

pression (17) according to our discussion in the preceding section. Equation (34) has a clear operational significance: It relates  $\bar{K}$  and  $\bar{L}$  to the average value of  $\tilde{F}(t)$  in an arbitrarily small neighborhood of  $t=0$ . Since, as we have seen,

$$\lim_{\epsilon \rightarrow 0^+} \tilde{F}(\epsilon) = \lim_{\epsilon \rightarrow 0^-} \tilde{F}(\epsilon), \quad (37)$$

the value of  $\tilde{F}(0)$ —and hence of the naive equal-time commutator—can be arbitrarily chosen without affecting any observable quantity. We conclude that the noncanonical value of the commutator, and not the canonical one, is physically significant.

We should remark that in Ref. 7 the well-defined modified function

$$L_\infty'(\omega) \equiv \lim_{\epsilon \rightarrow 0^+} \int_{|t| > \epsilon} dt L_\infty(t) e^{i\omega t}$$

is considered and found to satisfy

$$L_\infty'(0) = -(1+f^2)^{-1}.$$

It was then argued that  $\tilde{L}_\infty(t)$  has a  $\delta$ -function singularity at  $t=0$ , so that

$$L_\infty'(\omega) \neq L_\infty(\omega). \quad (38)$$

However, the Fourier transform of  $\tilde{L}(\omega)$  [and not  $\tilde{L}_\infty(t)$ ] has to be related to  $\theta(t)d\tilde{F}(t)/dt$ . This can be formally seen from the fact that  $d\tilde{F}(t)/dt$  is, as a distribution, completely equivalent to the continuous function  $i\Delta(1+f^2)^{-1}e^{i\Delta t}$ . In fact,  $d\tilde{F}(t)/dt$  would have a  $\delta$ -function singularity at  $t=0$  only if Eq. (37) were not satisfied.

Finally, we would like to suggest that a study of similar problems in other soluble models or in perturbation theory may provide further insights for understanding the general questions expressed in Secs. 1 and 3.

#### ACKNOWLEDGMENT

We would like to express our deepest thanks to Professor Joseph Sucher for his useful suggestions and continuous encouragement.

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## Errata

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**Gravitational Scattering of Light by Light**, BRUCE M. BARKER, MANJIT S. BHATIA, AND SURAJ N. GUPTA [Phys. Rev. **158**, 1498 (1967)]. A negative sign should be added to the right side of Eq. (3). This does not affect the first relation in Eq. (7), but the second relation takes the form

$$V_{+-}(\mathbf{k}) = V_{-+}(\mathbf{k}) = -(2c^2\hbar^2 p_0^2 \kappa^2 / \mathbf{k}^2) \times [1 - (3\mathbf{k}^2/4p_0^2) + (3\mathbf{k}^4/16p_0^4) - (\mathbf{k}^6/64p_0^6)],$$

which introduces similar changes in Eqs. (13) and (14), and the final result becomes

$$d\sigma/d\Omega = [32G^2(h\nu)^2/c^8 \sin^4\theta] \times [1 + \cos^{16}(\frac{1}{2}\theta) + \sin^{16}(\frac{1}{2}\theta)]. \quad (15)$$

**High-Energy Trident Production with Definite Helicities**, J. D. BJORKEN AND M. C. CHEN [Phys. Rev. **154**, 1335 (1967)]. The last term in (4) should read

$$\dots + i\lambda_2 |(p - p_1)\epsilon p_2 \tilde{p}_+| \}.$$

In (8), there are two sign errors in the third line

(2nd and 4th terms), i.e., the plus signs in front of  $p_2$  and  $p$  should be minus.

The substitution formulas below Eq. (8) should read

$$F_3 = -F_1(-p_+, p_2, -p, p_1, \lambda_2, -\lambda_1) \\ F_4 = F_1(-p_+, p_2, p_1, -p, \lambda_2, +\lambda_1).$$

Finally, below Eq. (9), add " $|\theta| < \frac{1}{2}\pi$ ."

With these corrections, (8) agrees with the Appendix formula of Henry as amended in the following erratum.

We thank Dr. George Henry for pointing these out to us.

**Trident Production with Nuclear Targets**, G. READING HENRY [Phys. Rev. **154**, 1534 (1967)]. In (11') an equal sign should be inserted immediately after  $\mathfrak{M}_4$ . In the fourth line of the formula in the Appendix,  $k_2$  should be replaced by  $k_4$ . This corrected formula agrees with (8) of Bjorken and Chen as amended in the preceding erratum.