

## Rotating Superconductor B

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See Unified Absolute Relativity Theory at:

[www.wbabin.net/saraiva/saraiva305.pdf](http://www.wbabin.net/saraiva/saraiva305.pdf)  
[www.wbabin.net/saraiva/saraiva306.pdf](http://www.wbabin.net/saraiva/saraiva306.pdf)  
[www.wbabin.net/saraiva/saraiva307.pdf](http://www.wbabin.net/saraiva/saraiva307.pdf)

A rotating superconductor generates a gravitational field because the positive charges rotate and the electrons are at rest.

Gravitomagnetism doesn't exist.

The usual magnetic dipole moment is only a momentum:

$$p = mv = I\pi .R^2$$

m – mass; v – speed; p – momentum; I – Electric current; R – Radius of rotation.

$$m = \frac{I\pi .R}{\omega} \quad \Leftrightarrow \quad m = \frac{q\pi .R}{t.2\pi .f}$$

$$\Leftrightarrow \quad m = \frac{qR}{2}$$

$\omega$  -- angular speed; q – electric charge; t – time; f – frequency.

$$m = \frac{F}{g} \quad \Leftrightarrow \quad g = \frac{2FR}{qR^2} \quad \text{and} \quad FR = \frac{1}{2}mv^2$$

$$g = \frac{mv^2}{qR^2}$$

F – force; g – Acceleration; E – energy.

$$v = \omega R \quad \Leftrightarrow \quad g = \frac{m_p}{q}\omega^2$$

$m_p$  -- mass of the proton.

Exact formula for acceleration:

$$g = \frac{m_P}{4q} \omega^2$$

Experimental data:

$$g = 10^{-3} m/s^2 ; \quad f = 6500 c/min = 1.1 \times 10^2 Hz$$

$$\omega = 2\pi f = 6.8 \times 10^2 Hz$$

Our formula:

$$g = 1.2 \times 10^{-3} m/s^2$$

### Some formulas

Magnetocaloric effect:

$$T_B = \alpha \frac{B^2 L}{2\mu_0}$$

$T_B$  -- Temperature;  $\alpha$  -- coefficient; B – magnetic field; L – length: perimeter  
 $\mu_0$  -- permeability.

Electrocaloric effect:

$$T_E = \beta \frac{\epsilon_0 E^2 L}{2}$$

$T_E$  -- temperature;  $\beta$  -- coefficient;  $\epsilon_0$  -- permittivity; E – electric field.

At sun's surface  $\alpha = 1$

Our inner ear balance system can detect the position of the moon.

### Gravitational wave detection

The usual detectors depend on the length contraction and we don't know if macroscopic lengths suffer any contraction.

A much more efficient detector are accelerometers.

The gravitational waves are waves of acceleration or force.

Spacetime doesn't exist.

Usual method:

$$L = L_0 \sqrt{1 - v^2/c^2} \quad \text{and} \quad v^2 = \frac{GM}{D}$$

$$\Leftrightarrow \Delta L = \frac{L_0 GM}{2c^2 D^2} \Delta D$$

For  $L_0 = 10 \text{ km}$ ;  $M = 1 \text{ kg}$ ;  $D = 1 \text{ m}$ ;  $\Delta D = 0.1 \text{ m}$

$$\Delta L = 3.7 \times 10^{-25} \text{ m}$$

Accelerometer method:

$$\Delta g = \frac{2GM}{D^3} \Delta D$$

$$\Delta g = 1.3 \times 10^{-11} \text{ m/s}^2$$

With accelerometers we can produce and detect gravitational waves in a lab.

Speed of the waves:

$$V = 7.5 \times 10^{20} \sqrt{m} \quad \text{with} \quad m = 2 \times 10^{30} \text{ kg}$$

For  $f = 1 \text{ Hz}$   $\Leftrightarrow \lambda = 10^{36} \text{ m}$