

In TGD Universe gauge fields are replaced with topological field quanta.

Examples are topological light rays, magnetic/electric flux tubes and sheets, and flux quanta carrying both magnetic and electric fields.

Flux

quanta form a fractal hierarchy in the sense that there are flux quanta

inside flux quanta. It is natural to assume quantization of Kähler magnetic flux. Braiding and reconnection are the basic topological operations for flux quanta.

The basic question is how the basic notions assigned with the classical

gauge and gravitational fields understood in standard sense generalize in

TGD framework.

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\item Superposition and interference of the classical fields is very natural in Maxwell electrodynamics and certainly experimentally verified phenomena. Also the notion of hologram relies crucially on the notion of interference. How can one describe the effects explained in terms of superposition of fields in a situation in which the theory is extremely non-linear and all classical gauge fields are expressible in terms of CP_2 coordinates and their gradients? It is also

rather clear that the preferred extremals for Kähler action decompose to space-time regions representing space-time correlates for quanta. The superposition of classical fields in Maxwellian sense is impossible.

How can one cope with this situation? The answer is based on simple observation: only the {\it effects} of the classical fields superpose.

There is no need for the fields to superpose. Together with the notion of

many-sheeted space-time this leads to elegant description of interference

effects without any need to assume that linearization is a good approximation.

\item Topological quantization brings in also braiding and reconnection of

magnetic flux tubes as basic operations for classical fields. These operations for flux tubes have also Maxwellian counterparts at the level

of field lines. Braiding and reconnection are in a central role

in TGD
Universe and especially so in in TGD inspired theory of
consciousness and
quantum biology. The challenge is to build a coherent overall
phenomenological view about the role of topologically quantized
classical
fields in biology and neuroscience. For instance, one can ask what
is the
precise formulation for the notion of conscious hologram and whether
magnetic flux tubes could serve as correlates of entanglement (or at
least
negentropic entanglement suggested by the number theoretic vision
and
identified as a basic signature of living matter).

\item Topological quantization and the notion of magnetic body are
especially important in TGD inspired model of EEG. The attempt to
understand the findings of Persinger from the study of what is known
as God
helmet leads to a considerable progress in the understanding the
possible
role of topologically quantized classical fields in biology and
neuro-science.

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