

Quantum Mechanics and Consciousness

Elcio Fabio Soares Pereira

Ph.D by The University of Utah – USA

Retired Professor by The UFMG – Minas Gerais – Brazil –

https://ORCID.ORG/00001 – 6156 8167

Abstract

Comments related to quantum waves and time intervals in primordial eras are presented in the Introduction, as they are considered relevant to the theme of this work.

In general, experiments related to the topic discussed require expensive experimental setup and specialized workforce make it difficult to obtain data for these systems. Using this as a guide, we review, in the Discussions and Conclusions topic, some hypotheses formulated in previous works. This review aims to present new evidence whenever possible, this being the case of Poincaré resonances, which is highlighted with emphasis as it is considered fundamental to quantum mechanics.

The last topic of the work deals with the encounter between physics and consciousness, the latter constituting a central theme of his studies along with the themes of life and the cosmos, all of which seems to be closely related to quantum mechanics.

Considering results of double slit experiments obtained from reference literature, the author manages to explain some of the strange mysteries of quantum mechanics, based on hypotheses formulated by himself for the origin of the primary consciousness of the universe and its extension to biological beings.

Keywords: *cosmos, life, consciousness, quantum mechanics, Poincaré resonances, collapse of quantum waves.*

Date of Submission: 03-06-2024

Date of acceptance: 14-06-2024

I. INTRODUCTION

In the search for answers to questions such as the origin of life, of the universe and consciousness, a great difficulty we face in carrying out experiments to obtain data that can contribute to the evaluation of hypotheses eventually formulated. In order to overcome this difficulty, efforts must be focused on searching for any evidence that makes it possible to formulate hypotheses that, in some way, contribute to the elucidation of the truth.

The author's opinions on some aspects that he considers relevant in the development of this work are presented below.

Quantum waves must have existed since the beginning of time and, it seems, are the result of quantum fluctuations in the vacuum, being implicitly discontinuous and, as I believe, an immaterial process. After the emergence of matter and the generation of subatomic particles, these enabled the formation of atoms. These would also be the sources of discontinuous waves arising from quantum jumps of electrons between their orbitals. These facts are probably the most responsible for the discontinuity of physical processes.

In benefit of clarity and considering the way I imagine the succession of the facts, it seems to me that time should be divided into two periods, one before and the other one after the creation of matter. Based on the current knowledge, it is not possible to quantify these time intervals and not even claim that this well-defined intervals existed. I believe that before the formation of atoms there was a period of time characterized by a great instability of matter, which was formed and destroyed in short intervals until the obtention, thru the action of the evolution theory of Darwin, of a set of physical and mathematical laws that gave them stability, thus enabling the formation of subatomic particles that would give rise to also stable atoms.

II. DISCUSSION AND CONCLUSIONS

Virtual particles resulting from the interference of quantum waves must have coexisted with material particles formed by their transformation into matter through the action of energy.

It should be noted that the feasibility of creating matter through the interaction of energy with virtual particles resulting from quantum fluctuations has recently been demonstrated (1). If this is true, the hypothesis suggested by the author in a previous work (2), that the transformations of quantum waves into material particles would occur through computational processes, must be corrected.

Taking as models the Darwin's Theory of Evolution and the biological development with the emergence of the brain and consciousness and, assuming that this consciousness has become viable through the

emergence of a memory making possible to record the information necessary for the development of these beings, questions can be formulated as: was there, before the emergence of matter, any possibility of recording the information necessary for the emergence of a consciousness along the lines of a biological consciousness? If this possibility exists, this record of information, which is supposed to constitute the fundamental laws of mathematics and physics, would have provided the emergence of a primary consciousness of the universe which would therefore have arisen before the generation of matter and being, as a consequence of this, immaterial ?

Yes, the author believes that the information would be stored in structures similar to the one of the biological DNA, as suggested in previous work (3). Assuming that this hypothetical primary consciousness arose before the formation of matter, it would probably be immaterial just like the supposedly similar biological consciousness created along the same lines.

Admitting the immateriality of human consciousness and its similarity with a hypothetical primary consciousness of the universe, the author believes it's possible to consider a division of time with intervals existing before and after the creation of matter.

Perhaps, after the formation of the atom, it enclosed the supposed molecular structure responsible for the memory of primary consciousness, just as the biological DNA was enclosed by biological cells, providing, as the biological DNA, the necessary information for the processes that would be relevant.

Recently (4), physicists discovered structures within the nucleus of an atom that could be considered as true molecules, which constitutes a very favorable indication for the hypothesis of the atom's enclosure of a hypothetical non-biological DNA, being its existence confirmed.

According to the author, the brain in the case of biological beings and other possible organisms not known when considering the universe, would receive information provided by the collapse of quantum waves.

II.1. Poincaré Resonances

Poincaré resonances play a fundamental role in physics. The advancement of mathematics with the use of operators and various other tools, has made it possible to solve the problem of the non-integrability of systems where these resonances occur which, through their actions of creation, propagation and annulment of correlations, break the symmetry of time, that is, they give origin of the arrow of time, responsible for the processes that give rise to everything that exists in the universe, one of these supposedly being the creation of primary consciousness and its extension into the consciousness of biological beings.

