On Gravity Control and Cold Fusion

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Abstract

In this short note, Gravity Control is related to Cold Fusion.

In recent articles it was explained the quantum origin of gravity, derived from finite gauge groups: Platonic. As a byproduct, the gravitational potential can be controlled in a similar way to temperature, via dynamic nuclear orientation of spins.

It is surprising that another consequence is the possibility to reorient the spins to allow for weaker electrostatic repulsion in nuclei, with obvious applications to cold fusion.

1 Quark Model and 3rd Quantization

The quark model within the Standard Model postulates three quarks per baryon, with fractional charges. These are interpreted by the author as a 3D-local frame of a "pixel of Universe" [1]. The "3rd quantization" refers to assuming their states to transform under a finite group of transformations within $SU(2)$: Platonic groups of symmetry.

1.1 Quantum Gravity

In previous work of the author [1, 2] it was explained that assuming finiteness of the qubit space / gauge group $SU(2)$, and yielding the Platonic subgroups of symmetry T, O and I, had some startling consequences: the EM spectrum has an additional finer split which accounts for Gravity; moreover, the energy levels depend on the spin orientation of the interacting nucleons (proton and neutron). For example, the neutron which is classically neutral, brakes $SO(3)$ isotropy in the quark model, acquiring a polar structure corresponding to the spin orientation:

$$n^0 = (+2/3, -1/3, -1/3) == (-1/3, -1/3, -1/3) + (+1, 0, 0), \quad n^0 = e^- + G,$$

let us say in the RGB-color directions[2].

Similarly for the proton:

$$p^+ = (-1/3, +2/3, +2/3) == (+2/3, +2/3, +2/3) - (+1, 0, 0), \quad p^+ = 2e^+ - G.$$

Here $e^\pm$ denotes the spherically symmetric elementary electric charge ($1/r$ Coulomb potential / fundamental solution of Poisson equation).

The first term is responsible for the rotational symmetric Coulomb potential, while the 2nd term produces what we call Gravity, except it is directional dependent.

The weakness of this second term is due to the randomness of the orientation of the local quark frame, i.e. spin direction, in rapport with a global coordinate system (Lab for instance, ambient magnetic field etc.). The overall force in an interaction between two baryons is an average over directions, due to random orientations of the constituents of the sample, in the usual environment. This randomness is a consequence of thermal transfer of angular momentum (perhaps an analog of Brownian motion for angular momentum / spin), subject to the usual statistics of directions on the unit sphere.

[1] We borrowed the term from [3].

[2] A baryon has a 3D-frame defined by three quarks identified by colors R, G, B; these are not apriori binded to the global XYZ-coordinate system of an ambient space-time (Laboratory etc.). It is a local coordinate system.

This is consistent with Alzofon's effective Theory of Gravity, in terms of thermodynamics, with temperature as an analog of gravitational potential[3].

In an interaction of say a large mass (Earth) and a comparatively small mass, the large mass defines a radial direction causing a slight bias in the randomness of directions of the spin, due to a minimization of the total energy. The computations should confirm the right magnitude and yield, allegedly, the universal gravitational constant in the process.

Hence a neutron is no longer "neutral" from the point of view of electric force field, depending on the axes of interaction between two such neutrons.

This leads to Gravity Control via Dynamic Nuclear Orientation of spin directions in a body, relative to, for instance, Earth gravity.

1.2 On Cold Fusion

In an nucleus, the orientation of the spins affects the short-distance electric force due to fractional charges. Neutrons, with a non-trivial fractional electric electric charge and discrete configurations, adequately oriented, may "neutralize" and couple protons. See for instance how two neutrons interact electromagnetically, spin direction dependent [2].

When two nuclei come in proximity, a much more complex picture emerges, than the typical Coulomb electric force of pointwise charges predicts.

The spin orientation plays a crucial role, and at a qualitative level, the classical electrostatic repulsion requires a correction which may account for cold fusion, which is an actual fact. A precise mathematics formulation is yet lacking, what the author referred to the non-commutative Coulomb Law on the (co)tangent bundle of the configuration space. This is a tensorial electric interaction law and magnetism comes from a Lorentz transformation and from fluxons as sources of magnetic fields.

