

180(2): Comparison of Metrical and Covariant M_{3,0} Theories.

From note 180(1) it is known that the ECE wave equation is :

$$\left(\square + \frac{\omega^2}{c^2} - \kappa^2 \right) \varphi_\mu^a = 0 \quad - (1)$$

for gravitation, and :

$$\left(\square + \frac{\omega^2}{c^2} - \kappa^2 \right) A_\mu^a = 0 \quad - (2)$$

for electromagnetism. The covariant mass and metrical descriptions of gravitation are respectively :

$$E^2 - c^2 p^2 = c^2 \hbar^2 R \quad - (3)$$

and

$$E_1^2 - c^2 p_1^2 = m_0^2 c^4 \quad - (4)$$

from which :

$$\boxed{R = \left(\frac{\hbar_0 c}{\hbar} \right)^2 \left(\frac{E^2 - c^2 p^2}{E_1^2 - c^2 p_1^2} \right) = \frac{\omega^2}{c^2} - \kappa^2 = \nabla_a \int^a \Omega_{\mu\nu}^a} \quad - (5)$$

here

$$\Omega_{\mu\nu}^a = \omega_{\mu\nu}^a - \Gamma_{\mu\nu}^a \quad - (6)$$