1) 116(1): Counter Gravitation at Spin Connection Resonance

The ECE equation of gravitation due to orbital torsion is:

$$\underline{\nabla} \cdot \underline{g} = 4\pi G \rho_M \quad -(1)$$

where $\underline{g}$ is the acceleration due to gravity, G is Newton's constant, and ρ_M the mass density of a mass M. Then:

$$\underline{g} = -(\underline{\nabla} + \underline{\omega}) \phi_M \quad -(2)$$

where ϕ_M is the gravitational potential and $\underline{\omega}$ is the spin connection vector. Thus:

$$\nabla^2 \phi_M + \underline{\omega} \cdot \underline{\nabla} \phi_M + (\underline{\nabla} \cdot \underline{\omega}) \phi_M = -4\pi G \rho_M \quad -(3)$$

The potential energy is:

$$U_M = m \phi_M \quad -(4)$$

where M interacts with m. So:

$$\boxed{\nabla^2 U_M + \underline{\omega} \cdot \underline{\nabla} U_M + (\underline{\nabla} \cdot \underline{\omega}) U_M = -4\pi G m \rho_M} \quad -(5)$$

In eq. (5), U_M is negative valued, and $\underline{g}$ is negative valued. A mass m is always attracted by a mass M.

2)

In general, eq. (5) can have resonant solution at which the gravitational potential energy U_M goes to large negative values. This increases the attraction between m and M.

In order to obtain counter gravitation, it is necessary to make the value of U_M <u>more positive</u> ~~and~~ or <u>less negative</u> for a given m and ρ_M. This means that g is made less negative and the attraction between m and M is decreased.

One possible method of achieving this aim is to find the spin connection vector $\underline{\omega}$ that causes resonance in U_m so it becomes less negative at resonance. The type of $\underline{\omega}$ that leads to this result can be found mathematically from eq. (5). The next problem is how to <u>engineer</u> this $\underline{\omega}$ from an electric circuit. The electric equivalents of eqns. (1) and (2) are:

$$\underline{\nabla} \cdot \underline{E} = \rho_e / \epsilon_0 \quad - (6)$$

and

$$\underline{E} = -(\underline{\nabla} + \underline{\omega}) \phi_e \quad - (7)$$

where ρ_e is the electric charge density, ϵ_0

is the vacuum permittivity, $\underline{E}$ is the electric field strength, and ϕ_e is the electric (scalar) potential. The electric potential energy is:

$$U_e = e\,\phi_e \quad - (8)$$

So:

$$\boxed{\nabla^2 U_e + \underline{\omega} \cdot \underline{\nabla} U_e + (\underline{\nabla} \cdot \underline{\omega}) U_e = -e\rho_e / \epsilon_0} \quad - (9)$$

In this case U_e can be positive valued (repulsion of two charges), or negative valued (attraction of two charges).

It has been assumed that the spin connection vector $\underline{\omega}$ is the same in eqs. (5) and (9). In general eq. (9) has resonance solutions. In this case U_e can become very large and positive valued. The total potential energy of two charged mass is:

$$U = U_e + U_M + U(\text{int.}) \quad (10)$$

where $U(\text{int})$ is an interaction energy between U_e and U_M. In the laboratory off resonance, this interaction energy is never observable because for two masses of one kilogram each and two charges of one coulomb each, U_e is about

4)

twenty one orders of magnitude (10^{21}) greater than $\overline{U}_{\underline{m}}$ if the separation is one metre. In this situation $\overline{U}$ of eq. (10) is dominated by $\overline{U}_e$.

Adding eqs. (5) and (9):

$$\boxed{\nabla^2 \overline{U} + \underline{\omega} \cdot \underline{\nabla} \overline{U} + (\underline{\nabla} \cdot \underline{\omega}) \overline{U} = -\left(\frac{e\rho_e}{\epsilon_0} + 4\pi G m \rho_{\underline{m}} \right)} \quad -(11)$$

Under the conditions outlined above, the driving term is dominated completely by its electric part. At resonance, $\overline{U}$ becomes very large due to the electric driving term. This means that the total potential energy $\overline{U}$ becomes very large, and this total energy includes $\overline{U}_{\underline{m}}$ and $\overline{U}_{int}$. This means that it is possible theoretically <u>to use the electric driving term to decrease the gravitational attraction</u>. This is because $\overline{U}_{int}$ is amplified at resonance. If:

$$\overline{U}_{\underline{m}}(\text{total}) = \overline{U}_{m} + \frac{1}{2} \overline{U}_{int} \quad -(12)$$

$$\overline{U}_e(\text{total}) = \overline{U}_e + \frac{1}{2} \overline{U}_{int} \quad -(13)$$

and $\overline{U}_{int}$ is positive valued, then at resonance

U_m becomes less negative as required.

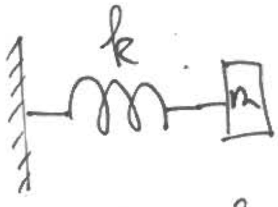
A simple example of counter-gravitation is two positively charged plates. The electric potential energy U_e is positive and 10^{21} greater than the gravitational potential energy U_m. The electric repulsion overwhelms the gravitational attraction. If the lower plate is fixed the upper plate flies upward. This effect will be greatly amplified at spin connection resonance from eq. (11). As in paper 63, circuits can be designed from eq. (11). To keep the aircraft airborne, it would be fitted with such a circuit to cause constant and controllable counter-gravitation.

