

# Hutchison effect and classical $Z^0$ force

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Hutchison effect [1] is certainly the hardest-to-swallow new physics claim by an alt.scientist, and not even noticed by the people busily building their academic careers. According to the description of Donald Reed [2], Hutchison effect involves a catastrophic fracture of metal samples when posed to a radiation. Also physical objects of different composition were reported to become inexplicably embedded in each other once these objects were radiated. For instance, pieces of wood contained metal knives, etc. It is even more difficult to take seriously the anecdotes about Philadelphia Experiment in 1943 ... - well I simply cannot continue! It deserves only to say that the effects were similar to those claimed by Hutchison.

What would happen that condensed matter goes somehow into state in which you can put your hand through it but that the return to the ordinary state can have catastrophic consequences. It is difficult to exaggerate the technological implications if this effect is real. Surgery without any wounds would become possible. One could build various materials by just going into the interior of the solid matter block and do local "surgery" to tailor materials and fabricate nano-circuits. One could even store data into 3-dimensional lattice like structures. The recent technology based one 2-dimensional manipulation of matter would become 3-dimensional.

Since I do not have anything to lose anymore, I can quite well spend five minutes by speculating how many-sheeted space-time might allow a natural explanation for the effect. Reader certainly has a rough idea about what might be expected since I have proposed already earlier the possibility of Houdini effect or of Trojan horse effect in which system can penetrate inside another one along a space-time sheet at which it does not experience the repulsive forces generated by the system.

Radiation is involved with the experiment of Hutchison and this radiation should be able to dramatically affect the structure of a solid state object

so that an object in the ordinary state can penetrate it. Classical  $Z^0$  force created by mostly neutrons of atomic nuclei and screened by neutrinos (also sneutrinos could be considered) is responsible for the basic properties of the condensed matter in TGD Universe. Thus  $Z^0$  topological light rays could be the "radiation" involved with the Hutchison effect.

Interestingly, the experiment of Modanese and Podkletnov [3] produced unknown radiation having strange effects on test particles (I have proposed an explanation for these effects in the chapter "Did Tesla Discover the Mechanism Changing the Arrow of Time?"). The radiation accompanied the discharge of a capacitor for which the second plate was a super-conducting disk. This system is obviously a good candidate for a system producing intense  $Z^0$  MEs. The radii of the disks were  $d = 10$  cm and the distance between capacitor plates varied between 15 and 40 cm. The voltage varied from 500 kV to 2000 kV. Interestingly, the voltage 500 kV above which the effect appeared corresponds to energy .5 MeV and electron rest mass. This should relate to the effect in some non-trivial manner.

### 1. $Z^0$ screening

Consider first the model for the  $Z^0$  screening.

a) The role of  $Z^0$  force for the stability of condensed matter in TGD Universe is discussed in the chapter "TGD and Condensed Matter". The classical  $Z^0$  force is responsible for the hard core of the atom and justifies the notion of valence and van der Waals equation.  $Z^0$  force is absolutely crucial for the molecular stability of molecules containing more than one atom heavier than hydrogen (proton's  $Z^0$  charge is very small) and parity breaking enzyme action would involve  $Z^0$  force (see the chapter "Pre-Biotic Evolution in Many-Sheeted Space-Time" of [cbookII]). The screening could be due to neutrinos, neutrino Cooper pairs or sneutrinos. The basic constraint is the remarkable precision of the  $Z^0$  screening which requires short wavelengths of about atomic size or even shorter and the model predicts automatically relativistic screening particles which can be either neutrino Cooper pairs or sneutrinos. The model fixes the masses of the screening particles to be of order .1 eV.

Sneutrinos are an especially attractive possibility because they can form a Bose-Einstein condensate in the ground state and all of them can be non-relativistic. It is not clear whether a Bose-Einstein condensate of neutrino Cooper pairs with  $A - Z$  neutrinos per atom and having Compton wavelength of order 5 microns and mass about .1 eV really makes sense (Fermi statistics). The problem with neutrinos is that their Fermi energy is relativistic being determined by the density of neutrinos and thus by a wavelength of order

atomic size. Incoherent state would give rise to a constant average charge density so that local screening would not be possible.

b) The screening particles could reside besides  $k = 169$  space-time sheet (p-adic length scale of about 5 microns) also at the space-time sheets  $k = 151$  (10 nm, the cell membrane length scale),  $k = 157$ ,  $k = 163$ ,  $k = 167$  and perhaps for all integer values of  $k$  in this range. Usually neutrinos however appear at  $k = 169$  space-time sheet and have mass about .1 eV. The mass of the screening particle depends on the space-time sheet according to p-adic length scale hypothesis when the screening particle resides at a space-time sheet which corresponds to  $k < 169$ .

