Gravitational and Consciousness Waves

Possible interference

M.Kozlowski
Warsaw University, Warsaw, Poland

Abstract

According to S. Hawking and W Israel calculation the frequencies of the gravitational waves is in the range 10^-7 t0 10^11 Hz. In this paper we show that the theoretical (calculated) frequencies of the brain waves is of the order 10 Hz. Due to the overlapped frequencies the interference of the brain waves and gravitational waves is possible.

Key words:Brain waves; Planck mass, Gravitational waves, Interference

---

I Overview of the research

In this paper we study the possible interference of the gravitational waves and human brain waves. The existence of gravitational waves is experimentally verified. In our paper we propose that due to the overlap of frequencies of human brain waves and gravitational waves the possibility of interference of both is possible.

2. Generalized Schrodinger Equation

Io our paper[1] Generalized Schrodinger Equation for Schumann wave was derived and solved

$$i\hbar\frac{\partial\Psi}{\partial t}=V\Psi-\frac{\hbar^2}{2m}\nabla^2\Psi-\tau\hbar\frac{\partial^2\Psi}{\partial t^2}\,. \tag{1}$$

The new term, relaxation term

$$\tau\hbar\frac{\partial^2\Psi}{\partial t^2} \tag{2.}$$

describes the interaction of the particle with mass m with space-time. The relaxation time τ can be calculated as:

$$\tau^{-1}=\left(\tau_{e-p}^{-1}+\ldots+\tau_{Planck}^{-1}\right), \tag{3.}$$

where, for example $\tau_{e\text{-}p}$ denotes the scattering of the particle m on the electron-positron pair ($\tau_{e-p}\sim 10^{-17}$s) and the shortest relaxation time τ_{Planck} is the Planck time ($\tau_{Planck}\sim 10^{-43}$s).

From equation (3) we conclude that $\tau\approx\tau_{Planck}$ and equation (1) can be written as

$$i\hbar\frac{\partial\Psi}{\partial t}=V\Psi-\frac{\hbar^2}{2m}\nabla^2\Psi-\tau_{Planck}\hbar\frac{\partial^2\Psi}{\partial t^2}, \tag{4}$$

where

$$\tau_{Planck}=\frac{1}{2}\left(\frac{\hbar G}{c^5}\right)^{\frac{1}{2}}=\frac{\hbar}{2M_pc^2}\,. \tag{5}$$

In formula (5) M_P is the mass Planck. Considering Eq. (5), Eq. (4) can be written as

$$i\hbar\frac{\partial\Psi}{\partial t}=-\frac{\hbar^2}{2m}\nabla^2\Psi+V\Psi-\frac{\hbar^2}{2M_p}\nabla^2\Psi+\frac{\hbar^2}{2M_p}\nabla^2\Psi-\frac{\hbar^2}{2M_pc^2}\frac{\partial^2\Psi}{\partial t^2}. \tag{6}$$

The last two terms in Eq. (6) can be defined as the Bohmian pilot wave

$$\frac{\hbar^2}{2M_p}\nabla^2\Psi-\frac{\hbar^2}{2M_pc^2}\frac{\partial^2\Psi}{\partial t^2}=0, \tag{7}$$

i.e.

$$\nabla^2\Psi-\frac{1}{c^2}\frac{\partial^2\Psi}{\partial t^2}=0. \tag{8}$$

It is interesting to observe that pilot wave Ψ does not depend on the mass of the particle. With postulate (8) we obtain from equation (6)

$$i\hbar\frac{\partial\Psi}{\partial t}=-\frac{\hbar^2}{2m}\nabla^2\Psi+V\Psi-\frac{\hbar^2}{2M_p}\nabla^2\Psi \tag{9}$$

and simultaneously

$$\frac{\hbar^2}{2M_p}\nabla^2\Psi-\frac{\hbar^2}{2M_pc^2}\frac{\partial^2\Psi}{\partial t^2}=0. \tag{10}$$

In the operator form Eq. (10) can be written as

$$\hat{E}=\frac{\hat{p}^2}{2m}+\frac{1}{2M_pc^2}\hat{E}^2, \tag{11}$$

where $\hat{E}$ and $\hat{p}$ denote the operators for energy and momentum of the particle with mass m. Equation (11) is the new dispersion relation for quantum particle with mass m. From Eq. (11) one can concludes that Schrödinger quantum mechanics is valid for particles with mass $m \ll M_P$. But pilot wave exists independent of the mass of the particles.

