

WHERE ARE THEY ALL?

A possible solution to Fermi paradox.

M a t t i Pitkänen 10.9. 2007

<http://www.helsinki.fi/~matpitka/tgdbooks.html>
<http://www.helsinki.fi/~matpitka/consbooks.html>
matpitka@rock.helsinki.fi

1. Fermi paradox

Various probability arguments (Drake's equation) suggests that life should not be a rare phenomenon in our galaxy. Also molecules which are important for life such as polycyclic aromatic hydrocarbons (PAH) are found from interstellar space [*PAH*]; these molecules are regarded as outcome of processes involving photosynthesis. Neither do the circumstances favoring life seem to be a rare exception: already now a very Earth like exoplanet is known [*exo*]. Also indications that primitive life has existed or perhaps even exists in Mars [*Mars*]. It might be that life as we know it is an unavoidable consequence of evolution everywhere in universe.

This raises the question first formulated by an Italian physicist Enrico Fermi: "*Where are they all?*". The question is known as (Hart-)Fermi-paradox. Material about Fermi paradox can be found from Wikipedia [*Fermi*].

1.1 Some leading questions

In the following some leading questions which might make it easier to understand the possible solution of Fermi paradox to be discussed in the following.

1. Is Fermi paradox only apparent paradox reflecting our misinterpretations?
2. Is our understanding about physics, biology, consciousness, and the nature of civilizations quite too restricted?
 - a) What is consciousness? Is it restricted to brain or possibly a phenomenon of a wider scale? Could some aspects of it be literally cosmic as some meditators might claim? Is it really possible to regard consciousness as a property of system in a strict sense of the word as the materialistic dogma assumes?
 - b) What is life? Do also other forms of life than the chemical one exist? Is even terrestrial life merely chemical? What is the role of electromagnetic (EEG) and other fields?
 - c) What are advanced communications? Could they rely on telepathy? Could they correspond to a direct sharing of mental images and ideas? Something which we do not even

realize to be communications? Could our "Gods" and "angels" be representatives of more advanced civilizations?

d) What are higher civilizations? Where are they located? Or does it make sense to locate them to some planet? We are a cell civilization ourselves: are we ourselves "cells" of some higher civilization in some sense?

1.2 A connection between Fermi paradox and mystery of dark matter?

Fermi paradox is not the only problem involving invisibility. The mystery of dark matter is perhaps the most central problem in recent day physics [*dark*]. It is known that 96 per cent of matter in Universe seems to interact with ordinary matter only through gravitation or the manner how it interacts is unknown to us.

It depends on theory whether this 96 per cent is identified as a dark matter or dark matter and energy (74 per cent in standard model). The notion of dark energy was introduced for few years ago when it became clear that the cosmic expansion seems to accelerate. One manner to achieve this is to add to Einstein's equations a cosmological term characterized by so called cosmological constant [*lambda*] having a positive value. The negative pressure assignable to the vacuum energy density can be said to cause the acceleration as a kind of antigravity effect. Einstein himself introduced cosmological constant (negative at this time) in order to have unexpanding cosmology but when the cosmic expansion was discovered Einstein concluded that it was the biggest blunder of his professional life.

The natural question is whether the invisibility of higher civilizations corresponds to invisibility of dark matter and this is what I am going to argue next.

2. A brief introduction to TGD and quantum biology

TGD [*TGD*] leads to an ontology which is new in many respects. The notion of space-time generalizes in several manners. One ends up to the so called zero energy ontology, which means that negative energies are possible and all possible universes are creatable from vacuum. Planck constant, which in standard quantum theory is a genuine constant, has a discrete spectrum of values and the values can be arbitrarily large. This means that Universe is a macroscopic quantum system in all scales. Dark matter is identified as ordinary matter for which Planck constant differs from its ordinary value so that the interactions with ordinary matter differ in their character from ordinary interactions. Dark matter with a large Planck constant is in a key role in the TGD based model of living matter. Because the new ontology is so central from the point of view of TGD inspired theory of consciousness and living matter [*TGDconsc*], I will represent the basic ideas of TGD using applications to quantum biology to concretize their implications.

