Research Essay

On Psychon in Quantum of Consciousness

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Abstract

In this paper, we formulate the hypothesis that brain waves and Schumann waves are quantum fields with elementary excitation energy, *Psychon* with $E_{Psychon}=10^{-15}eV$. With the *Psychon* entity, we formulate the model for calculation of normalized energy spectra for brain and Schuman waves. The model calculations are in very good agreement with measured energy spectra for both Schuman and Brain waves.

Keywords: Brain wave frequencies, Schumann Resonances, Psychon, quantum consciousness.

Psychon: A hypothetical unit of thought, mental activity, or nervouse energy
Oxford Living Dictionaries

1. Overview of the research

Considering human consciousness as the physical phenomenon, we assume that:

1. Consciousness is manifested by activity of brain in the form of electromagnetic brain waves with frequencies 3-40 Hz.

2. On the Earth exists the second mode of electromagnetic waves – Schumann waves with the same frequencies as the human brain waves.

For the "antenna" with arm length R the characteristic frequency ω of electromagnetic wave can be calculated as:

$$\omega = \frac{c}{R} \quad (1)$$

where c is the light velocity. For Earth radius $R = 6.4\ 10^8$ m we obtain from formula (1)

$$\omega = 50 \text{ Hz} \quad (2)$$

i.e., in the ranges of Schumann waves. The frequency 50 Hz can be calculated in the energy units as

$$\omega = \frac{10^{-15}eV}{\hbar} \quad (3)$$

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where $\hbar$ is famous reduced Planck constant. Multiplying both sides of formula (3) one obtains from formula (3)

$$\hbar\omega = 10^{-15} eV \quad (4)$$

Formula (4) is valid for both modes of electromagnetic waves observed on Earth Surface. Considering formula (4) we conclude that energy quantum for both type of waves is equal $\hbar\omega = 10^{-15} eV$. This is elementary value of quantum energy for brain and Schuman waves and according to Oxford Dictionary can be named *psychon***.**

2. Consciousness and Quantum Theory

In the following we accept well established experimental data that the Earth atmosphere is fulfilled with two electromagnetic fields with nearly the same frequencies , but different amplitudes Brain waves and Schuman waves. As early as in 2012 we pursued quantum theory (QT) of the Brain and Schumann waves.

The issue of observation in QT is central, in the sense that objective reality cannot be disentangled from the act of observation, as the Copenhagen Interpretation (CI) nearly states In the words of John A. Wheeler 1981, we live in an observer-participatory Universe.has vast majority of today's practicing physicists follow CI's practical prescriptions for quantum phenomena, while still clinging to classical beliefs in observer-independent local, external reality). There is a critical gap between practice and underlying theory. In his Nobel Prize speech of 1932, Werner Heisenberg concluded that the atom "has no immediate and direct physical properties at all." If the universe's basic building block isn't physical, then the same must hold true in some way for the whole. The universe was doing a vanishing act in Heisenberg's day, and it certainly hasn't become more solid since.

This discrepancy between practice and theory must be confronted, because the consequences for the nature of reality are far-reaching An impressive body of evidence has been building to suggest that reality is non-local and undivided. Non-locality is already a basic fact of nature, first implied by the Einstein-Podolsky-Rosen thought experiment despite the original intent to refute it, and later explicitly formulated in Bell's Theorem.

Moreover, this is a reality where the mindful acts of observation play a crucial role at every level. Heisenberg again: "The atoms or elementary particles themselves . . . form a world of potentialities or possibilities rather than one of things or facts." He was led to a radical conclusion that underlies our own view in this paper: "What we observe is not nature itself, but nature exposed to our method of questioning." Reality, it seems, shifts according to the observer's conscious intent.

Quantum theory is not about the nature of reality, even though quantum physicists act as if that is the case. To escape philosophical complications, the original quantum mechanics was pragmatic: it concerned itself with the epistemology of quantum world (how we experience quantum phenomena), leaving aside ontological questions about the ultimate nature of reality. The

practical bent of QM should be kept in mind, particularly as there is a tendency on the part of many good physicists to slip back into issues that cannot be tested and therefore run counter to the basic tenets of scientific methodology.