Indeed, perhaps not well known, chickens may transmute elements, producing calcium needed for the shells, as it was carefully demonstrated experimentally (see Louis Nicolas Vauquelin and biological transmutation).

Now we have a solid foundation for explaining cold fusion in terms of a modification of the Standard Model: Platonic groups of symmetry as gauge groups and quark flavors.

1.3 On Znidarcik work on controlling natural forces

Further considerations on this subject, yet from a different perspective, can be found in Frank Znidarcik work on control of natural forces [4].

The process of understanding the natural world progressed towards high energies, building larger and more powerful particle accelerators, away from the study of stationary quantum states which is the central theme of quantum phenomena taking place at lower energies. Cold fusion is one of them, with modern science taking advantage of technology to achieve hydrogen fusion at tremendous temperature mimicking the Sun's production of helium, instead of investigating the catalytic approach biological systems demonstrate as possible.

His central concept is What he calls the speed of "sound" (transfer of vibrations) in nuclei V_t. This is complementary to the speed of light, the first associated to $SU(2)$-interaction (Yukawa meson interaction or the modern version, the Strong Force), while the later, associated with $U(1)$-EM.

This duality has to be interpreted in relation with the fine structure constant $\alpha = hc/q^2$ and the two fundamental charges, the electric charge $q_E = q/c$ (in alternative units) and the magnetic charge $q_M = h/q$ (fluxon)[4].

Znidarsic's approach is reminiscent of Quantum Markov Processes modeling quasi-equilibrium quantum transitions. The "sound velocity" is instrumental in determining the Hamiltonian spectrum and corresponding probabilities of transitions between states. These are determined by the usual amplitudes of probability, which are coefficients of unitary transformations, in the more modern theory of Quantum Computing. His interpretation is, instead, in terms of classical Newtonian concepts, that are global, associated to the historical take of cause-effect modeled by functions. The network model is

[3]Both are subject to related PDEs: Heat/Laplace/Poisson equations, with solutions but shadows of conformal transformations

[4]The monopol is a pointwise analog of electric charge, mistakenly conjectured to exist by looking at the symmetry of Heaviside form of Maxwell equations; these are not the primary equations, the later involving the magnetic vector potential, eather flow or qi flow, which was considered crucial by Maxwell himself.

essentially a blow-up of the arrow $Input \to Output$ into a graph (e.g. Feynman diagram, Quark Lines Diagram etc.), which when linearized (quiver representation) is at the heart of Quantum Mechanics (Hilbert Spaces).

With simple equations relating these classical observables (traces of operators) he can derive various QM quantities: spectrum of Hydrogen atom, relate with Planck's constant etc. [4]. The central equation is, of course, the classical harmonic oscillator, related to harmonic functions as shadows of conformal transformations.

Another central concept used is that of impedance and the idea of matching impedance enabling transfer of impulses (e.g. photon) between interacting quantum systems. This is quite familiar in Electronics and Communications; the present author emphasized this analogy coining the term *Infotronics* [5].

The Low Energy Physics is much richer in key aspects of quantum phenomena than HEP, e.g. which-way and delayed control quantum optics experiments [6].

2 Conclusions

The finite number of discrete states hypothesis, from quantum phase $Z_n \to U(1)$ (think of Bohr's model of electron "orbits") to $\Gamma \to SU(2)$ gauge group (Platonic geometry of baryons), essentially quantizing the angular momentum as a consequence (directions of mutual interactions), leads to several breakthroughs: 1) explanation of the three generations of fermions; 2) model for quark flavors; 3) quantum origin of Gravity; 4) possibility to control Gravity; and finally, 5) possibility of explaining Cold Fusion.

Overall, LEP is much richer in quantum lessons than HEP, and central to some everyday quantum processes like Cold Fusion and Gravity, *both* occurring, surprisingly, in biological systems (chickens and coleopteres).

References

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[5] L. M. Ionescu, "Infotronics: Theory and Experiments", Barnes & Noble, https://www.barnesandnoble.com/w/infotronics-lucian-m-ionescu/1113657110; https://www.lulu.com/account/projects/1z8grg9d?page=1&pageSize=10

[6] L. M. Ionescu, "On the arrow of time", https://arxiv.org/pdf/0708.4180.pdf