2.1 T(opological) G(eometro)D(ynamics) very briefly

TGD is a unified theory of fundamental interactions which has developed during 28 years and at the same time expanded to a theory of consciousness providing a model of quantum biology. The key ideas of TGD are following.

1. TGD can be seen as a generalization of so called super-string model (M-theory). The 1-dimensional (1-D) strings moving in 10- or 11-dimensional space are replaced with 3-D surfaces moving in 8-D space. This means that the 2-D orbits of strings are replaced with 4-D surfaces identified as our 4-D space-time but in a widely generalized sense. A further assumption is that these 3-surfaces are "lightlike". This assumption bringing in mind esoteric teachings has a purely geometric meaning, and makes it possible to generalize and extend the so called conformal symmetries responsible for the miraculous mathematical properties of super-string models. These symmetries are in a central role in the formulation of quantum TGD.
2. Another manner to end up with TGD is via a search for a modification of general relativity solving the so called energy problem of general relativity. In general relativity the notions of energy and momentum are not well-defined since the translational symmetries responsible for their existence are lost as space-time becomes curved. If one assumes that 4-dimensional space-time is a 4-D surface in a higher-D space obtained by replacing the points of the empty space-time of special relativity (Minkowski space) with certain internal space- call it S- having a very small size, the basic symmetries of Minkowski space become those of higher-D space and energy and momentum continue to be well-defined and one obtains a description of gravitation in terms of space-time curvature.
3. The surprise was that this leads to a unified theory for all known interactions - electromagnetic, weak, strong, and gravitational - if one chooses the space S suitably.

2.2 Many-sheeted space-time and the notion of field body

Many-sheeted space-time is one of the basic implications of TGD. *Figure 1* gives a 2-D illustration about the situation.

1. Both 3-space and 4-D space-time consists of sheets forming a hierarchical structure ordered with respect to the size of the sheet. Each sheet can be identified as a subsystem, which can correspond to any object of our nearby environment, astrophysical object, cell level system, atom, etc... My own body defines my own private space-time sheet. Quite generally, the topology of space-time codes for various physical structures.
2. Every system is accompanied by various kinds of fields such as electromagnetic and gravitational fields. These fields cannot be assigned to any particular subsystem in standard physics. In TGD the situation is different: one can assign to each system a "field body" consisting of field quanta. For instance, magnetic body consists of quanta of magnetic flux (tubes, sheets,...) realized as space-time sheets much larger than the system (*Figure 2*). One can also speak about field bodies which mediate interactions and connect different systems ("relative field bodies").
3. In TGD inspired theory of consciousness field body is the "intentional agent" which receives sensory information from the biological body and utilizes it as a motor instrument. The finding of Libet [*Libet1*] that our sensory data has a lag which is a fraction of a second could be understood in terms of time lapse resulting from the communication of sensory data to the magnetic body using EEG. From Uncertainty Principle one can conclude that in the case of EEG the size scale of magnetic body is of order of size of Earth. As a matter of fact, magnetic body is predicted to have onionlike fractal structure and communications to various layers of the onion would take place using fractal variants of EEG. The existence of

fractally scaled variants of some parts of EEG (alpha band and its harmonics in particular) is a testable prediction of the model.

