255(9): Suggested Interpretation of the Inhomogeneous Field Equations

In vector notation these are:

$$\underline{\nabla} \cdot \underline{E}^a = \rho^a / \epsilon_0 \quad -(1)$$

$$\underline{\nabla} \times \underline{B}^a - \frac{1}{c^2} \frac{\partial \underline{E}^a}{\partial t} = \mu_0 \underline{J}^a \quad -(2)$$

The left hand sides refer to the electromagnetic field, and the right hand sides to material matter. On the left hand sides:

$$\underline{E}^a = c A^{(0)} \underset{\sim}{T}^a (\text{orbital}) \quad -(3)$$

$$\underline{B}^a = A^{(0)} \underset{\sim}{T}^a (\text{spin}) \quad -(4)$$

in S.I. units. The scaling constant $A^{(0)}$ refers to the field.

On the right hand side:

$$\rho^a = \epsilon_0 c A^{(0)}_{\text{matter}} \left(\underline{\omega}^a{}_b \cdot \underset{\sim}{T}^b (\text{orbital}) - \underline{q}^b \cdot \underline{R}^a{}_b (\text{orbital}) \right) \quad -(5)$$

$$\underline{J}^a = \epsilon_0 c^2 A^{(0)}_{\text{matter}} \left(\omega^a{}_{0b} \underline{T}^b (\text{orbital}) - q^b{}_0 R^a{}_b (\text{orbital}) + \underline{\omega}^a{}_b \times \underline{T}^b (\text{spin}) - \underline{q}^b \times \underline{R}^a{}_b (\text{spin}) \right) \quad -(6)$$

where $A^{(0)}_{\text{matter}}$ refers to material matter.

2) This is the way in which the ECE theory has been developed to date. The computational problem is reduced to eqns. (1) and (2), with all the terms in eqs. (5) and (6) grouped together. If the electromagnetic field interacts with the vacuum then $A^{(0)}_{matter}$ is replaced with $A^{(0)}_{vacuum}$, the vacuum potential.

Therefore

$$\underline{E}^a(\text{matter}) = c A^{(0)}_{matter}\, \underset{\sim}{T}^a \angle \text{ (orbital)} \quad -(7)$$

$$\underline{A}^a(\text{matter}) = A^{(0)}_{matter}\, \underline{q}^a \quad -(8)$$

$$\underline{B}^a(\text{matter}) = A^{(0)}_{matter}\, \underset{\sim}{T}^a(\text{spin}) \quad -(9)$$

$$\underline{E}^a(\text{vacuum}) = A^{(0)}_{vacuum}\, \underset{\sim}{T}^a(\text{orbital}) \quad -(10)$$

$$\underline{A}^a(\text{vacuum}) = A^{(0)}_{vacuum}\, \underline{q}^a \quad -(11)$$

$$\underline{B}^a(\text{vacuum}) = A^{(0)}_{vacuum}\, T^a(\text{spin}) \quad -(12)$$

Spin Connection Resonance Driven by the Vacuum

This is described by:

$$\underline{\nabla} \cdot \underline{E}^a = \rho^a(\text{vacuum}) / \epsilon_0 \quad -(13)$$

$$\underline{\nabla} \times \underline{B}^a - \frac{1}{c^2}\frac{\partial \underline{E}^a}{\partial t} = \mu_0 \underline{J}^a(\text{vacuum}) \quad -(14)$$

where:

3)

$$\underline{E}^a = -c\underline{\nabla} A_0^a - \frac{\partial \underline{A}^a}{\partial t} - c\,\omega_{0b}^a \underline{A}^b + c A_0^b \underline{\omega}^a{}_b$$

$$- (15)$$

$$\underline{B}^a = \underline{\nabla} \times \underline{A}^a - \underline{\omega}^a{}_b \times \underline{A}^b \quad - (16)$$

In the simplest case assume one polarization and

$$\underline{A}^a = \underline{0} \quad - (17)$$

So only electric fields are present. Then:

$$\underline{E} = -\underline{\nabla}\phi + \underline{\omega}\phi \quad - (18)$$