Furthermore, looking in greater detail at the actions provided by these resonances, such as annulment, creating and propagating correlations, it is assumed that these resonances have a role similar to that of neurons in the human brain. The fact that they only occur in processes with persistent waves is another indication of their similarity to neurons which, in order to fire, require an accumulation of continuous impulses. This process probably must have arisen, according to Darwin, by incorporating some evolutionary advantage.

The process of Poincaré resonances, being genuinely physical and according to the hypothesis proposed by the author (5) being responsible for the reduction of the quantum state, that is, for the collapse of quantum waves, seems to fulfill one of the prerequisites mentioned by Penrose (6) for the existence of consciousness. Another condition suggested by the same author is that it should have to be a non-computational process, a condition that could only be answered by existing some theory for consciousness, a theory that would enable planning to carry out experiments whose results could perhaps provide an answer to this question of non-computability of the interactions that occur in the process. The author presented in previous works (3,7) hypotheses for the formation of consciousness that perhaps make it possible to plan and carry out such experiments.

In this, he searches for any and all evidence that makes his hypotheses more convincing. He believes that, based on the process presented for the formation of the primary consciousness of the universe and its extension to the formation of the consciousness of biological beings and using modern technological imaging resources such as quantum tomography, digital holography and others (8 ,9), it is possible in a not too distant future to plan and execute experiments aimed at obtaining data that could perhaps indicate whether or not the interactions that occur in the process of Poincaré resonances can be computable. If such experiments are viable, the data obtained from their execution would perhaps make it possible to take a formidable step towards elucidating the problem of consciousness.

The non-locality of these resonances also deserves attention when considering the strange unexplained phenomena that occur in quantum mechanics. In the Bigbang we have the non-local phenomenon of a singularity that would appear to be large compared to non-local singularities occurring at intervals of time in the process of Poincaré resonances, if it were possible to quantify a singularity. One can think that, whatever process occurred in the Bigbang singularity, perhaps this process is the same that would be happening whenever a Poincaré Resonance occurs, that is, whenever the situation occurs in which the relationship of two wave frequencies, in an interference process, be an integer.

In very simple terms, these resonances play the role currently attributed to the observer, promoting the collapse of waves that, losing their coherence, would separately show the previously superimposed wave functions of objects, enabling their capture by organisms to form their consciousness.

In physical terms, the incorporation of Poincaré resonances in a statistical description of reality promotes the appearance of diffusive terms, making probability the central object, from both classical and quantum mechanics, receiving the name of density matrix in the latter. This eliminates the need to consider probability amplitudes and the physical problem of reducing quantum mechanical waves.

The author refers the reader more interested in mathematical and physical details to consult the chemical laureate Prigogine(10).

II.2. The Meeting of Physics and Consciousness

Rosenblum and Kuttner (11) report that there is a superposition when a photon encounters, for example, an atom.

It seems to me that perhaps it is common for superpositions of quantum wave functions of different interacting objects to occur and that perhaps these interactions accumulate, through superpositions, information about everything that is found in their path.

Thinking in these terms, all these interactions would end up forming a dense holographic mist. This would have a certain analogy with the ripple caused by the interference of different waves formed on the calm surface of a lake when it is hit by many objects thrown simultaneously onto its surface.

All this seems fantastic, but no more fantastic than the processes that give rise to all biological life that we know are occurring at all times, processes that, despite not having complete knowledge of them, still seem wonderful to us and we could almost say, impossible to happen.

Next, we present another piece of evidence for the existence of a primary consciousness in the universe, a clue that resides in the fact that its existence explains, as will be shown, one of the most intriguing enigmas of quantum mechanics.

The double slit experiment by Rosenblum and Kuttner (11) is described below, with the author agreeing with them in their statement that this experiment reveals the encounter between physics and consciousness. In the author's opinion, the results of the experiment provide yet another strong indication of the existence of a primary consciousness in the universe. A summary report of the apparatus used and results obtained is described below.

As it is a well-known experiment, we believe there is no doubt in obtaining the pairs of boxes to be used in it. The wave function of the object is divided into two by also known devices, thus obtaining part of the wave function in one box and part in the other. The question to be answered by the experiment is: which one contains the object?

To make this determination, two different experiments were carried out, and it must be assumed that all the boxes were prepared identically and were all the same both inside and outside.

In the first experiment, the slits in each box of the pair are opened simultaneously, observing, in this case, an interference behavior, showing that the atom was spread across the two boxes.

In the second experiment, the slit of each box is opened separately and when the opening of the slit of one box shows that it contained the object, the opening of the slit of the even box shows that it was empty, the atom behaving like a particle.

Now the weird thing: choose however you want random sets of two boxes each. Randomly take these sets of two boxes forming several pairs of boxes and then, for each pair, randomly choose one of the experiments mentioned above and you will see that the results will always be the predicted results depending on the type of experiment chosen.