## 2. Model for the Hutchison effect

The model for the Hutchison effect would go as follows.

a) If  $Z^0$  topological light rays could build bridges between space-time sheets and if corresponding  $Z^0$  electric force could drive the screening particles from  $k = 169$  to some smaller space-time sheet, also wormhole contacts and join along boundaries feeding  $Z^0$  gauge flux would move to this space-time sheet by purely energetic reasons. Solid state object would go into a Houdini state in which one could literally put your hand through it since the  $Z^0$  gauge charges in hand and condensed matter would be at different space-time sheets and hand and solid matter would not "see" each other at all.

The driving of the screening particles to a smaller space-time sheet costs energy, which for sufficiently massive screening particles is in a good approximation the zero point kinetic energy of the screening particle at the corresponding space-time sheet. The most natural candidate for the small space-time sheet corresponds to  $k = 167$ , the prime nearest to  $k = 169$ .

b) The feed of energy by  $Z^0$  MEs would be necessary to preserve this state. If you put your hand in and energy feed stops, the screening particles flow back to the larger space-time sheet and since the density of the combined system becomes twice the normal, the outcome is a gigantic  $Z^0$  force exploding the whole system.

c) The frequencies of  $Z^0$  MEs can be predicted exactly in terms of particle mass and p-adic length scale hypothesis as differences of the zero point kinetic energies given in the case of non-relativistic particles by the formula

$$\begin{aligned}
 E(k) &\simeq \frac{\pi^2}{2mL^2(k)} = \frac{m_p}{m} \frac{L^2(137)}{L^2(k)} \times E_p(137) \\
 &\simeq \frac{m_p}{m} \times 2^{137-k} \times .5 \text{ eV} .
 \end{aligned}
 \tag{1}$$

$k = 167$  is the prime nearest  $k = 169$ .

The model for the neutrino screening fixes the masses of the screening particles to be about .1 eV if one assumes that the latent heat of evaporation corresponds to the change of neutrino energy in turn proportional to  $m$  (this despite the fact that the energies involved are relativistic (see the chapter "TGD and Condensed Matter"). For  $m_\nu(169) = .1$  eV and  $k = 167$  giving  $m_{2\nu}(167) = .8$  eV the energy of  $Z^0$  MEs would be of order .4 eV. This energy is very near to the proton's zero point kinetic energy and to  $Z^0$  plasma frequency of water (see the chapter "Bio-Systems as Conscious Holograms" of [cbookII]). The plasma frequency depends on the density of neutrons and cannot differ much for solid state and liquid state.

The experimental testing of the model would involve the irradiation of condensed matter with intense  $Z^0$  topological light rays with the predicted frequencies (involving numerical uncertainty). As already mentioned, the device of Modanese and Podkletnov [3] is a good candidate for a system producing intense  $Z^0$  MEs. The device of Podkletnov and Modanese produces a coherent electric discharge and ordinary plasma and one might think that the possibly accompanying  $Z^0$  plasmoids could generate an intense classical  $Z^0$  radiation realized as  $Z^0$  MEs with  $Z^0$  plasma frequency which in turn would drive the screening particles to  $k = 167$  space-time sheet. That the basic metabolic currency corresponds to  $Z^0$  plasma frequency suggests that bio-systems have already invented Hutchinson effect and enzyme catalysis (chiral selection is a signature of  $Z^0$  force) uses it as a manner to overcome  $Z^0$  potential barriers. Needless to say, the replication of the Hutchison effect by professional physicists would be a dramatic verification of the classical  $Z^0$  force concept, of the new low energy neutrino physics, of the many-sheeted space-time concept, and perhaps even of super-symmetry!

## References

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