144(6): New Spin Connection Resonance Structures

Define:
$$R_\mu^a = \frac{m}{e} r_\mu^a \quad -(1)$$

Key:
$$\underline{A}^a_{orb} = \frac{\partial \underline{R}^a}{\partial t} + c \underline{\nabla} R_0^a + c\omega^a_{0b}\underline{R}^b - cR_0^b \underline{\omega}^a_b \quad -(2)$$

$$\frac{1}{c}\underline{A}^a_{spin} = \underline{\nabla}\times\underline{R}^a - \underline{\omega}^a_b \times \underline{R}^b \quad -(3)$$

From the Cartan and Evans identities:

$$\underline{\nabla}\cdot\underline{A}^a_{spin} = 0 \quad -(4)$$

$$\underline{\nabla}\times\underline{A}^a_{orb} + \frac{1}{c}\frac{\partial \underline{A}^a_{spin}}{\partial t} = \underline{0} \quad -(5)$$

$$\underline{\nabla}\cdot\underline{A}^a_{orb} = \xi^a \quad -(6)$$

$$\underline{\nabla}\times\underline{A}^a_{spin} - \frac{1}{c^2}\frac{\partial \underline{A}^a_{orb}}{\partial t} = \underline{\xi}^a \quad -(7)$$

Eqs. (2) and (3), used in eqns. (4) to (7), produce various spin connection resonance in:

$$R_\mu^a = \left(R_0^a, -\underline{R}^a\right) \quad -(8)$$

$$= \frac{m}{e} r_\mu^a$$

This means that there is an internal resonance property of $\underline{A}^a_{spin}$ and $\underline{A}^a_{orb}$.