

In this chapter a general vision about new energy technologies provided by the new ontology forced by TGD is discussed, some evidence for the new ontology is considered, and models explaining some \blockquote{free energy} anomalies are discussed.

There are close connections to the basic mechanisms of energy metabolism in living matter in TGD Universe and one cannot avoid even reference to TGD inspired quantum theory of consciousness. The point is that so called time mirror mechanism defines a mechanism of remote metabolism as sucking of energy from remote energy storage, a mechanism of memory as communications with geometric past, and mechanism of intentional action initiating neural activity in geometric past. At the level of technology time mirror mechanism would define a mechanism of energy transfer, communication, and remote quantum control.

\vm{\it 1. The new ontology}\vm

The ontology of TGD Universe involves several new elements. The notion of many-sheeted space-time means that each physical system corresponds to a space-time sheet, its own sub-universe in geometric sense, and glued to a larger space-time sheet and containing subsystems as smaller space-time sheets glued to it. Many-sheeted space-time leads to the notion of field body distinguishing between TGD and Maxwell's electrodynamics. One can assign to each physical system a field body (or magnetic body) and in case of living matter it acts as intentional agent using biological body as a sensory receptor and motor instrument.

Zero energy ontology states that any physical system has a vanishing net energy so that everything is creatable from vacuum. Zero energy states

decompose into positive and negative energy parts. The possibility of negative energy signals is one important implication and a considerable modification of thermodynamics is forced by the fact that different signs of energy correspond to different arrows of geometric time.

Negative energy signals propagating to the geometric past inspire a new vision about communications, energy technology, and remote control. The implications are especially important for the understanding of living matter where both time directions manifest themselves. In neuroscience a radically new view about memory based on the notion of 4-D brain emerges.

The hierarchy of Planck constants implies a generalization of the notions of imbedding space and space-time and macroscopic quantum coherence in all length and time scales at high enough levels of dark matter hierarchy assigned to the hierarchy of Planck constant. The consequences of this hypothesis are powerful: entire cosmos should be in a well-defined sense a living system with dark matter representing higher level conscious entities.

The original motivation for the p-adic physics were the highly successful calculations of elementary particle masses based on p-adic thermodynamics and conformal invariance. The only sensible interpretation of p-adic physics seems to be as physics of cognition and intentionality meaning that cognition is present even at elementary particle level. This implies a profound generalization of space-time concept implying that cognition and intentionality are literally cosmic phenomena but having experimentally measurable correlates in real physics.

\vm{\it 2. The new view about energy}\vm

The basic idea is that quantum biology could teach us a lot about energy technology. The necessity to carry fuel is one of the drawback of standard

energy technologies. Remote metabolism based on sucking of energy by sending negative energy signals to energy storage analogous to a population inverted laser defines what might be called quantum credit card. This is the basic metabolic mechanism of TGD inspired quantum biology. The mechanism could make sense also as an energy technology.

In biological systems the fuel serves as an energy storage and is recycled. Animal cells burn the fuel and plant cells reconstruct it using sunlight as an energy source. Similar recycling of the fuel could make it unnecessary to carry large amounts of fuel. The systems doing the recycling could be seen as primitive life forms and plasmoids are an excellent candidate in this respect. Fuel could be practically any quantum system with two or more states with different energies.

Large Planck constant phases would make it possible to communicate short wave length photons over long distances: say photons with energy of visible photon but having wavelength of EEG photon. This might help to achieve a lossless energy transfer. Topological light rays (`\blockquote{massless extremals}`) would be in a key role in making possible precisely targeted, dispersion-free and lossless energy and information transfer. They are ideal also for quantum control.

`\vm{\it 3. Evidence for the new ontology}\vm`

There are surprisingly many well established anomalies supporting the new ontology and these anomalies have been a strong guiding line in attempts to construct a general theoretical framework.

`\begin{enumerate}`
`\item` There is a considerable support for the notion many-sheeted space-time quantified in terms of p-adic length scale hypothesis. One example is the radiation from interstellar dust having no generally accepted interpretation in terms of molecular transitions. The interpretation in terms of metabolic energy quanta liberated in dropping of electrons

or
protons to larger space-time sheets makes sense quantitatively.

\item The Bohr quantization of radii of planetary orbits and quantal effects of ELF em fields on vertebrate brain helped considerably to develop the ideas about the hierarchy of Planck constants. Later a lot of further anomalies have emerged supporting the quantization of Planck constant.

\item Living matter is a gigantic bundle of anomalies from the point of view of recent day physics and the notion of field body combined with p-adic length scale hypothesis allows to develop detailed models for how magnetic body controls biological body and receives sensory input from it. The notion of field body leads also to a concrete model for pre-biotic life based on the notion of plasmoid involving magnetic body controlling plasma phase. Recently a considerable empirical support for this notion has emerged.

\end{enumerate}

\vm{\it 4. Podkletnov- and Modanese-Podkletnov effects}\vm

The explanation of Modanese-Podkletnov effect shares many common elements with the model of Podkletnov effect and actually led to the correct track allowing to eliminate competing models.

The \blockquote{dropping} of electrons to the space-time sheets of topological light rays emitted by a critical system would be the key mechanism besides rotation induced charging. During the discharge of the capacitor (Modanese-Podkletnov effect) this mechanism would induce the motion of test penduli. In the case of a super-conductor making repeatedly a transition to a non-super-conducting state (Podkletnov effect) this mechanism would induce the motion of air above super conductor and apparent loss of weight of test particles. Biefeld-Brown effect associated with lifters and corona wind can be explained by the same mechanism as Modanese-Podkletnov effect. Podkletnov effect is enhanced by the em and Z^0 charging induced

by
rotation and thus involves also the em and Z^0 variants of Searl
effect.

\vm{\it 5. Over unity effects}\vm

Over-unity effects are the basic claim of free energy research
community.
TGD indeed allows temporary over-unity effects: the basic mechanism
is the
dropping of particles on larger space-time sheets liberating zero
point
kinetic energy appearing as a basic metabolic mechanism in TGD
inspired
theory of living systems. This mechanism does not allow a perpetual
mobile: the particles must be kicked back to the smaller space-time
sheets
and in the ordinary living matter solar radiation takes care of
this. There
are also anomalies associated with the dissociation of water and
hydrogen
molecules. The hydrino atom concept of Mills is also closely related
to
these anomalies and TGD based justification for the notion is
discussed in
this chapter.