4. What is also new and highly non-trivial is that field body and biological body are essentially four-dimensional structures. The brain and body of geometric past still exist as conscious entities having mental images which we experience as memories. Biological death means only the arrival of a particular wave of consciousness to the timelike boundary of a 4-D body. Consciousness at the level of 4-D body does not cease: our past lives.
5. Many-sheeted space-time leads also to a generalization of the notion of subsystem which in TGD inspired theory of consciousness corresponds to a subself experienced by self (system) as a mental image. What is new is the paradoxical sounding prediction that even in the case that two systems are unentangled, subsystems can entangle. Entanglement of subsystems can be interpreted as giving rise to sharing and fusion of mental images giving rise to a kind of stereo consciousness (stereovision would be one example of this). Consciousness would not be completely private and there would exist a pool of shared and fused mental images making for instance possible to assign universal meaning to the symbols of language. This new view about entanglement was originally motivated by the observation that two space-time sheets condensed at larger space-time sheets can be connected by bonds while the larger space-time sheets can remain unconnected (see *Figure 3*). By quantum classical correspondence the bonding of the space-time sheets serves as a space-time correlate for entanglement. Much later (only a couple years ago) the generalization of quantum measurement theory by introducing the notion of finite measurement resolution allowed to mathematize this concept. Entanglement is always defined with respect to a resolution characterizing the system and the entanglement of subsystems is not visible in the resolution characterizing the system.

2.3. The hierarchy of Planck constants and of dark matter

There are several reasons to consider the possibility that Planck constant h is actually not a constant but can have a set of quantized values which can be arbitrarily large.

1. One observation is the quantization of the radii of planetary orbits (also those of exoplanets) in the same manner as in the case of hydrogen atom [*Nottale*]: now however the value of Planck constant is gigantic: $h/h_0 = GMm/v_0$, where M and m are the masses of Sun and planet, G is Newton's constant and v_0 is a dimensionless constant (in units $c=1$) whose favored value is $v_0 = 2^{-11}$. Also other values are possible. The gravitational Planck constant is assigned with the "relative field bodies" connecting Sun and planet and mediating gravitational interaction between them. The interpretation is that gravitational Planck constant is associated with dark matter, which is macroscopic quantum phase in astrophysical scales. Visible matter condensed around dark matter would reflect the quantal properties of dark matter.
2. Second motivation comes from the observed effects of ELF radiation on vertebrate brain [*ELF*], which can be both physiological and affect behavior. These effects appear at harmonics of cyclotron frequencies of biologically important ions (in particular Ca^{++} ion) in a magnetic field of $B=2$ Gauss (note that the nominal value of Earth's magnetic field is .5 Gauss) and are very quantal. These frequencies are in EEG range (harmonics 15 Hz for Calcium ion). Standard quantum mechanics does not allow quantal effects since the energy of EEG photons is extremely low and much below the thermal energy at body temperature. If the value of h is large enough, the effects of ELF photons are not masked by thermal noise, and the effect can be understood.

3. If EEG consists of photons with large Planck constant, one can understand the correlation of EEG with the state of brain and contents of consciousness. In particular, temperature ceases to be a restriction for life: for sufficiently large Planck constant even the interiors of planets and Sun could serve as seats of life of some kind. This kills a central counter argument against the claim of a Romanian group of physics that since the plasmoids created in electric circuits possess some basic features assigned usually to life, they indeed represent primitive life forms [*plasmoid*].
4. The mathematization for the notion of Planck constant hierarchy involves a further generalization of the space-time concept. The basic prediction is that Planck constant corresponds to a discrete subgroup of rotation group acting as the symmetries of the field body of the dark matter system. A hierarchy of favored values of Planck constant and symmetry groups emerges from simple number theoretic arguments. For instance, $h = nh_0$, $n=5,6$, correspond to the favored values of Planck constant. In this case the symmetry group would correspond to the symmetries of 5- and 6-cycles appearing in polycyclic aromatic hydrocarbons [PAHs] known to be important for life. Examples are the cycles appearing in DNA, in some aminoacids, in most hallucinogens except alcohol, and PAHs in the interstellar space [*PAH*] believed to result via photosynthesis and believed to be predecessors of aminoacids and other biomolecules.

The conclusion would be that each physical system is accompanied by a field body with a fractal, onionlike, structure formed by field bodies. This leads to the following vision about the nature of living matter.

