78(2): Angular Displacement in RFR.

Continuing note 78(1) we start by reference to the eq. (133), p. 36, of "The Enigmatic Photon", volume 3:

$$\hbar \omega_{res} = \frac{e^2 c^2 B^{(0)2}}{m \omega^2}, \quad - (1)$$

then:

$$\theta_{res} = \hbar \omega_{res} \tau / J \quad - (2)$$

$$= \frac{e^2 c^2 B^{(0)2}}{m \omega^2} \cdot \frac{\omega^2 \left(m^2 \omega^2 + e^2 B^{(0)2} \right)^{1/2}}{e^2 c^2 B^{(0)2}} \cdot \tau$$

$$= \frac{1}{m} \left(m^2 \omega^2 + e^2 B^{(0)2} \right)^{1/2} \tau \quad - (3)$$

$$= \tau \left(\omega^2 + \frac{e^2 B^{(0)2}}{m^2} \right)^{1/2}$$

$$= \tau \Omega \quad - (4)$$

$$\boxed{\theta_{res} = \tau \Omega} \quad - (5)$$

i.e.

$$\theta_{res} = \left(\left(\frac{v_0}{r} \right)^2 + \left(\frac{e B^{(0)}}{m} \right)^2 \right)^{1/2} \tau \quad - (6)$$

2)

This result means that under the resonance condition of eq. (1) the dependence of θ on r is given by eq. (5). Here:

$$\omega = \frac{v_0}{r} \qquad (6)$$

<u>Interpretation</u>

Eq. (6) is the same as that used in paper 77 to describe the evolution of a spiral galaxy. However, in eq (5), we are dealing with radiatively induced fermion resonance (RFR). At resonance, the angular velocity of the electron is:

$$\Omega = \frac{\theta_{res}}{\tau} \qquad (7)$$

and this is related through eq. (6) to the angular velocity of the pump field in RFR:

$$\omega = \frac{v_0}{r} = \frac{d\theta}{dt}. \qquad (8)$$

The pump field is a circularly polarized electromagnetic field.