

1) 93(11) Interpretation of Φ (Coulomb Law)

This was calculated to be:

$$\underline{\nabla} \cdot \underline{E} = - \frac{\phi^{(0)}}{r^2} \left(1 - \frac{2GM}{rc^2}\right)^{-1} \left(1 + \frac{mc^2}{rc^2} (1 + \sin^2 \theta)\right) \quad - (1)$$

ii The weak field, torsion free, limit. So:

$$\underline{\nabla} \cdot \underline{E} = - \frac{\phi^{(0)}}{r} \quad - (2)$$

if $2GM \ll rc^2$ - (3)

It is known that:

$$\underline{E} = - (\underline{\nabla} + \underline{\omega}) \phi^{(0)} \quad - (4)$$

where $\underline{\omega}$ is the spin connection. So:

$$\nabla^2 \phi^{(0)} + \underline{\nabla} \cdot (\underline{\omega} \phi^{(0)}) = \frac{\phi^{(0)}}{r^2} \quad - (5)$$

a solution of which is:

$$\phi^{(0)} = \frac{1}{r}, \quad \omega = \frac{1}{2} \frac{1}{r} \quad - (6)$$

So the ECE field equation is self-consistent, and reduces to the well tested Coulomb Law in the limits (3) and (6).