318(7): Tuning an Electric Field for Counter Gravitation

From the previous note, eqs. (29) and (30):

$$(\nabla^2 + k_0^2)(m\Phi_m + e\phi_e) = A\cos(\underline{k}\cdot\underline{r}) = -\frac{e\rho_e}{\epsilon_0} \quad -(1)$$

The solution of this equation is:

$$m\Phi_m + e\phi_e = \frac{A\cos(\underline{k}\cdot\underline{r})}{k_0^2 - k_z^2} = -\frac{e\rho_e}{\epsilon_0(k_0^2 - k_z^2)} \quad -(2)$$

So

$$\Phi_m = \frac{e}{m}\left[\frac{\rho_e}{\epsilon_0(k_z^2 - k_0^2)} - \phi_e\right] \quad -(3)$$

where

$$k_0^2 = 2\,\underline{\nabla}\cdot\underline{\omega} \quad -(4)$$

and where it has been assumed that:

$$\underline{k}\cdot\underline{r} = k_z Z \quad -(5)$$

The condition for zero gravitational force can be found from:

$$\underline{F} = \underline{M}\,\underline{g} \quad -(6)$$

and

$$\underline{g} = -\underline{\nabla}\Phi_m - 2\underline{\omega}\,\Phi_m \quad -(7)$$

Here $\underline{M}$ is the mass of the earth.

So:

$$\mathbf{F} = 0 \text{ if } \Phi_n = 0 \quad -(8)$$

The condition for zero g force is, from eqs. (8) and (3):

$$\phi_e = \frac{\rho_e}{\epsilon_0 (k_z^2 - k_0^2)} \quad -(9)$$

and:

$$\mathbf{E} = -\nabla \phi_e - 2\boldsymbol{\omega} \phi_e \quad -(10)$$

When the electric field strength is tuned to this condition, g forces vanish, and the vehicle lifts off the ground.

Finally, the condition for positive g is a negative spin connection vector $\boldsymbol{\omega}$, so in eq. (7):

$$\mathbf{g} = -\nabla \Phi_n + 2\boldsymbol{\omega} \Phi_n \quad -(11)$$

If

$$2\boldsymbol{\omega} \Phi_0 > \nabla \Phi_n \quad -(12)$$

then $\mathbf{g}$ is positive.