In order to put forward the classical theory of the brain waves we quantize the Brain and Schumann wave field. In the model (Marciak-Kozlowska,Kozlowski, 2013) we assume (i) the brain is the thermal source in local equilibrium with temperature T.(ii) The spectrum of the brain waves is quantized according to formula

$$\hbar\omega = E \quad (5)$$

where E is the photon energy in eV , $\hbar$ =Planck constant, $\omega = 2\pi\nu, \nu$ -is the frequency in Hz. (iii). The number of photons emitted by brain is proportional to the (amplitude)^2 as for classical waves. The energies of the photons are the maximum values of energies of waves For the emission of black body brain waves we propose the well know formula for the black body radiation.

In thermodynamics we consider Planck type formula for probability dN/dE for the emission of the particle (photons as well as particles with m≠0) with energy (E,E+dE)by the source with temperature T is equal to[1] :

$$\frac{dN}{dE} = BE_{\max}^2 e^{(-\frac{E_{\max}}{E_{psychon}})} \quad (6)$$

where B= normalization constant, E=total energy of the particle, k = Boltzmann constant=1.3 x 10^{-23} J K^{-1}. K is for Kelvin degree. However in many applications in nuclear and elementary particles physics kT is recalculated in units of energy. To that aim we note that for 1K, kT is equal k1K = K x 1. 3 10^{-23} J x K^{-1}= 1.3 10^{-23} Joule or kT for 1K is equivalent to 1.3 10^{-23} Joule= 1.3 10^{-23} /(1.6 10^{-19}) eV = 0.8 10^{-4} eV. Eventually we obtain 1K= 0.8 10^{-4} eV, and 1eV= 1.2 10^4 K.

In formula (5) " temperature " T (eV) is the energy parameter which describes the shape of the energy spectra. In the following we chose $E(eV)_{psychon}$ as the energy parameter and formula (5) can be written as

$$\frac{dN}{dE} = BE_{\max}^2 e^{(-\frac{E_{\max}}{E_{psychon}})} \quad (6)$$

In Fig. 1, we present the experimental data for brain waves[2]:

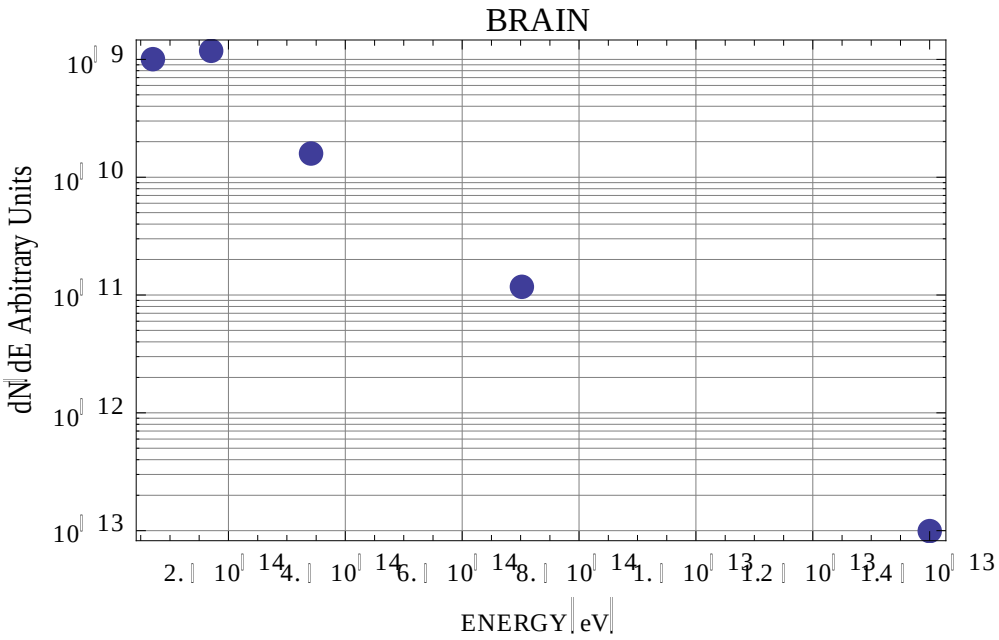

FiG.1. Energy spectra of the brain waves [3]

and in Fig 2. the same for Schumann waves:

