171(5): Severe Self Inconsistencies in Annihilation Theory

Consider a particle of mass m_1 colliding with an antiparticle of mass m_2 and annihilating to produce two photons. The process is described by an adaptation of note 160(3), in which the energy conservation equation is

$$\gamma m_1 c^2 + m_2 c^2 = \gamma' m_1 c^2 + \gamma'' m_2 c^2 \quad -(1)$$

and the momentum conservation equation is:

$$\underline{p} = \underline{p}' + \underline{p}'' \quad -(2)$$

In annihilation the terms on the RHS's of eqns (1) and (2) are transformed or transmuted into photons and other products of annihilation. In the simplest instance:

$$\gamma' m_1 c^2 = \hbar\omega_1 \quad -(3)$$

$$\gamma'' m_2 c^2 = \hbar\omega_2 \quad -(4)$$

$$\underline{p}' = \gamma' m_1 \underline{v}' = \hbar \underline{\kappa}' \quad -(5)$$

$$\underline{p}'' = \gamma'' m_2 \underline{v}'' = \hbar \underline{\kappa}'' \quad -(6)$$

As in note 171(4) eqs. (1) and (2) can be solved to give:

$$x_2 = \frac{\omega\omega'}{\omega-\omega'} - \left(\frac{x_1^2 + (\omega^2 - x_1^2)^{1/2} (\omega'^2 - x_1^2)^{1/2} \cos\theta}{\omega - \omega'} \right) \quad -(7)$$

where

$$x_1 = m_1 c^2/\hbar, \quad x_2 = m_2 c^2/\hbar \quad -(8)$$

In the standard model of annihilation into photons, two photons are incorrectly stated to have total energy $m_1 c^2$ added to $m_2 c^2$. The correct equation according to Einstein de Broglie theory is eqn. (1). This must be considered with eqn. (2).

As shown in note 171(4), if:

$$m_1 = m_2 \quad - (9)$$

in electron positron annihilation, and if we consider scattering at 90° for simplicity, then a devastating failure of the standard model occurs because:

$$m = \frac{\hbar\omega}{c^2} \text{ or } -\frac{\hbar\omega'}{c^2} \quad - (10)$$

This failure occurs both for scattering and annihilation, no matter what the products of annihilation are.

The way forward proposed by ECE scholars is to consider m as the covariant mass, related to R by

$$R = \left(\frac{mc}{\hbar}\right)^2 \quad - (11)$$

so from eqs. (10) and (11):

$$R = \left(\frac{\omega}{c}\right)^2 \text{ or } \left(\frac{\omega'}{c}\right)^2 \quad - (12)$$