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Quantum Interactions of Entangled Ionotropic Receptors Accentuate the Impact of Entanglement to Consciousness

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This contribution concentrates on the evaluation of quantum processes in the brain that essentially contribute to the protection and activation of entanglement and their impact to consciousness. The corresponding calculations occur in the Fock space that represents discrete quantum fields, where the corresponding computations occur in the following succession. First, three possible weak interactions of emitted, small-sized neurotransmitters are described. These interdependencies are the attraction by electric dipole-dipole interaction, the attraction by the Morse potential and the repulsion characterized by s-wave scattering. Second, this article focusses on ionotropic receptors that are embedded in a dense non-rigid grid. Anharmonic oscillators approximate these molecules, where their interactions cause grid vibrations. The determination of the expectation values of the total energy of the oscillating receptors, situated in two entangled ground states, demonstrate the existence of gap functions that shield the entanglement. This protected entanglement represents a bridge to the materialistic consciousness, and as well it refutes the dominant criticism against the quantum processes in the brain that decoherence destroys in picoseconds the entanglement (quantum coherence). The entangled entropy of the protected entangled states is not zero; what is a clear sign of entanglement. Third, consciousness activates the protected entanglement that reveals distinct positive effects, concerning the acquisition of information. Thus, the working space (associative cortices) that operates in a conscious state instantly gets compressed information on the current particular states of the cortical and subcortical components. Thereby, the emergence of consciousness is a synergetic process, which is created by the mutual interdependencies (causal circularity) of the components of the working space (synergetic agents) and the subcortical areas (synergetic “slaves”).

Recent Publications

1. Study of the impact of light-matter-interaction on the herpesviruses: A quantum field approach. Paul Levi. Innovations in Science and Technology, Vol. 2, chapter 8, 103-131, first edition 2022, BP International. ISBN 978-93-55-468-1 (eBook).
2. Basic Quantum Field Model of the Self-Organization of Microtubules in Eurytopic Cells. Paul Levi. European Journal of Biophysics 2020 8(2), 52-67.
3. Quantum Interactions of Small -Sized Neurotransmitters and of the Entanglement Ionotropic Receptors Accentuate the Impact of Entanglement to Consciousness. Paul Levi. European Journal of Biophysics 2018, 6(2), 32-52.
4. Quantum Effects in Synaptic Neurons and Their Networks in the Brain. Paul Levi. European Journal of Biophysics 2016, 4(6), 47-66.

Biography

Paul Levi has expertise in modeling and evaluation of neural process in quantum biology by quantum field-based methods. Originally he worked as a physicist in the range of nuclear physics (elementary particles). Then he changed to informatics, where he was a member of the Human Brain Project. Here he evaluated the different genes on massif parallel and distributed computers where he applied methods of AI. Later on he was also a member of the European Human Brain Project. In consequence he continues to work on the field of quantum biology.

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