ERRATA

WHICH CAUSALITY? DIFFERENCES BETWEEN TRAJECTORY AND COPENHAGEN ANALYSES OF AN IMPULSIVE PERTURBATION

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The author wishes to make the following amendments:

The evaluation of the matrix element $(\Delta V)_{00}$ is corrected. This correction increases the differences between the trajectory and Copenhagen analyses.

The unnumbered displayed equation preceding Eq. (9) is corrected by including the factor $\delta(t - \tau)/q$ so that $(\Delta V)_{00}$ becomes¹

$$(\Delta V)_{00} = \langle 0 | \Delta V | 0 \rangle = \frac{\delta(t - \tau)}{q} \left[\frac{\epsilon^2}{2} - \frac{1}{4k^2} + \frac{\cos(2k\epsilon)}{4k^2} \right].$$

Consequently, the correct first-order change in energy, E_1 , of an ensemble of particles is given by correcting Eq. (9) to read

$$E_1 = F(\Delta V)_{00} = \frac{F\delta(t - \tau)}{q} \left[\frac{\epsilon^2}{2} - \frac{1}{4k^2} + \frac{\cos(2k\epsilon)}{4k^2} \right]. \quad (9)$$

Including this correcting factor $\delta(t - \tau)/q$ increases the magnitude of E_1 during perturbation for the Copenhagen interpretation. Meanwhile, the average E_1 of the ensemble of particles for the trajectory representation under Copenhagen epistemology remains $\langle E_1 \rangle_{\text{average}} = 0$ during perturbation.¹ This strengthens our findings that trajectory and Copenhagen analyses differ regarding perturbing impulses.

References

1. E. R. Floyd, *Int. J. Mod. Phys. A* **14**, 1111 (1999).