1. Each layer of the onion is characterized by the value of Planck constant telling its position in the hierarchy of dark matter.
2. At the surface of the onion the value of Planck constant is largest and in some sense defines the "IQ" of the system. At the level of molecules one expects rather low values of Planck constants. For instance, the magnetic body assignable to the ordinary EEG as has of order Earth size and the lifetime of human (say 70 years) would correspond to a layer with size of order lightlife (70 light years). Even higher layers might be present: transpersonal states of consciousness would indeed naturally correspond to these layers.

Field body receives information from the biological body and quantum controls it.

1. In the case of ordinary living matter field body would naturally receive information from cell membranes, which are full of receptors monitoring the state of environment. This leads to the idea that cell membranes are Josephson junctions and that Josephson currents code this information and communicate it to some layer in the onion formed by magnetic bodies. Dark matter hierarchy suggests even the existence of fractally scaled up counterparts of cell membrane and the TGD based model of EEG relies on this assumption. What is encouraging that the model predicts correctly the decomposition of EEG into bands, in particular alpha band, explains why high arousal correspond to chaotic looking activity in beta band, and predicts also correctly the positions of narrow sub-bands in beta and theta bands [*Nunez*]. The strange findings challenging pump-channel paradigm [*Pollack*] (ionic currents seem to be quantal and same even for artificial membranes; currents continue to flow in absence of metabolism) support superconductivity hypothesis and suggest that ordinary Ohmic currents are only for the purposes of measuring the concentrations of various ions in cellular environment and that metabolic energy goes to the communications to the magnetic body using generalized EEG.

2. Magnetic body controls biological body through the genome. This inspires the hypothesis that magnetic flux sheets go through DNA strands and genes form what could be regarded as text lines at the page of book defined by the flux sheet. The quantization of magnetic flux with unit proportional to Planck constant implies that for large values of h the flux sheets are very wide and can go through a large number of genomes. One ends up with the notion of super genome meaning that coherent collective gene expression becomes possible in the scale of organ and organism. Hypergenome would in turn fuse the super-genomes to a larger structure making possible coherent collective gene expression at the level of species and population. This would bring to the theory of evolution completely new "synergetic aspect" and evolution would be much more than fight for survival.
3. The interaction between field body and biological body is essentially remote mental interaction so that paranormal phenomena would differ from normal biological basic interactions only in that field body uses external biological body to remote viewing or psychokinesis.
4. There are good reasons to assume that field bodies have developed magnetic immune systems to prevent the use of their private biological bodies by alien field bodies. Hypnosis would be example of this kind of possession by a foreign field body. This immune system can be compared to firewall in computer world (assuming that we have created computers as our own images).
 - a) The height of the firewall depends on individual. For very sensitive persons it is very low and these people are very sensitive to suggestions, hypnosis, spiritual experiences, and even encounters of ETs. Very high firewall makes it impossible to receive even useful information and in firewall of skeptic might be too high.
 - b) In the case of computers viruses and cookies are very simple programs making possible for an external computer to partially "possess" the computer via web. Their role is to serve as kind of mediums or couriers. In the case of field body viruses and cookies would correspond to very simple life forms to which immune system does not bite: plasmoids are natural candidates in this respect. This would suggest that UFOs are actually plasmoids (unidentified moving processes rather than objects). Plasmoids would quantum entangle the brains of the sensitive person to some conscious entity at some higher level of hierarchy and the person would fall in a trance like state able to share mental images of this entity. Patterns of magnetic pulses can be used to generate alternative states of consciousness [*Persinger*] and the patterned motion of the magnetic body of plasmoids (kind of dance like motor expression!) consisting of flux tubes and sheets with respect to the observer could generate this kind of pulse patterns. It has been observed that some moving light balls indeed involve magnetic pulses with maximal field strength of about .3 Gauss and typical strength which is 10 times weaker [*Akers*]. The prediction is that the durations of pulses should be inversely proportional to the velocity of motion of the light balls. Also the motion of a magnetometer with respect to living system might course similar pulses.

