64(3): Resonances in the Faraday Law of Induction.

The Faraday law of induction is:

$$\underline{\nabla} \times \underline{E}^a + \frac{\partial \underline{B}^a}{\partial t} = \mu_0 \underline{\tilde{j}}^a \quad -(1)$$

where:

$$\underline{E}^a = -\frac{\partial \underline{A}^a}{\partial t} - c \underline{\nabla} A^{0a} - c\omega^{0a}{}_b \underline{A}^b + c \underline{\omega}^a{}_b A^{0b} \quad -(2)$$

$$\underline{B}^a = \underline{\nabla} \times \underline{A}^a - \underline{\omega}^a{}_b \times \underline{A}^b. \quad -(3)$$

The current $\underline{\tilde{j}}^a$ measures the effect of gravitation on electromagnetism.

In the standard model:

$$\underline{\nabla} \times \underline{E} + \frac{\partial \underline{B}}{\partial t} = \underline{0} \quad -(4)$$

$$\underline{E} = -\frac{\partial \underline{A}}{\partial t} - \underline{\nabla} \phi \quad -(5)$$

$$\underline{B} = \underline{\nabla} \times \underline{A}. \quad -(6)$$

Using:

$$\underline{\nabla} \times \underline{\nabla} \phi = 0 \quad -(7)$$

then

$$-\underline{\nabla} \times \frac{\partial \underline{A}}{\partial t} + \frac{\partial}{\partial t} \underline{\nabla} \times \underline{A} = \underline{0} \quad -(8)$$

and there is no resonance. In the standard model there is no current $\underline{\tilde{j}}^a$. In consequence

2) The standard model cannot explain the bending of light by gravity on the classical level. ECE is able to do this because it is a generally covariant unified field theory.

ECE reduces to the standard model if:

$$\underline{E}^a = -\frac{\partial \underline{A}^a}{\partial t} - \underline{\nabla}\phi^a = -c\omega^{0a}{}_b \underline{A}^b + \underline{\omega}^a{}_b \phi^b \quad -(9)$$

$$\underline{B}^a = \underline{\nabla} \times \underline{A}^a = -\underline{\omega}^a{}_b \times \underline{A}^b. \quad -(10)$$

In this limit there is no $\underline{\tilde{J}}^a$ and no resonance.

To develop a simple resonance equation assume for simplicity ~~that~~:

$$\phi^a = 0 \quad -(11)$$

and

$$\omega^{0a}{}_b = 0 \quad -(12)$$

so:

$$\underline{E}^a = -\frac{\partial \underline{A}^a}{\partial t} \quad -(13)$$

$$\underline{B}^a = \underline{\nabla} \times \underline{A}^a - \underline{\omega}^a{}_b \times \underline{A}^b \quad -(14)$$

Using eqs (13) and (14) in eq (1):

$$\frac{\partial \underline{A}^b}{\partial t} \times \underline{\omega}^a{}_b + \underline{A}^b \times \frac{\partial \underline{\omega}^a{}_b}{\partial t} = \mu_0 \underline{\tilde{J}}^a \quad -(15)$$

Now assume:

$$\underline{j}^a = \underline{j}^a(0)\sin(\omega t) \quad -(16)$$

and:

$$\boxed{\frac{\partial^2 \underline{A}^b}{\partial t^2}\times \underline{\omega}^a{}_b + 2\frac{\partial \underline{A}^b}{\partial t}\times\frac{\partial \underline{\omega}^a{}_b}{\partial t} + \underline{A}^b\times\frac{\partial^2\underline{\omega}^a{}_b}{\partial t^2} = \mu_0\,\omega\,\underline{j}^a(0)\cos(\omega t)} \quad -(17)$$

At resonance $\underline{A}^b$ is greatly amplified and the electromagnetic field is greatly amplified by interaction with gravitation.