317(3): Ampère Maxwell Law in ECE2: Complete Equations

As in UFT 254 to UFT 256 this law is based on:

$$\underline{\nabla} \times \underset{\sim}{T}^a(\text{spin}) - \frac{1}{c}\frac{\partial \underset{\sim}{T}^a}{\partial t}(\text{orb}) = \underline{j}^a \quad -(1)$$

where:

$$\underline{j}^a = \omega^a{}_{0b}\underset{\sim}{T}^b(\text{orb}) + \underline{\omega}^a{}_b \times \underset{\sim}{T}^b(\text{spin})$$
$$-\left(q^b{}_0 \underline{R}^a{}_b(\text{orb}) + \underline{q}^b \times \underline{R}^a{}_b(\text{spin})\right) \quad -(2)$$

In ECE2:

$$\underline{B}^a = A^{(0)}\underset{\sim}{T}^a(\text{spin}) \quad -(3)$$
$$\underline{E}^a = cA^{(0)}\underset{\sim}{T}^a(\text{orb}) \quad -(4)$$
$$\underline{B}^a{}_b = W^{(0)}\underline{R}^a{}_b(\text{spin}) \quad -(5)$$
$$\underline{E}^a{}_b = cW^{(0)}\underline{R}^a{}_b(\text{orb}) \quad -(6)$$
$$\frac{A^{(0)}}{W^{(0)}} = \frac{1}{r^{(0)}} \quad -(7)$$

It follows that:

$$\underline{\nabla} \times \underline{B}^a - \frac{1}{c^2}\frac{\partial \underline{E}^a}{\partial t} = \frac{\omega^a{}_{0b}}{c}\underline{E}^b + \underline{\omega}^a{}_b \times \underline{B}^b$$
$$- \frac{1}{cr^{(0)}} q^b{}_0 \underline{E}^a{}_b - \frac{1}{r^{(0)}}\underline{q}^b \times \underline{B}^a{}_b \quad -(8)$$

Removing indices using the method of UFT 316:

2)

$$\underline{\nabla} \times \underline{B} - \frac{1}{c^2}\frac{\partial \underline{E}}{\partial t} = 2\left[\left(\frac{q_0}{r^{(0)}} - \omega_0\right)\frac{\underline{E}}{c} + \left(\frac{\underline{q}}{r^{(0)}} - \underline{\omega}\right) \times \underline{B}\right] \quad -(9)$$

The Complete Field Equations in ECE2

Gauss Law of Magnetism

$$\underline{\nabla} \cdot \underline{B} = 2\underline{B} \cdot \left(\underline{\omega} - \frac{1}{r^{(0)}}\underline{q}\right) \quad -(10)$$

Faraday Law of Induction

$$\frac{\partial \underline{B}}{\partial t} + \underline{\nabla} \times \underline{E} = 2\left[c\left(\omega_0 - \frac{q_0}{r^{(0)}}\right)\underline{B} + \left(\underline{\omega} - \frac{\underline{q}}{r^{(0)}}\right) \times \underline{E}\right] \quad -(11)$$

Coulomb Law

$$\underline{\nabla} \cdot \underline{E} = 2\underline{E} \cdot \left(\frac{1}{r^{(0)}}\underline{q} - \underline{\omega}\right) \quad -(12)$$

Ampère Maxwell Law

$$\underline{\nabla} \times \underline{B} - \frac{1}{c^2}\frac{\partial \underline{E}}{\partial t} = 2\left[\left(\frac{q_0}{r^{(0)}} - \omega_0\right)\frac{\underline{E}}{c} + \left(\frac{\underline{q}}{r^{(0)}} - \underline{\omega}\right) \times \underline{B}\right] \quad -(13)$$

3) Electric Charge Density

$$\rho_E = 2\epsilon_0 \underline{E} \cdot \left( \frac{1}{r^{(0)}} \underline{v} - \underline{\omega} \right) \quad -(14)$$

$$-(15)$$

Electric Current Density

$$\underline{J}_E = \frac{2}{\mu_0} \left[ \left( \frac{v_0}{r^{(0)}} - \omega_0 \right) \frac{\underline{E}}{c} + \left( \frac{\underline{v}}{r^{(0)}} - \underline{\omega} \right) \times \underline{B} \right]$$

Magnetic Charge Density (Magnetic Monopole)

$$\rho_m = 2 \underline{B} \cdot \left( \underline{\omega} - \frac{1}{r^{(0)}} \underline{v} \right) \quad -(16)$$

Magnetic Current Density

$$\underline{J}_m = 2 \left[ c \left( \omega_0 - \frac{v_0}{r^{(0)}} \right) \underline{B} + \left( \underline{\omega} - \frac{\underline{v}}{r^{(0)}} \right) \times \underline{E} \right]$$

$$-(17)$$

Units

$$J_E^\mu = (c\rho, \underline{J}) \quad -(18)$$

$$J_m^\mu = (c\rho_m, \underline{J}_m) \quad -(19)$$

$$\rho_E = C m^{-3} \quad -(20)$$

$$\underline{J}_E = C s^{-1} m^{-2} \quad -(21)$$

4)

$$\rho_m = \text{tesla m}^{-1} \quad -(22)$$

$$\underline{J}_m = \text{tesla s}^{-1} \quad -(23)$$

$$\mu_0 = J s^2 C^{-2} m^{-1} \quad -(24)$$

$$\epsilon_0 = J^{-1} C^2 m^{-1} \quad -(25)$$

$$\underline{E} = \text{volt m}^{-1} = J C^{-1} m^{-1} \quad -(26)$$

$$\underline{B} = \text{tesla} = J C^{-1} s m^{-2} = \text{weber m}^{-2} \quad -(27)$$

$$\text{volt} = J C^{-1} \quad -(28)$$

$$\text{weber} = \text{volt s} \quad -(29)$$

## In Free Space

$$\underline{v} = r^{(0)} \underline{\omega} \quad -(30)$$

and:

$$v_0 = r^{(0)} \omega_0 \quad -(31)$$

i.e.

$$v^\mu = r^{(0)} \omega^\mu \quad -(32)$$

where

$$v^\mu = ( v_0 , \underline{v} ) \quad -(33)$$

and

$$\omega^\mu = ( \omega_0 , \underline{\omega} ) \quad -(34)$$

Under the free space condition (32) the field equations reduce to:

$$\underline{\nabla} \cdot \underline{B} = 0 \qquad - (35)$$

$$\underline{\nabla} \times \underline{E} + \frac{\partial \underline{B}}{\partial t} = \underline{0} \qquad - (36)$$

$$\underline{\nabla} \cdot \underline{E} = 0 \qquad - (37)$$

$$\underline{\nabla} \times \underline{B} - \frac{1}{c^2} \frac{\partial \underline{E}}{\partial t} = \underline{0} \qquad - (38)$$

There are many conclusions and developments possible using these new field equations.