2.4 Zero energy ontology

In standard physics the sign of energy is positive. This leads to philosophical problems. The problematic question is what are the values of the conserved quantities of the universe (energy, em charge, quark and lepton number). An additional difficulty is caused by the fact that they are very naturally infinite in positive energy ontology. These questions cannot be answered with the framework of standard physics. On the other hand, TGD inspired cosmology led to a different interpretational problem: the density of non-conserved gravitational mass was nonvanishing as in standard cosmologies but the density of inertial energy vanishes. The construction of quantum TGD

finally led to so called zero energy ontology which resolves this problem and also the problems due to the positive energy ontology (*Figure 4*) .

1. All quantum states possess vanishing net values of conserved quantum numbers such as energy. Or stating it otherwise: every physical state is createable by intentional action from vacuum. .
2. Zero energy states decompose into positive and negative energy states such that negative energy state is in the geometric future. If the temporal distance between positive and negative energy states is long as compared to the time scale of perception, the usual positive energy ontology works well. In the opposite case the zero energy state can be interpreted as a quantum fluctuation having no importance for the world as we perceive it.

Zero energy ontology gives justification for the time mirror mechanism which is the fundamental mechanism of TGD inspired model of quantum biology. To avoid confusion one must distinguish between two times: geometric and subjective time. The latter corresponds to a sequence of quantum jumps giving rise to the conscious sensation of flow of time. Geometric time corresponds to the time of physicist identified as the fourth space-time coordinate. These times are only loosely related and their identification is only approximate and makes sense only in some states of consciousness. Indeed, subjective time is irreversible and no subjective future exists whereas geometric time is reversible and both future and past exist.

1. Symbolic (declarative memories) can be understood as communications of some onion layer of magnetic body with the brain of the geometric past. A signal consisting of negative energy phase photons (identifiable as phase conjugate photons in nonlinear optics) with larger Planck constant represents a question to the brain of the geometric past which responds automatically by sending a positive energy signal to the magnetic body in the geometric future. Episodal memories which correspond to literal re-experiences result by time-like quantum entanglement for subsystems representing the mental images.
2. Time mirror mechanism makes possible to realize intentions by sending negative energy signals to the brain of the geometric past and inducing neural activity leading to a motor response in the brain of geometric future. This kind of mechanism allows more or less instantaneous reaction and provides an evolutionary advantage in "jungle". The mechanism explains Libet's findings [*Libet2*] that neural activity is initiated in brain already before the conscious decision. In the usual ontology the interpretation would be that free will is only apparent. In the recent context "before" refers to the geometric rather than subjective time, so that the free will is possible and assigned to the quantum jump identified as moment of consciousness.
3. The system can receive positive energy as a recoil energy by sending negative energy to a system of geometric past able to receive it. A system analogous to a population inverted laser having more particles in a state of higher energy, is ideal as a provider of energy. The resulting quantum credit card makes it possible to react very rapidly in situations encountered in "jungle". I have christened this mechanism remote metabolism and magnetic body could use it to suck metabolic energy from brain or body to its own purposes by sending phase conjugate dark (generalized) EEG photons to the biological body. In the case of declarative memories excited state of the laser like system would naturally correspond to bit 1 and ground state to bit 0. Metabolic energy would be needed to restore the mental image since the process of memory recall would tend to reduce the population of excited states. Note that remote metabolism would be tailor made for say space travel since

there would be no need to carry the fuel: if UFOs exist they might apply this kind of technology.

4. Many-sheeted space-time provides a concrete realization of the laser like systems as many-sheeted lasers. The "dropping" of particles from smaller to larger space-time sheets liberates zero point kinetic energy. If the interaction energy with the matter at the space-time sheet can be neglected, so called p-adic length scale hypothesis makes precise predictions about the maximal liberated energies. The standard metabolic energy currency of about .5 eV of living matter corresponds to the dropping of proton from a space-time sheet of atomic size. Actually a fractal hierarchy of universal metabolic currencies is predicted and should be present already during the prebiotic evolution so that the chemical storage of energy is not necessary for a primitive metabolism. The transitions corresponding to the dropping of particles should be visible in astrophysics and there are indeed exist three kinds of narrow bands of radiation in both visible and infrared range without identification in terms of known molecular transitions. The energies of the photons in question are consistent with p-adic length scale hypothesis and allow an interpretation in terms of proposed transitions assuming that there is some binding energy with the matter at the smaller space-time sheet [transitions].

