

The basic difficulties and challenges of Quantum Mind program are analyzed. The conclusion is that the recent form of quantum theory is not enough to overcome the challenges posed by the philosophical problems of quantum physics and quantum mind theories, and the puzzles of quantum biology and quantum neuroscience. Certain anomalies of recent day biology giving hints about how quantum theory should be generalized serve as an introduction to the summary of the aspects of quantum TGD especially relevant to the notion of Quantum Mind. These include the notions of many-sheeted space-time and field (magnetic) body, zero energy ontology, the identification dark matter as a hierarchy of phases with large value of Planck constant, and p-adic physics proposed to define physical correlates for cognition and intentionality.

Especially relevant is the number theoretic generalization of Shannon entropy: this entropy is well defined for rational or even algebraic entanglement probabilities and its minimum as a function of the prime defining p-adic norm appearing in the definition of the entropy is negative. Therefore the notion of negentropic entanglement makes sense in the intersection of real and p-adic worlds and is negative: this motivates the proposal that living matter resides in this intersection.

TGD inspired theory of consciousness is introduced as a generalization of quantum measurement theory. The notions of quantum jump and self defining the generalization of the notion of observer are introduced and it is argued that the notion of self reduces to that for quantum jump. Negentropy Maximization Principle reproduces standard quantum measurement theory for ordinary entanglement but respects negentropic entanglement so that the outcome of state function reduction is not random for negentropic entanglement. The new view about the relationship of experienced time and geometric time combined with zero energy ontology is claimed to

solve  
the basic philosophical difficulties of quantum measurement theory  
and  
consciousness theory. The identification of the quantum correlates  
of  
sensory qualia and Boolean cognition, emotions, cognition and  
intentionality and self-referentiality of consciousness is  
discussed.

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