75(2): ECE Theory of Counter-Gravitational Effects in Rotating Superconductors

Having discussed the units with Dr. Tajmar it is concluded that there are two representations possible of the magnetic dipole moment (London moment):

$$\boxed{\begin{aligned} \underline{m} &= -\frac{e}{2m}\underline{J} \quad &(1) \\ \underline{B} &= -\frac{2m}{e}\underline{\omega} \quad &(2) \end{aligned}}$$

where $\underline{m}$ is magnetic dipole moment, $\underline{J}$ is angular momentum, $\underline{B}$ is magnetic field strength and $\underline{\omega}$ is angular velocity. In a superconductor e and m are charge and mass of Cooper pairs.

In ECE theory the magnetic field strength is described by $\underline{B}^a$, where a is a label indicating state of polarization. In the experiment by de Matos, Tajmar et al. it is found that $\underline{m}$ or $\underline{B}$ is orders of magnitude larger than expected (31 orders of magnitude). They also observed the gravitational equivalent of the Faraday law of induction. So paper 75 will provide qualitative explanations of these two phenomena in terms of ECE theory. The explanation for the first effect is spin connection resonance (SCR) and the explanation for the second

2) effect was given in paper 55 and note 75(1).

1) Spin Connection Resonance

Eqs (1) and (2) are examples of:

$$F^a = A^{(0)} T^a \quad -(3)$$

because $\underline{B}^a$ is part of F^a. So comparing eqs (2) and (3), $\underline{\omega}$ is part of T^a. The constant of proportionality $A^{(0)}$ plays the role of $2m/e$. So the most general explanation of the effect observed at the European Space Agency is eq. (3). If we adopt an indexless notation for clarity:

$$F = A^{(0)} T. \quad -(4)$$

The Cartan torsion is defined by the first Cartan structure equation:

$$T = d \wedge q + \omega \wedge q \quad -(5)$$

where q is the tetrad and where ω is the spin connection. The tetrad is related to the electromagnetic potential by:

$$A = A^{(0)} q, \quad -(6)$$

so:

$$F = d \wedge A + \omega \wedge A. \quad -(7)$$

The ESA effect is ~~therefore~~ due to the Cartan torsion. This is missing from the Einstein Hilbert theory.

3) The Cartan torsion T is related by the first Bianchi identity by:

$$d \wedge T = R \wedge q - \omega \wedge T \quad - (8)$$

to the Cartan curvature form R. Eq. (8) may be written as:

$$d \wedge F = \mu_0 j \quad - (9)$$

where:

$$j = \frac{A^{(0)}}{\mu_0} \left(R \wedge q - \omega \wedge T \right). \quad - (10)$$

So from eqs. (7) and (9):

$$d \wedge (d \wedge A + \omega \wedge A) = \mu_0 j \quad - (11)$$

The dynamical equivalent of this equation is:

$$d \wedge (d \wedge q + \omega \wedge q) = R \wedge q - \omega \wedge T \quad - (12)$$

The Hodge dual of eq. (9) is:

$$d \wedge \tilde{F} = \mu_0 J \quad - (13)$$

Eq. (11) shows that A may be amplified by resonance, because it is a resonance equation. This means that for a given T^a in eq., $A^{(0)}$ may be amplified by resonance. This means that B^a may be amplified because it is part of F^a.

4) The details of magnetic resonance equations have been developed in previous papers, and so can be applied directly to the ESA experiment.

2) Gravitational Equivalent of the Faraday Law of Induction

This has been given in note 75(1) and is again due to the Cartan torsion. In shorthand notation it is part of:

$$d \wedge T = j_{grav} = R \wedge q - \omega \wedge T \quad — (14)$$

If it is assumed that:

$$j_{grav} = 0 \quad — (15)$$

the law simplifies to:

$$d \wedge T = 0. \quad — (16)$$

Its Hodge dual is:

$$d \wedge \tilde{T} = J_{grav} = \tilde{R} \wedge q - \omega \wedge \tilde{T} \quad — (17)$$

The Faraday law of induction is part of:

$$\left.\begin{aligned} d \wedge F &= 0 \\ d \wedge \tilde{F} &= \mu_0 J. \end{aligned}\right\} \quad — (18)$$

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So in terms of eq. (2), the effective dynamo of the superconductor can be amplified by resonance, by which is meant spin connection resonance. This is effectively an amplification of the tetrad field by resonance. In the completed paper 75 some examples and graphics will be given using vector notation. When the tetrad is amplified, the torsion is also amplified because:

$$T = D \wedge q = d \wedge q + \omega \wedge q. \quad -(19)$$

The torsion is related to the curvature form by:

$$D \wedge T = R \wedge q \quad -(20)$$

so if T is amplified, so is R. What is actually meant by "gravitation" in EH theory is R, but in EH theory:

$$R \wedge q = 0 \quad -(21)$$

and there is no way of relating R to a spinning superconductor in EH theory because the torsion T is completely missing from EH theory.