144(5): Now for Fields.

These are found from the minimal prescription:

$$p^a_\mu = mv^a_\mu = eA^a_\mu \quad -(1)$$

$$p^a_\mu = \frac{m}{e} v^a_\mu \quad -(2)$$

So:

Vector Orbital Potential

The spacelike part of this is defined by:

$$\underline{A}^a_{orb} = \frac{m}{e}\left(\frac{\partial \underline{r}^a}{\partial t} + c\underline{\nabla} r^a_0 + c\omega^a_{0b}\underline{r}^b - cr^b_0 \underline{\omega}^a{}_b\right) \quad -(3)$$

Vector Spin Potential

The spacelike part of this is defined by:

$$\underline{A}^a_{spin} = \frac{m}{e}\left(\underline{\nabla} \times \underline{r}^a - \underline{\omega}^a{}_b \times \underline{r}^b\right) \quad -(4)$$

The spin vector potential is $\frac{c}{f_{ine}}$ smaller in magnitude than the orbital vector potential.

The usual electric and magnetic fields are derived from the orbital part of the potential. By convention, the sign is changed for the electric field, so:

$$\underline{E}^a_{orb} = -\frac{\partial \underline{A}^a_{orb}}{\partial t} - c\nabla A^a_{0\,orb} \quad -(5)$$

$$- c\omega^a_{0b}\underline{A}^b_{orb} + cA^b_{0\,orb}\,\underline{\omega}^a{}_b$$

and

2).

$$\underline{B}^{a}_{orb} = \underline{\nabla} \times \underline{A}^{a}_{orb} - \underline{\omega}^{a}{}_{b} \times \underline{A}^{b}_{orb} \quad -(6)$$

New Types of Electric and Magnetic Field Derived From the Spin Potential.

These are c times smaller in magnitude than the well known eletric and magnetic fields, and are defined by:

$$\frac{\underline{E}^{a}_{spin}}{c} = -\frac{1}{c}\left(\frac{\partial \underline{A}^{a}_{spin}}{\partial t} + c\underline{\nabla} A^{a}_{\circ spin} + c\omega^{a}{}_{ob}\underline{A}^{b}_{spin} - cA^{b}_{\circ spin}\underline{\omega}^{a}{}_{b}\right) \quad -(7)$$

$$\frac{\underline{B}^{a}_{spin}}{c} = \frac{1}{c}\left(\underline{\nabla} \times \underline{A}^{a}_{spin} - \underline{\omega}^{a}{}_{b} \times \underline{A}^{b}_{spin}\right) \quad -(8)$$

It can so see that the orbital and spin vector potentials each have an internal structure defined by eqns. (3) and (4). The new types of electric and magnetic fields are c times smaller than the well known type of electric and magnetic fields. This means they are ten million times smaller in magnitude.

3) The internal structure of the usual vector potential (axial vector potential), a given in eq. (3), leads to the possibility of many new types of spin connection resonance.

Dynamics and Gravitational Theory.

In this theory there exist new types of spin vector potentials and dynamics and theory of gravitation, and new types of spin connection resonances.

New Field Equations

There exist new field equation for the spin electric and magnetic field.