

Topological Geometroynamics (TGD) is a unified theory of fundamental interactions which has led to a theory of consciousness as a generalization of quantum measurement theory based on a new ontology referred to as zero energy ontology (ZEO). Quantum biology is the second application of TGD.

Quantum gravitation would play a key role in quantum biology and consciousness but in a sense very different from that in Penrose-Hameroff theory. The TGD view of dark matter as phases of ordinary matter with a large value of effective Planck constant makes possible quantum coherence in arbitrary long length scales. Also the new view of space-time and electromagnetic fields is central and leads to the notion of a magnetic body carrying dark matter and serving as the "boss" of the biological body controlling it and receiving sensory input from it (EEG). The prediction of ZEO that the arrow of time changes in ordinary state function reductions plays an essential role in the picture. The magnetic bodies of both Sun and Earth could be key players concerning quantum gravitational quantum coherence.

Quantum gravitational Compton time τ_{gr} , which by Equivalence Principle does not depend on the particle mass, represents the minimal value of quantum gravitational coherence time. If the clock period is shorter than τ_{gr} , the statistical determinism certainly fails but can also fail for longer clock periods. The entanglement of humans and computers is also a very interesting possibility and there is some evidence for this kind of entanglement.