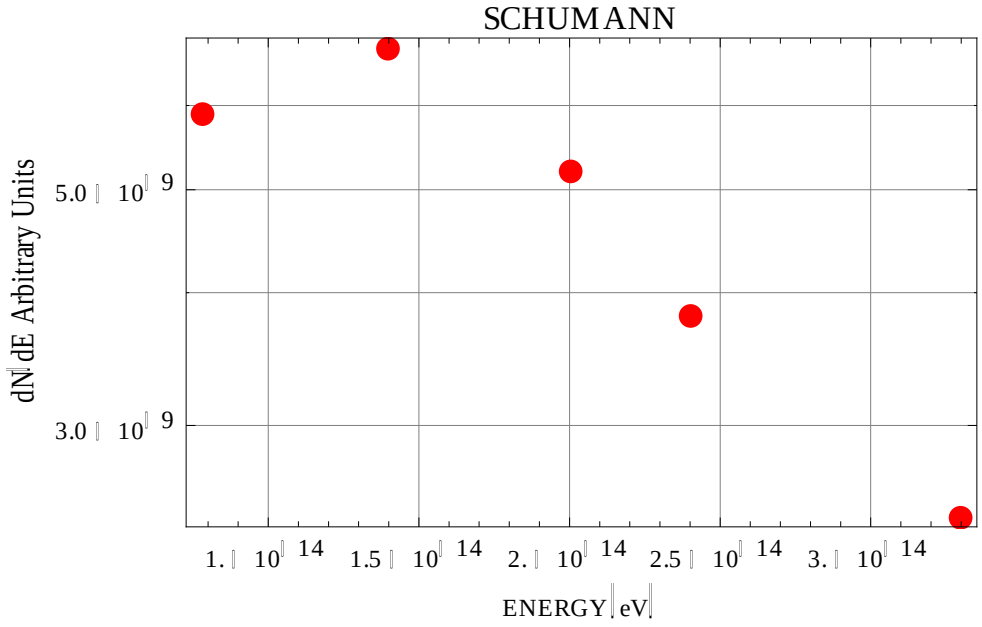

Fig.2 Experimental Energy spectra of the Schumann waves [3]

In Fig 3., theoretical energy spectra for brain waves with $E_{psychon}=10^{-15}$eV is presented [1,2]:

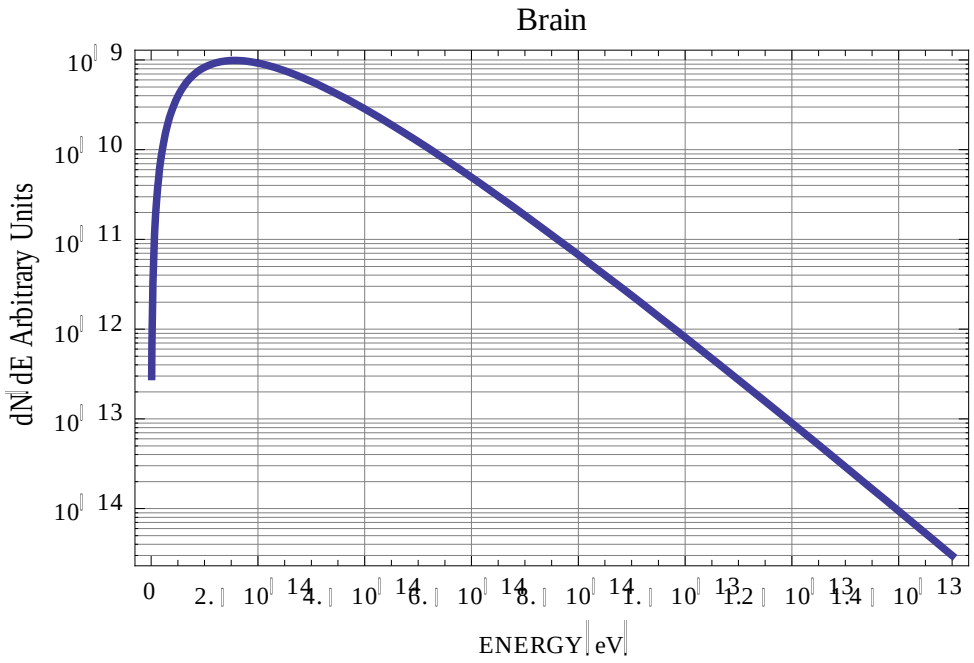

Fig.3. Theoretical energy spectra of brain waves , $E_{psychon}=10^{-15}$ eV [1,2]