2.5 p-Adic physics as physics of cognition and intentionality

p-Adic number fields [*p-adic*] are completions of rationals to a continuum as are also ordinary real numbers. In the case of real numbers one adds to the rationals algebraic numbers and transcendentals like e and π . In the case of p-adic numbers one adds numbers, which are infinite as real numbers. To every prime $p=2,3,5,7,\dots$ one can assign a p-adic number field and an infinite number of algebraic extensions analogous to complex numbers.

1. One can assign also to p-adic numbers a physics (what this physics is far from obvious). The basic motivation for p-adics in the case of TGD was that p-adic thermodynamics makes possible to understand elementary particle masses and reduces the fundamental mystery number defined by the ratio of Planck mass to proton mass to number theory. It took a long time to get convinced that p-adic physics can be interpreted as the physics of cognition and intentionality and that p-adic physics can be seen as a simulation of real physics.
2. The challenge is to "glue" real physics and various p-adic physics to single coherent whole. To achieve this it is necessary to generalize the notion of number by "gluing" together real numbers and various p-adic number fields by along common rationals (and possibly also common algebraics). Also the notions of space, manifold, and space-time generalize. It becomes possible to speak about p-adic space-time sheets as correlates for intentions and cognitions: this would be the geometric counterpart for the "mind stuff" of Descartes. Note however that space-time and quantum states are zombies: consciousness is in the quantum jump.
3. Rather remarkably, every p-adic space-time sheet has literally infinite size in the sense of the real topology. This means that cognition and intentionality are cosmic phenomena and cannot be localized to brain or even field body. The intersections of field bodies and p-adic space-time sheets consist of discrete sets of points and provide a material representations for cognitions and intentions. The larger the size of field body (the larger the value of

Planck constant), the larger the number of points in this intersection, and the better the cognitive representations and the more precise the intentional grasp on the material world. Thus the evolution of cognition involves growth of the largest Planck constant associated with the system characterizing also the time scale of long term memories and planned action.

4. The theory is testable. The p-adic topology should reflect itself as an effective p-adic topology of real space-time sheets serving as correlates for matter and p-adic continuity means p-adic fractality with characteristic long range correlations combined with local chaos in the real topology. The success of p-adic mass calculations supports this view and suggests that cognition and intentionality are present already in elementary particle scales. Also the successes of the applications to biology and even cosmology support the theory.
5. The essential ingredient of the theory is p-adic length scale hypothesis: primes which are near powers of two are physically preferred. In particular, prime powers of two and Mersenne primes $M_n = 2^n - 1$ and their complex analogs (Gaussian Mersennes) are especially favored. For instance, most important elementary particles correspond to Mersenne primes and a number theoretical miracle occurs in biologically important length scale range: in the length scale range between cell membrane thickness (10 nm) and size of cell nucleus (2.5 micrometers) there are as many as 4 Gaussian Mersennes!

3. A possible solution of Fermi paradox

After these preliminaries I am ready to propose a possible solution of Fermi paradox in TGD Universe.

