

## Bio-Systems as Conscious Holograms

Brain as a hologram is an old idea and it emerges naturally also in TGD framework both at quantum and classical level, which by quantum classical correspondence is expected to reflect what happens at the deeper quantum level. The book is organized as follows.

1. The new view about the relationship between experienced and geometric time underlies the notion of 4-D dynamical hologram. Therefore the first part of the book contains three chapters about this topic reflecting the development of ideas. The first one is more than decade old. The third one written quite recently is inspired by zero energy ontology and provides a rather detailed vision about how the arrow of geometric time correlating with the arrow of experienced time and the localization of the contents of sensory experience to a narrow time interval emerge.
2. Second part of the book is devoted to the development of hologram idea. Also a general model of sensory qualia and a model for sensory receptor as electret, which are very abundant in living matter, are discussed.
3. The third part of the book is devoted to water memory and metabolism. The title suggests a connection between these two and this kind of connection has indeed emerged. A discovery - certainly one of the greatest surprises of my professional life - popped up as an outcome of an attempt to understand the mechanism behind water memory for which rather strong support exists now. The idea was that dark nuclei which sizes zoomed up to atomic size scale could provide a representation of genes with dark nucleons consisting of three quarks representing DNA codons. It turned out that the model for dark nucleon consisting of three quarks predicts counterparts of 64 DNAs, 64 RNAs, and 20 aminoacids and allows to identify vertebrate genetic code as a natural mapping of DNA type states to amino-acid type states. The population of dark nuclei would be new life-form possibly responsible for the water memory. The chapter about metabolism represents a model of metabolism based on the identification of universal metabolic energy quanta as increments of zero point kinetic energies emitted or absorbed as particles are transferred between space-time time sheets characterized by different p-adic primes.