So the enigma: would the atoms know in advance how they would be in the boxes before their choice or was it their choice that defined their arrangement in the boxes? Furthermore, this has a previous effect, that is, at the moment of division of the wave function, that is, when the atom had to decide whether to go whole along one of the paths or whether to spread out. How could this be explained?

A possible explanation would be to admit the existence of a primary consciousness of the universe, that is, when the action of the Poincaré resonance breaks the coherence of the wave beam and allows one of the configurations of this beam to be captured by the physical organism involved in the formation of the primary consciousness of the universe, this same aspect would also be captured by the brain of the human observer then resulting that, simultaneously both organisms will have the same information. Supposing there is an intimate connection between the two consciousnesses or that the supposed two consciousnesses are in fact just one or even that they have properties common to both, the occurrence of one of these possibilities could explain the intriguing question of the physical result of the two experiences always being according to what the biological

observer programmed to see. It also seems that consciousnesses would have a special setting regarding time, that is, perhaps their settings are timeless and counterfactual like those of quantum mechanics.

What was suggested above seems to explain the intriguing results of the double slit experiment and, even more so, it also explains the fact that quantum probability is an objective phenomenon, always presenting the same result for any observer.

I think that “observation” does not always mean that it is human observation, this observation could be made, for example, by a photographic film and even more so, regarding the creation of reality, I believe that this would be created uninterrupted by the action of resonances of Poincaré that, at intervals of time, would cause the collapse of quantum waves, creating “realities” that could or could not be perceived despite being observed. What is observed is not always consciously perceived. The universe would exist regardless the existence or not of any observer. In the author's understanding, conscious observers or those capable of being conscious interact with these “realities” created by the collapse of waves through Poincaré resonances to form or extend their consciousness, be it the universal primary or biological consciousness.

Admitting that constantly and at determined time intervals, there is the collapse of the wave function caused by the Poincaré resonances, the atoms and everything else would exist independently of any observer.

The universe exists even if we are not observing it. In each collapse, a certain aspect of this universe manifests itself causing certain interference with a possible organism that can keep, in its memory, these observed aspects that I suppose, initiate everything that occurred and occurs in the formation and extension of the primary consciousnesses of the universe and human.

REFERENCES

- [1]. Technological Innovation Website. Make matter: Matter can be created from nothing with photon-photon collisions. 08/28/2023. Online. Available at www.inovacaotecnologica.com.br/noticias/noticia.php?artigo=matéria-criada-nada-colisoes-foton-foton. Captured on 04/04/2024.
- [2]. Pereira, Elcio Fabio Soares. “Cosmos-Life-Consciousness V”. *Global Journal of Science Frontier Research: A Physics and Space Science*, Vol. 23, Issue 9, Version 1.0, Year 2023. Online ISSN: 2249-4626 and Print ISSN: 0975-5896.
- [3]. Pereira, Elcio Fabio Soares. “Cosmos-life-consciousness IV”. *Development and its Applications in Scientific Knowledge*, DOI: 10.56238/sevedi76016v22023-086, 2023.
- [4]. Technological Innovation Website. Molecule-like structure discovered inside the nucleus of an atom. 04/12/2023. Online. Available at www.inovacaotecnologica.com.br/noticias/noticia.php?artigo=fisicos-descobrem-especie-molecula-dentro-nucleo-atomo. Captured on 04/04/2024.
- [5]. Pereira, Elcio Fabio Soares. “The Role of Poincaré Resonances in the Collapse of Quantum Waves and in the Formation of Consciousness”. *Global Journal of Science Frontier Research: A Physics and Space Science*. Vol. 23, Issue 3, Version 1.0, Year 2023. Online ISSN: 2249-4626 and Print: 0975-5896.
- [6]. Penrose, Roger. “Shadows of the Mind – A search for the lost Science of consciousness”. Translated by Gabriel Cozzella. São Paulo: Editora UNESP, 2021.
- [7]. Pereira, Elcio Fabio Soares. “Cosmos-Life-Consciousness III”. *Brazilian Journal of Development*, V.8, n.5, p. 35488-35497, 2022.
- [8]. Technological Innovation Website. Quantum wave function is photographed for the first time, 11/26/2020. Online. Available at www.inovacaotecnologica.com.br/noticias/noticia.php?artigo=funcao-onda-quantica-fotografada-pela-primeira-vez. Captured on 04/04/2024.
- [9]. Technological Innovation Website. Quantum Yin-Yang: Quantum entanglement is directly photographed. 08/29/2023. Online. Available at www.inovacaotecnologica.com.br/noticias/naticia.php?artigo=yin-yang-quantico-fostografia-entrelacamento-quantico. Captured on 04/04/2024.
- [10]. Prigogine, Ilya. “The End of Certainties: time, chaos and the laws of nature”. Translated by Roiberto Leal Ferreira. São Paulo: Editora UNESP, 2011.
- [11]. Bruce Rosenblum, Fred Kuttner. “The quantum enigma – the meeting of physics and consciousness”. Translated by George Schlesinger. Technical Review by Alexandre Cherman. Rio de Janeiro: Editora Schwarcz S.A., 2020.