394(3): Conservation of Antisymmetry in the Macroscopic Zitterbewegung Theory.

The Riemannian torsion tensor $T^{\lambda}_{\mu\nu}$ is defined by the well known commutator equation:

$$[D_\mu, D_\nu] V^\rho = - T^{\lambda}_{\mu\nu} D_\lambda V^\rho + R^\rho{}_{\sigma\mu\nu} V^\sigma \quad -(1)$$

where

$$T^{\lambda}_{\mu\nu} = \Gamma^{\lambda}_{\mu\nu} - \Gamma^{\lambda}_{\nu\mu} \quad -(2)$$

and where $\Gamma^{\lambda}_{\mu\nu}$ is the Christoffel connection. This must be antisymmetric:

$$\Gamma^{\lambda}_{\mu\nu} = - \Gamma^{\lambda}_{\nu\mu} \quad -(3)$$

because if it were symmetric:

$$\mu \overset{?}{=} \nu \quad -(4)$$

and

$$[D_\mu, D_\nu] \overset{?}{=} 0 \quad -(5)$$

Eq. (3) alone is enough to refute Einsteinian general relativity.

Using the tetrad postulate:

$$\Gamma^{a}_{\mu\nu} = \partial_\mu q^a{}_\nu + \omega^a{}_{\mu b} q^b{}_\nu \quad -(6)$$

it follows that:

$$\partial_\mu q^a{}_\nu + \omega^a{}_{\mu b} q^b{}_\nu = - \left(\partial_\nu q^a{}_\mu + \omega^a{}_{\nu b} q^b{}_\mu \right) \quad -(7)$$

Eq. (7) gives the scalar and vector antisymmetry laws. They are a direct consequence of eq. (1), which defines the Maurer Cartan structure equations and the Riemann curvature and torsion tensors.

2) The Lindstrom or trace antisymmetry law is also a direct consequence of fundamental geometry:

$$\Gamma^a_{00} + \Gamma^a_{11} + \Gamma^a_{22} + \Gamma^a_{33} = 0. \quad -(8)$$

It is also true that:

$$\Gamma^a_{00} = \Gamma^a_{11} = \Gamma^a_{22} = \Gamma^a_{33} = 0. \quad -(9)$$

Now define:

$$\omega^a_{\mu b} q^b_\nu = \omega^a_{\mu 0} q^0_\nu + \omega^a_{\mu 1} q^1_\nu + \omega^a_{\mu 2} q^2_\nu + \omega^a_{\mu 3} q^3_\nu \quad -(10)$$

$$:= \omega^a_\mu q_\nu$$

The Cartan torsion tensor:

$$T^a_{\mu\nu} = \partial_\mu q^a_\nu - \partial_\nu q^a_\mu + \omega^a_{\mu b} q^b_\nu - \omega^a_{\nu b} q^b_\mu \quad -(11)$$

reduces for each a to:

$$T_{\mu\nu} = (\partial_\mu + \omega_\mu) q_\nu - (\partial_\nu + \omega_\nu) q_\mu. \quad -(12)$$

The antisymmetry laws become:

$$(\partial_\mu + \omega_\mu) q_\nu = -(\partial_\nu + \omega_\nu) q_\mu \quad -(13)$$

and:

$$\Gamma_{00} = \partial_0 q_0 + \omega_0 q_0 = 0 \quad -(14)$$

$$\Gamma_{ii} = (\partial_i + \omega_i) q_i = 0 \quad -(15)$$

$$i = 1, 2, 3.$$

The antisymmetry laws are a direct consequence of fundamental geometry. They are true for all of physics.

) To convert to vector notation:

$$\partial_\mu = \left(\frac{1}{c}\frac{\partial}{\partial t}, \underline{\nabla} \right) \quad - (16)$$

$$q_\mu = \left(q_0, -\underline{q} \right) \quad - (17)$$

Trace Antisymmetry Laws

$$\frac{\partial q_0}{\partial t} + \omega_0 q_0 = 0 \quad - (18)$$

$$\underline{\nabla} \cdot \underline{q} + \underline{\omega} \cdot \underline{q} = 0 \quad - (19)$$

using

$$\omega_\mu = \left(\frac{\omega_0}{c}, -\underline{\omega} \right) \quad - (20)$$

Also:

$$\frac{\partial q_x}{\partial x} + \omega_x q_x = 0 \quad - (21)$$

$$\frac{\partial q_y}{\partial y} + \omega_y q_y = 0 \quad - (22)$$

$$\frac{\partial q_z}{\partial z} + \omega_z q_z = 0 \quad - (23)$$

Scalar Antisymmetry Law

$$(\partial_0 + \omega_0) q_\nu = -(\partial_\nu + \omega_\nu) q_0 \quad - (24)$$

Vector Antisymmetry Law

$$(\partial_\mu + \omega_\mu) q_\nu = -(\partial_\nu + \omega_\nu) q_\mu \quad - (25)$$

$$\mu, \nu = 1, 2, 3$$

In vector notation eq. (24) is:

$$-\underline{\nabla} q_0 + \underline{\omega} q_0 = -\frac{1}{c}\frac{\partial \underline{q}}{\partial t} + \omega_0 \underline{q} \quad -(26)$$

Application to Electrodynamics

The ECE postulate is used:

$$A^a_\mu = A^{(0)} q^a_\mu \quad -(27)$$

so

$$\underline{E} = -\underline{\nabla}\phi + \underline{\omega}\phi = -\frac{\partial \underline{A}}{\partial t} - \omega_0 \underline{A} \quad -(28)$$

$$\underline{B} = \underline{\nabla} \times \underline{A} - \underline{\omega} \times \underline{A} \quad -(29)$$