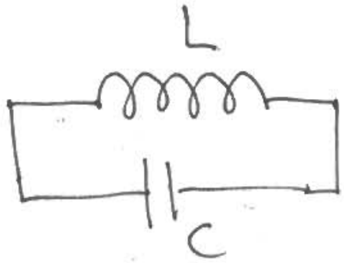
Key Problem

This is to engineer the spin connection vector ω in eq. (11). This task is helped by well known equivalent circuit analysis, e.g. J.B. Marion and S.T. Thornton, "Classical Dynamics" (HB, 1988, 3rd ed.), Section 3.8.

For example:

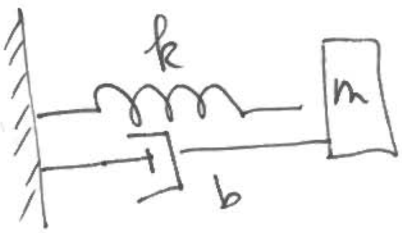
6)



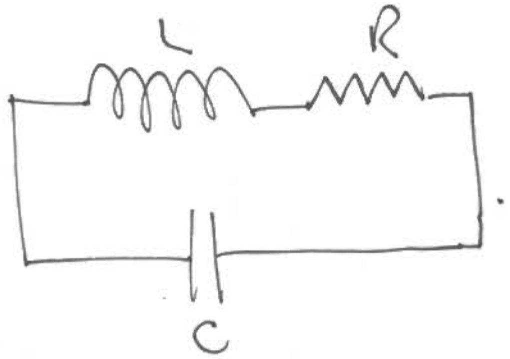


$m\ddot{x} + kx = 0$ (1) $L\ddot{q} + \frac{1}{C}q = 0$

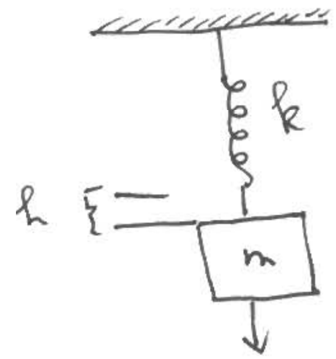
$\omega_0 = \left(\frac{k}{m}\right)^{1/2}$ $\omega_0 = \frac{1}{(LC)^{1/2}}$



(2)

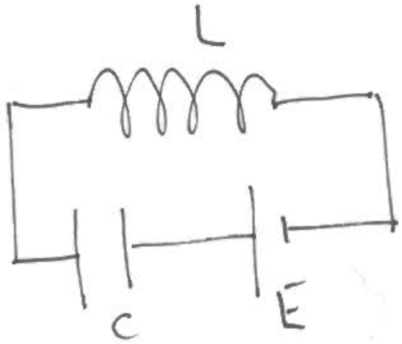


$m\ddot{x} + b\dot{x} + kx = 0$ $L\ddot{q} + R\dot{q} + \frac{1}{C}q = 0$



$F = mg$

(3)



$m\ddot{x} + kx = kh$ $L\ddot{q} + \frac{q}{C} = E = \frac{q_1}{C}$

Eq. (11) is a variation on :

7)

$$m\ddot{x} + b\dot{x} + kx = A\cos\omega t \quad - (14)$$

whose equivalent circuit is:

$$L\ddot{q} + R\dot{q} + \frac{1}{C}q = E_0\cos\omega t \quad - (15)$$

i.e.:

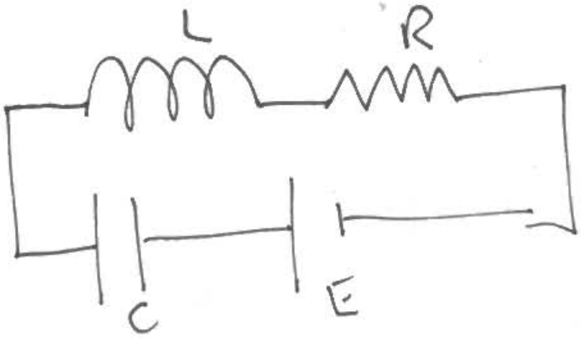


Fig. (1)

Therefore $\underline{\omega}$ plays the role of R and $\underline{\nabla}\cdot\underline{\omega}$ plays the role of $1/C$.

It is well known that resonance in charge q appears from the circuit of Fig (1). This resonance of charge affects the capacitor C.

If there is no damping:

$$m\ddot{x} + kx = A\cos\omega t \quad - (16)$$

$$\ddot{q} + \frac{1}{CL}q = E_0\cos\omega t \quad - (17)$$

and

Fig. (2)

Resonance in eq. (17) occurs at:

$$\omega = \omega_0 = \frac{1}{(LC)^{1/2}} \qquad - (18)$$

at which point:

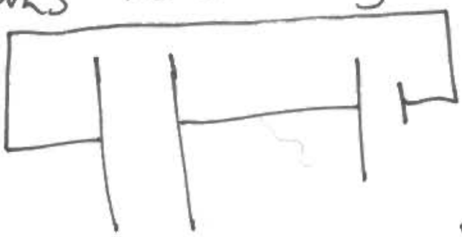
$$q \to \infty \qquad - (19)$$

Therefore adjusting the spin connection ~~res~~ for resonance is equivalent to <u>adjusting</u> <u>the capacitance</u> in a circuit of type (2).

<u>Summary</u>

The Coulomb law may be thought of as:

<u>Fig. (3)</u>



Coulomb Law

and the effect of the spin connection "adds the capacitance" in Fig (2).

In Fig (3) there is no resonance, the plates charge up, but in Fig (2) a small E can produce a surge of charge. This surge of charge is used for power. The Tesla coil is probably a variation on the simplest resonance circuit (2).