For particles with mass $m \ll M_P$ = neuron mass Eq. (11) has the form

$$i\hbar\frac{\partial\Psi}{\partial t}=-\frac{\hbar^2}{2m}\nabla^2\Psi+V\Psi. \tag{12}$$

In the case when $m \approx M_p$ Eq. (12) can be written as

$$i\hbar \frac{\partial \Psi}{\partial t} = -\frac{\hbar^2}{2M_p} \nabla^2 \Psi + V\Psi, \tag{13}$$

but considering Eq. (13) one obtains

$$i\hbar \frac{\partial \Psi}{\partial t} = -\frac{\hbar^2}{2M_p c^2} \frac{\partial^2 \Psi}{\partial t^2} + V\Psi \tag{14}$$

or

$$\frac{\hbar^2}{2M_p c^2} \frac{\partial^2 \Psi}{\partial t^2} + i\hbar \frac{\partial \Psi}{\partial t} - V\Psi = 0. \tag{15}$$

We argue that Equations (14) and (15) are the master equation for the brain oscillations, Ψ .We look for the solution of Eq. (15) in the form

$$\Psi(x,t) = e^{-i\omega} u(x). \tag{16}$$

After substitution formula (16) to Eq. (15) we obtain

$$\frac{\hbar^2}{2M_p c^2} \omega^2 - \omega\hbar + V(x) = 0 \tag{17}$$

with the solution

$$\begin{aligned} \omega_1 &= -\frac{M_p c^2 + M_p c^2 \sqrt{1 - \frac{2V}{M_p c^2}}}{\hbar} \\ \omega_2 &= \frac{M_p c^2 - M_p c^2 \sqrt{1 - \frac{2V}{M_p c^2}}}{\hbar} \end{aligned} \tag{18}$$

for $\frac{M_p c^2}{2} > V$ and

$$\omega_1 = \frac{M_p c^2 + iM_p c^2 \sqrt{\frac{2V}{M_p c^2} - 1}}{\hbar}$$
$$\omega_2 = \frac{M_p c^2 - iM_p c^2 \sqrt{\frac{2V}{M_p c^2} - 1}}{\hbar} \qquad (19)$$

for $\frac{M_p c^2}{2} < V$.

3 Schumann and Gravitation waves

Both formulae (18) and (19) describe the vibration of the Planck mass , formula (18) damped oscillation and formula (19) over damped ""oscillation. From elementary particles physics we know that the internal energy M_P c^2 is the maximum energy per particle in the Universe for elementary particles) For $\frac{M_p c^2}{2} \gg V$ we obtain

$$\omega_1 = \frac{2M_P c^2}{\hbar}$$
$$\omega_2 = \frac{V}{\hbar} \qquad (20)$$

The angular frequency ω_1 represents the Planck frequency $\omega_1 = \tau_P^{-1}$ Calogero tremor[2,3,4]

Frequency om2 For V $\approx$ $10^{-15} eV$ is angular frequency of the brain oscillations 12Hz in agreement with the measured frequencies. It is very interesting to observe that the same equation describes the two modes of the wave motion : the vibration of the space-time , Planck vibration, for primordial Universe and the brain vibration.

In principle, gravitational waves could exist at any frequency. However, very low frequency waves would be impossible to detect, and there is no credible source for detectable waves of very high frequency as well. Stephen Hawking and Werner Israel list different frequency bands for gravitational waves that could plausibly be detected, ranging from 10^{-7} Hz up to 10^{11} Hz. Considering formula (20 we obtain for energies of gravitational waves E= 10^-22 to 10 ^-4 eV ., whereas for quantum of brain waves E=10^-15 eV It means that brain waves belongs to the spectrum of gravitational waves (on Earth) Due to the overaped region of the frequencies the interference of the brain and gravitational waves is possible It is very interesting to observe that the same equation describes the two modes of the wave motion : the vibration of the space-time , Planck vibration, for primordial Universe and the brain vibration

3.Conclusions

It seems that there is strong connection of the structure of the Universe and the brain activity. In our paper we showed that the Planck vibration and the brain vibration can be described by the same second order Schrodinger equation.

References

Kozlowski M., Marciak-Kozlowska J. Quantum model of Consciousness, Journal of Consciousness Exploration and Research, vol.8, Issue 3 p.1,2017

2.V *Gaeta, Giuseppe (2000-06-28). "On the cosmological implications of the Calogero conjecture". Modern Physics Letters A. World Scientific Pub Co Pte Lt.* ***15****(20): 1329–1339. doi:10.1142/s0217732300001614. ISSN 0217-7323.*^

3 *Calogero, F (1997). "Cosmic origin of quantization". Physics Letters A. Elsevier BV.* ***228*** *(6): 335–346. doi:10.1016/s0375-9601(97)00107-2. ISSN 0375-9601.*

4 *Calogero, Francesco (2004-02-20). "Cosmic origin of quantization". International Journal of Modern Physics B. World Scientific Pub Co Pte Lt.* ***18*** *(04–05): 519–525. doi:10.1142/s0217979204024136. ISSN 0217-*

5 *Hawking, S. W.; Israel, W. (1979). General Relativity: An Einstein Centenary Survey. Cambridge: Cambridge University Press.*