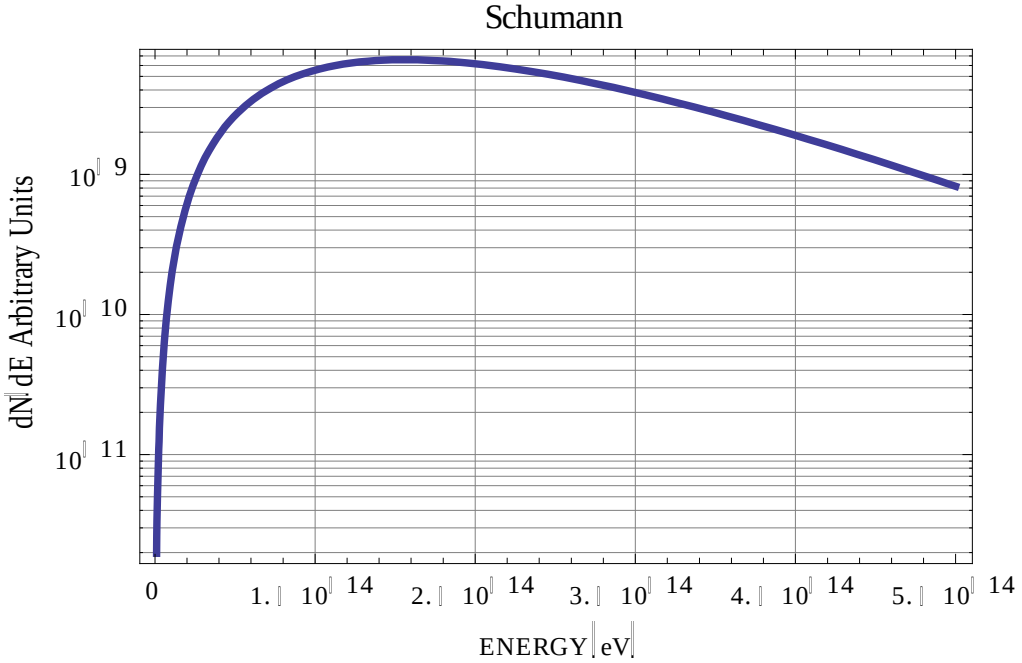

Fig.4 Theoretical energy spectra of Schuman waves, $E_{psychon}=10^{-15}$eV [1,2]

Comparison of theoretical and experimental data are presented in Fig.5 and Fig.6:

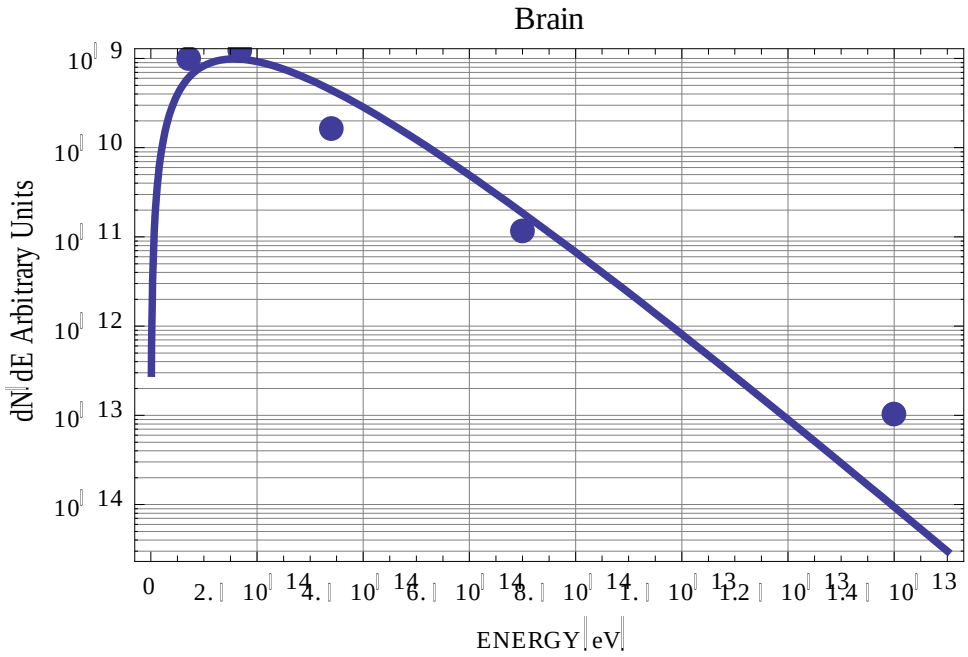

Fig.5 Comparison theoretical and experimental Energy spectra of brain waves

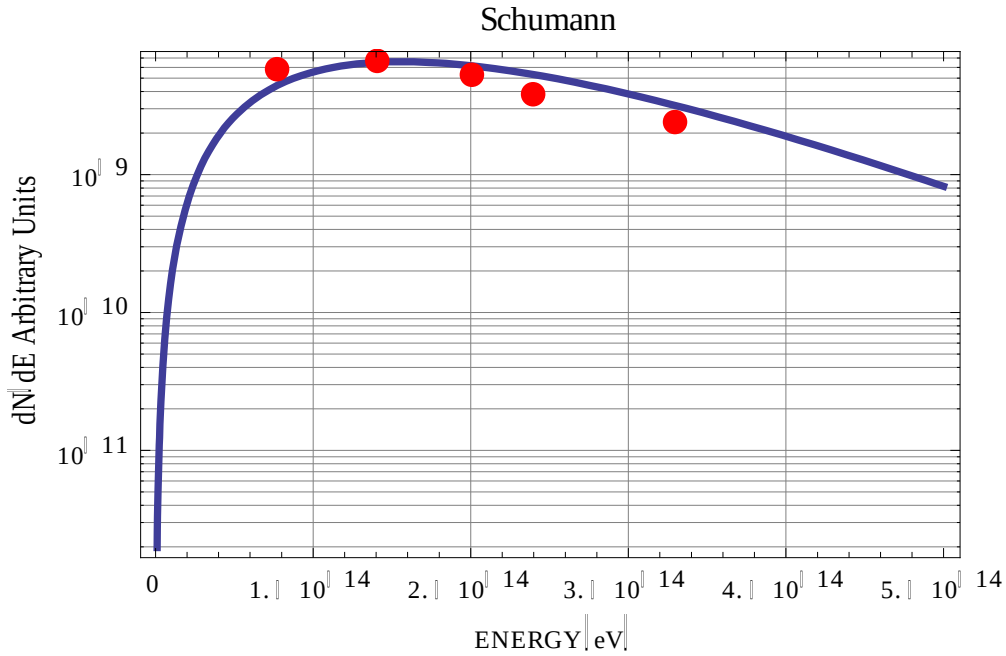

Fig.6 Comparison of theoretical and experimental energy spectra of Schuman waves

3. Conclusions

In this paper, we argue that the consciousness phenomenon can be described with the help of *psychon* quantum particle with mass, m=0 and energy $E_{psychon}=10^{-15}$eV. The p*sychon* is a boson with spin S=1. As for *boson* we applied the Planck formula for energy spectra of the brain and Schumann waves. The agreement with measured data is very good.

References

[1] M.Kozlowski, J. Marciak-Kozlowska *Brain Photons as the Quanta of the Quantum String, Neuroquantology* vol 10 No3, (2012)
[2]M.Kozłowski, J. Marciak-Kozłowska, *Schumann Resonance and Brain Waves: A Quantum Description, Neuroquantology* Vol 13, No 2 (2015)
[3] A. Nikolaenko, M. Hayakawa, *Schumann Resonance for Tyros* , Springer Geophysics, 2014.