1. The hierarchy of dark matter corresponds to a hierarchy of conscious entities. We ourselves correspond to one layer in this onionlike hierarchy. The civilizations above us correspond to higher levels of the hierarchy and the size of these conscious entities is typically astrophysical as is also the size of our magnetic bodies. Hence it might not make sense to assign this kind of conscious entity with some particular solar system or planet. These conscious entities can however direct their attention to some biological body and even identify themselves with it as we do. Of course, they might prefer to not to this in order to get out of Karma's cycle! Hence a possible explanation for the fact that we have not observed these higher civilization is that they are "enlightened".
2. It could also be that we are in some sense "cells" of these higher level conscious entities and that they communicate to us all the time telepathically by sharing mental images or by bit like communications. They could also use ourselves to their purposes in a delicate manner (motivation instead of possession). The p-adic model for cognition as a literally cosmic phenomenon suggests a universal cosmic pool of cognitive mental images shared by all civilizations of the universe. It might also be that those at the higher levels allow us to believe that we have invented all this by ourselves. Of course, some of us talk still about intuition, muses, spirituality, and even Gods.
3. Also direct communications are possible. For instance, large Planck constant photons at radio frequencies could interact strongly with living matter and it would become possible to communicate with living matter over very long distances. This mechanism would involve decoherence of large Planck constant photons to ordinary ones with same energy or a bundle of ordinary photons with much smaller energy. This brings in mind the recent discovery that the irradiation of salt water by radiowaves at harmonics of frequency 13.4 Ghz makes it "burn" that is emit burning gases $[NaCl]$: a possible explanation is that radiowave photons

are transformed in water to photons of same frequency but much larger Planck constant and in decoherence to ordinary photons with same energy become microwave photons which excite rotational excitations of NaCl and in this manner heat it just like microwave oven does. The required value of Planck constant would be by a factor $2^{10}=1024$ larger than normal Planck constant. This value is one of the favored ones.

4. Engineering in astroscales could be one signature for the presence of advanced civilizations *[Dyson]* but would be most naturally applied to the dark matter becoming visible via the visible matter only indirectly. The basic prediction is that large values of Planck constant correspond to discrete symmetries: typically discrete group of symmetries acting as rotations around a fixed symmetry axes. These symmetries would act as symmetries of dark field body and for large values of Planck constant they would be almost continuous symmetries. The breaking of these symmetries at the level of visible matter condensed around dark matter could lead to much smaller subgroups of these symmetry groups and structures analogous to those appearing in molecular physics could be the outcome. There is evidence for this kind of structures. For instance, there is a strange hexagonal structure appearing at the North pole of Saturn *[hexa]*. Planetary rings is second example and some of them even contain helical structures analogous to DNA double strand *[rings]*. The open question is whether these structures should be regarded as "natural" or as outcomes of astrolevel engineering.

References

[TGD]: <http://www.helsinki.fi/~matpitka/tgdbooks.html> : 7 books about TGD

[TGDconsc]: <http://www.helsinki.fi/~matpitka/conscbooks.html>: 8 books related to TGD inspired theory of consciousness and model of quantum biology.

[p-adic]: http://en.wikipedia.org/wiki/P-adic_numbers

[PAH]: L.J. Allamandola, M.P. Bernstein, S.A. Sandford, in "Astronomical and biochemical origins and the search for life in the universe", Ed. CB Cosmovici, S. Bowyer, D. Wertheimer, pp. 23-47, Editrice Compositori, Bologna (1997). <http://www.brunonic.org/Nicolaus/fromthestarstot.htm>.

[exo]: <http://en.wikipedia.org/wiki/Exoplanets>.

[Mars]: <http://en.wikipedia.org/wiki/ALH84001>.

[Fermi]: http://en.wikipedia.org/wiki/Fermi_paradox.

[Drake]: http://en.wikipedia.org/wiki/Drake_equation.

[nanno]: <http://en.wikipedia.org/wiki/Nannobacteria>.

*[plasmoid]: E. Lozneanu and M. Sanduloviciu (2003), "Minimal-cell system created in laboratory by self-organization", *Chaos, Solitons & Fractals*, Volume 18, Issue 2, October, p. 335. See also "Plasma blobs hint at new form of life", *New Scientist* vol. 179 issue 2413 - 20 September 2003,*

page 16.

[Shnoll]: S. E. Shnoll et al (1998), "Realization of discrete states during fluctuations in macroscopic processes", *Uspekhi Fisicheskikh Nauk*, Vol. 41, No. 10, pp. 1025-1035.

