{u}(p_4)\gamma_\mu u(p_2) = & \frac{1}{2p_1 \cdot p_2} \{ p_1 \cdot p_2 [\bar{u}(p_3)\gamma^\mu u(p_1)\bar{u}(p_4)\gamma_\mu u(p_2) - \bar{u}(p_3)\gamma^\mu \gamma^5 u(p_1)\bar{u}(p_4)\gamma_\mu \gamma^5 u(p_2)] \\ & + p_{2\mu} p_{1\nu} [\bar{u}(p_3)\gamma^\mu u(p_1)\bar{u}(p_4)\gamma^\nu u(p_2) + \bar{u}(p_3)\gamma^\mu \gamma^5 u(p_1)\bar{u}(p_4)\gamma^\nu \gamma^5 u(p_2)] \} , \end{aligned}$$

and similarly with $p_2 \rightarrow p_4$. If this is done it turns out that both $\mathfrak{M}_{2(a)}$ and $\mathfrak{M}_{2(b)}$ are, to leading order, of the form $\ln^2 s \times \text{Born term}$ and moreover of the opposite sign, so that when summed the leading behavior cancels.

Rather than contradicting, this result confirms the calculations of J. L. Cardy [Nucl. Phys. B33, 139 (1971)] of J. G. Halliday, J. Huskins, and C. T. Sachrajda [Nucl. Phys. B83, 189 (1974)]. The leading term to all orders is single gluon exchange with form-factor corrections only.

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