The vector antisymmetry equations are:

$$\frac{\partial A_Z}{\partial Y} + \frac{\partial A_Y}{\partial Z} = \omega_Y A_Z + \omega_Z A_Y \quad -(30)$$

$$\frac{\partial A_X}{\partial Z} + \frac{\partial A_Z}{\partial X} = \omega_Z A_X + \omega_X A_Z \quad -(31)$$

$$\frac{\partial A_Y}{\partial X} + \frac{\partial A_X}{\partial Y} = \omega_X A_Y + \omega_Y A_X \quad -(32)$$

Trace antisymmetry means that:

$$\frac{\partial \phi}{\partial t} + \omega_0 \phi = 0 \quad -(33)$$

$$\frac{\partial A_X}{\partial X} + \omega_X A_X = 0 \quad -(34)$$

$$\frac{\partial A_Y}{\partial Y} + \omega_Y A_Y = 0 \quad -(35)$$

$$\frac{\partial A_Z}{\partial Z} + \omega_Z A_Z = 0 \quad -(36)$$

where

$$A_\mu = \left(\frac{\phi}{c}, -\underline{A} \right) \quad -(37)$$

5) Electrostatics

$$\underline{E} = -\underline{\nabla}\phi + \underline{\omega}\phi = -\frac{\partial \underline{A}_E}{\partial t} - \omega_0 \underline{A}_E \quad -(38)$$

$$\frac{\partial \phi}{\partial t} + \omega_0 \phi = 0 \quad -(39)$$

and

$$\underline{A}_B = \underline{0} \quad -(40)$$

In the MZ theory, the macroscopic Heaviside-type theory:

$$\underline{E} = \underline{E_0} + \underline{\omega}\phi_0 \quad -(41)$$

where $\underline{E_0}$ and ϕ_0 are the electric field strength and potential in the hypothetical absence of the vacuum. If the Coulomb potential or dipole potential is used,

$$\frac{\partial \phi}{\partial t} = 0 \quad -(42)$$

$$\omega_0 = 0 \quad -(43)$$

so

It follows that:

$$\underline{E} = -\frac{\partial \underline{A}_E}{\partial t} \quad -(44)$$

Eqs. (34) to (38) reduce to zero = zero.

Magnetostatics

In MZ theory the magnetic flux density in the presence of the vacuum is:

$$\underline{B} = \underline{B_0} - \underline{\omega} \times \underline{A}_B \quad -(45)$$

where

$$\underline{B}_0 = \underline{\nabla} \times \underline{A}_B \quad -(46)$$

In magnetostatics:

b)

$$\phi = 0, \quad \underline{A}_E = \underline{0} \quad -(47)$$

In the MZ theory, $\underline{B}$, $\underline{B}_0$ and $\underline{\omega}$ are known for examples such as the dipole field. So the antisymmetry laws (30) to (32) are true automatically in ZT magnetostatics, because the spin connection vector $\underline{\omega}$ is derived from $\underline{B}$, $\underline{B}_0$ and $\underline{A}_B$.

Adding eqns. (34) to (36) gives the gauge equation:

$$\underline{\nabla} \cdot \underline{A}_B + \underline{\omega} \cdot \underline{A}_B = 0 \quad -(48)$$

with individual components (34) to (36). In the MZ theory, $\underline{\omega}$ and $\underline{A}_B$ are known, so $\underline{\nabla} \cdot \underline{A}_B$ can be found, together with $\partial A_{BX} / \partial X$, $\partial A_{BY} / \partial Y$, and $\partial A_{BZ} / \partial Z$.

The self consistent procedure is to find ω_X, ω_Y and ω_Z from eqs. (34) to (36) for a given magnetic potential such as the dipole potential. The shivering magnetic field in the presence of the vacuum is then found from:

$$\underline{B} = \underline{\nabla} \times \underline{A} - \underline{\omega} \times \underline{A}_B \quad -(49)$$

and the mean square fluctuations in $\underline{B}$ determined, giving $\langle \delta \underline{r} \cdot \delta \underline{r} \rangle$. In tensor notation eq. (49) is:

$$B_{ij} = \partial_i A_j - \partial_j A_i + \omega_i A_j - \omega_j A_i \quad -(50)$$

The vector antisymmetry law is:

$$B_{ij} = - B_{ji} \quad -(51)$$

7)

So:

$$\partial_i A_j + \omega_i A_j = -\left(\partial_j A_i + \omega_j A_i\right) \quad -(52)$$

is true automatically. So eqs. (30) to (32) are true automatically, QED.

It is worth emphasizing that U(1) gauge theory is refuted completely in UFT131, using the standard model's own definitions:

$$[D_\mu, D_\nu]\phi = [\partial_\mu - igA_\mu, \partial_\nu - igA_\nu]\phi$$

$$= -ig\left([\partial_\mu, A_\nu] - ig[A_\mu, A_\nu]\right)\phi$$

$$= -ig[\partial_\mu, A_\nu]\phi$$

$$= -ig\left(\partial_\mu(A_\nu\phi) - A_\nu\partial_\mu\phi\right)$$

$$= -ig\left((\partial_\mu A_\nu)\phi + A_\nu(\partial_\mu\phi) - A_\nu(\partial_\mu\phi)\right)$$

$$= -ig\,\partial_\mu A_\nu\,\phi \quad -(53)$$

It follows that in U(1) gauge theory:

$$\partial_\mu A_\nu = -\partial_\nu A_\mu \quad -(54)$$

but as shown in UFT131 and UFT132 this is not true, so the entire standard unified field theory is easily refuted.