[vNeumann]: http://en.wikipedia.org/wiki/Von_Neumann_probe.

[Dyson]: http://en.wikipedia.org/wiki/Dyson_sphere.

[dark]: http://en.wikipedia.org/wiki/Dark_matter

[lambda]: http://en.wikipedia.org/wiki/Cosmological_constant.

[Libet1]: B. Libet, E. W. Wright Jr., B. Feinstein, and D. K. Pearl (1979), "Subjective referral of the timing for a conscious sensory experience", *Brain*, 102, 193-224.

[Nottale]: <http://en.wikipedia.org/wiki/Nottale>

[ELF]: Blackman, C. F., Benane, S. G., Kinney, L. S., House, D. E., and Joines, W. T., (1982), "Effects of ELF fields on calcium-ion efflux from brain tissue, in vitro", *Radiat. Res.* 92:510-520.

[Pollack]: G. Pollack (2000), "Cells, Gels and the Engines of Life", Ebner and Sons. \\ <http://www.cellsandgels.com/>.

[Nunez]: P. L. Nunez (2000), "Toward a Quantitative Description of Large Scale Neocortical Dynamic Function and EEG", *Behavioral and Brain Sciences*, 23, (3): XX. <http://www.bbsonline.org/documents/a/00/00/05/08/>.

[Persinger]: http://en.wikipedia.org/wiki/Michael_Persinger.

[Akers]: "The Toppenish Field Study. A Technical Review and Update". The 7:th European SSE Meetin Augst 17-19, 2007, Røros, Norway.

[Libet2]: Libet, B., Gleason, C.A., Wright, E.W., Pearl, D.K. (1983). Time of conscious intention to act in relation to onset of cerebral activity (readiness-potential). The unconscious initiation of a freely voluntary act. *Brain*. 106 (3):623-642.

[transitions]: http://en.wikipedia.org/wiki/Diffuse_interstellar_band and <http://www.brunonic.org/Nicolaus/fromthestarstot.htm>.

[NaCl]: <http://www.youtube.com/watch?v=h6vSxR6UKFM>.

[hexa]: <http://en.wikipedia.org/wiki/Saturn>.

[rings] : http://en.wikipedia.org/wiki/Rings_of_Saturn.

Monilehtinen 3-avaruus Kuva 1

The diagram shows a 3D space with multiple sheets (blue and pink). Several wormholes, labeled 'madonreikänielut', connect different sheets. Small spheres representing physical objects are scattered on the sheets. A blue box at the bottom right indicates that wormhole mouths correspond to elementary particles.

3-avaruuslehdet vastaavat fysikaalisia objekteja

Topologinen kondensaatio

Madonreikäkontaktit

Madonreikien nielut vastaavat alkeishiukkasia.

Kenttäkeho Kuva 2

The diagram shows a sphere with magnetic field lines radiating from its surface. A blue box on the right notes that such systems are not possible in classical electrodynamics.

Jokaisella systeemillä Kenttäkeho. Ei mahdollista Maxwellin elektrodynamiikassa

Magneettinen kenttä hajoo vuokvantteihin jotka vastaavat Avaruusaikalehtiä, Vuoputkia, vuolehtiä, vuoseiniä.

Sharing of mental images by entanglement of sub-selves Kuva 3

The diagram shows two figures, each with a thought bubble containing the text 'I see each other'. Below them, two yellow boxes labeled 'I see' are connected by a green line, representing entanglement.

Zero energy ontology Kuva 4

The diagram features a diamond-shaped structure with 'time' written in red boxes at the top and bottom vertices. Red boxes at the top and bottom corners state that the boundaries of past and future light cones contain negative and positive energy matter, respectively. Blue boxes on the left list concepts like zero energy states, big bang-big crunch analogy, and timelike entanglement.

Zero energy states creatable from vacuum

Big bang-big crunch analogy

Communications to geometric past

Timelike entanglement

Boundaries of past light cones contain negative energy matter

time

time

Boundaries of future light cones contain positive energy matter