Assume that $\underline{\omega}$ is negative:

$$\underline{\omega} = -\omega_X \underline{i} - \omega_Y \underline{j} - \omega_Z \underline{k} \quad - (19)$$

Then:

$$E_X = -\frac{\partial \phi}{\partial X} - \omega_X \phi$$

$$E_Y = -\frac{\partial \phi}{\partial Y} - \omega_Y \phi \quad - (20)$$

$$E_Z = -\frac{\partial \phi}{\partial Z} - \omega_Z \phi$$

Align in the Z direction.

$$- (21)$$

$$\frac{\partial}{\partial Z}\left(\frac{\partial \phi}{\partial Z} + \omega_Z \phi\right) = -\frac{\rho(vac)}{\epsilon_0}$$

i.e.

$$\boxed{\frac{\partial^2 \phi}{\partial Z^2} + \frac{\partial \omega_Z}{\partial Z}\phi + \omega_Z \frac{\partial \phi}{\partial Z} = -\frac{\rho(vac)}{\epsilon_0}}$$

$$- (22)$$

Finally if it is assumed that:

4)

$$\frac{\rho(vac)}{\epsilon_0} = \frac{\rho_0}{\epsilon_0} \cos(\kappa_0 Z)$$

$$= -\frac{\rho_0}{\epsilon_0} \cos(\kappa_0 Z) \quad -(23)$$

Then a damped Euler Bernoulli equation is obtained:

$$\frac{\partial^2 \phi}{\partial Z^2} + \left(\frac{\partial \omega_Z}{\partial Z}\right)\phi + \omega_Z \frac{\partial \phi}{\partial Z} = \frac{\rho_0^{(vac)}}{\epsilon_0} \cos(\kappa_0 Z) \quad -(24)$$

This can be written as:

$$\boxed{\frac{\partial^2 \phi}{\partial Z^2} + \kappa^2 \phi + \beta \frac{\partial \phi}{\partial Z} = A \cos(\kappa_0 Z)} \quad -(25)$$

where:

$$\kappa^2 = \frac{\partial \omega_Z}{\partial Z}, \quad A = \frac{\rho_0(vac)}{\epsilon_0}, \quad -(26)$$

$$\beta = \omega_Z$$

The S.I. units are:

$$\rho_0(vac) = Cm^{-3}, \quad \epsilon_0 = J^{-1}C^2m^{-1},$$

$$A = Cm^{-3}JC^{-2}m = JC^{-1}m^{-2}$$

$$\phi = cA^{(0)} = JsC^{-1}m^{-1}\,m\,s^{-1} = JC^{-1}$$

so eqn (25) is dimensionally correct.

By antisymmetry:

5)

$$\underline{\nabla}\phi = \underline{\omega}\phi \quad -(27)$$

so in the Z direction:

$$\frac{\partial\phi}{\partial Z} = -\omega_Z\phi \quad -(28)$$

so eqn. (25) becomes:

$$\frac{\partial^2\phi}{\partial Z^2} + \left(\kappa^2 + \omega_Z^2\right)\phi = A\cos(\kappa_0 Z) \quad -(29)$$

which is an undamped Euler Bernoulli equation:

$$\frac{\partial^2\phi}{\partial Z^2} + \kappa_1^2\phi = A\cos(\kappa_0 Z) \quad -(30)$$

with

$$\kappa_1^2 = \kappa^2 + \omega_Z^2 \quad -(31)$$

The solution of eq. (30) is:

$$\boxed{\phi = \frac{A\cos(\kappa_0 Z)}{\kappa_1^2 - \kappa_0^2}} \quad -(32)$$

so when

$$\kappa_1^2 = \kappa_0^2 \quad -(33)$$

then

$$\phi \rightarrow \infty. \quad -(34)$$

The potential within the apparatus becomes infinite, no matter how small the driving term

---