# Alzofon-Ionescu Theory of Gravity

Prof. Dr. Lucian M. Ionescu, VIRequest
with contributions from Dr. George Hathaway, HRI

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**Abstract.** Gravity is not a fundamental force. Alzofon's Thermodynamic Gravity Theory is derived from Qubit Model, an upgrade of the Quark Model within the Standard Model. Alzofon's experiment is discussed: pros and cons.

At the level of the Standard Model, Gravity is a result of the structure of the electric charges of quarks in nucleons, subject to Platonic symmetry and lack of parity invariance, related to CP-violation, due to the dihedral group as the Quantum Mirror Symmetry group.

The AGNUE experiment performed at Hathaway Research International is briefly explained. It is designed to test Alzofon's Theory.

A glimpse of Gravity Control and what inertial mass is are presented. Further R&D will be funded under the upcoming Kickstarter Gravity [1].

## 1 Introduction

Alzofon's Theory on Gravity [2, 3] is the first theory of Gravity that addresses the dynamical aspects, beyond the static Newtonian theory or Einstein's relativistic, yet again static, version. Newton's theory of Gravity is developed in the framework of differential equations in Euclidean space, using a constitutive law for the force based on Coulomb-like potential, which is the unique fundamental solution of Poisson equation.

Einstein's General Relativity uses the framework of Differential Geometry, with a metric that corresponds to a perturbed Ricci tensor, due to matter, instead of the usual Poisson equation. Neither of these two theories explain in any way what Gravity is, why it exists and assume it is a fundamental interaction, of a Newtonian force type (no vector potentials / eather flow etc involved).

In contrast, Alzofon's Theory models the Gravitational potential in analogy to temperature, a harmonic function that satisfies a Dirichlet BVP, or rather a Neuman BVP, where heat flow may change the temperature potential. Hence in Alzofon's Theory one may "cool" the gravitational potential of a given distribution of masses, with their "gravitational potential index" analog to heat capacity index of a material (see F.A. article for details on this comparison).

This theory is a dynamic model of Gravity, rather comparable to Electromagnetism, where dynamic phenomena are explained by the Magnetism aspects of the theory. In Newton Theory there is no dynamics involved, while in Einstein's GR, a relativistic theory, the weak field approximation is only a weak correction, not involving any potential change due to a Gravitational energy density flow in/out of the mass distribution.

# 2   Alzofon's Theory ...

In a nut-shell FA-Theory models G-potential in analogy to temperature, subject to Dirichlet - von Neuman BVP, where the DNO statistics of NO is measured say by its entropy, corresponds to temperature as in Boltzmann's Law $S = kT$. The heat flow corresponds to G-order "flow" induced by microwave radiation via EPR-NO spin coupling[1].

# 3   ... and a Standard Model Foundations

In 2005 the author, after a long march through differential geometry, operatore Theory, Category Theory etc. realized how important is what Feynman said about Quantum Mechanics being Quantum Computing: the Digital World Theory v.1" emerged [4, 5] (... and after reading Smolin's book: "Three Roads to Quantum Gravity", getting the point that a qubit is a 3D-pixel of Space-Time; nowadays, this is well understood).

What remained to make Quantum Theory really discrete, was to quantize the qubit: from a continuous $SU(2)$ (or $SO(3)$ if you like), to a discrete group in 3D we will refer to as Platonic symmetry, and discrete quantum phase via 2D-groups $Z/n$ (or $e^{i\omega t}$) ... The relation between the two? the Hopf fibration!

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[1]Physicists: help!

## 3.1   Third Quantization and Its Consequences

Quantizing the qubit, i.e. assuming it has finite number of states, hence forcing the rotational symmetry to break from SO(3) to Platonic symmetry, postulated recently in order to "quantize everything" and remove the continuum from Quantum Physics, led to amaizing yet exciting consequences, e.g. the angular momentum is quantized as a consequence, and the gauge group has to be finite (not just a "vertical gauge group"). Then, when matching with Standard Model and the quark model, it invited to an explanation of quark flavors, "generations" and also yielded an prediction that EM is perturbed with a correction term that is Gravity. The baryons (focus on nucleons) as trinions or 3D-pixels of space, with their three quarks and fractional electric charge, exhibit a tensorial Coulomb-like law, that is not SO(3)-symmetric, and the proton and neutron have a residual preferred direction, beyond Lamb shift and much smaller in magnitude: Gravitational attraction! Yes, plainly put the nuclei of two masses will point their preferred direction towards the center of the system as an ensemble. The hierarchy of centers in a complex system like the Solar system is due to the non-commutative aspects involved (as if non-linear equations are involved). Gauss linking integral is probably instrumental in a mathematically precise formulation (Kontsevich integral?). Bottom line the fluctuation of orientation of nuclei invites to an effective description in terms of a thermodynamic theory and associated entropy. The step from Alzofon's Theory to author's foundation for it are somehow similar to the evolution of Thermodynamics due to Maxwell's contribution involving atomic theory (Einstein's explanation of Brawnian motion?). The insight that comes from the quark-flavor / Platonic model is that Dynamic Nuclear Orientation can be used to "cool" the Gravitational potential and fly-away with much smaller energetic costs. How inertial mass is related to this cooling is not clear at the time of this writing, but it should probably play the role of an impedance that can be adjusted as a result of the cooling . . .

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The Qubit Model upgrade of the SM, with the finiteness asumption (Platonic structure), will be refered to as SM++.

# 4   Experiments

## 4.1   Alzofon's 1994 Experiment

The main experiment to test his theory was performed in 1994, as reviewed by Yost [3] and critisized by D. Prutchi [14].

### 4.1.1  Yost's Review of the Experiment

### 4.1.2  A critique of the critique

[DP] critique brings some pertinent questions regarding the experiment and Alzofon's Theory. In [LI:DP] marginal comments on the [DP] claims are provided [2]. The debate on graph AF-2003 and 2004 from Experiment 3, with magnetic field ON and respectively off, is this:

DP: "Based on Dr. Alzofon's model, weight loss should not happen with magnetic field off, since the dynamic nuclear orientation couldn't happen if the EPR resonance condition was not satisfied during the microwave ON periods!"

This judgement of the theory is superficial; one needs to understand better the role of the static magnetic field which provides an overall "quantum direction" for the spin (coherent direction in space), from the role of the microwave radiation which in fact cyclically polarizes the nuclear spin (conform AGNUE below). Once the probe and the Lab devices are correlated via the magnetic field[3], it is conceivable and has to be tested, that a hysteresis phenomenon is likely to hold, and the two systems remain correlated, even if the magnetic field is subsequently turned off.

Think of a car that is started by turning the key ignition, and then runs smoothly on its own even if we disconnect the battery ...

It is true that Alzofon states "Microwaves alone would not have no effect on weight, either."; also true that the EPR resonance condition and the precise mechanism of DNO is not clear to the present author [4]

That FA labeled FA-2004 "Control", in the author's opinion, is just a moment's choice, meaning that it will be taken as a reference graph; nothing more. That switching *both* the magnetic field and microwave source the weight reduction is not present shows the crucial role of microwave radiation in DNO, which leads to weight reduction according to the SM++.

So, repeating the experiment with care and *documenting it (!)*, like Faraday would do, is of interest at this point; and think what underlying hidden assumptions are we making: "Hypothesis non fingo" said Newton.

The EPR - DNO mechanism should be better documented (Ls-spin coupling and how electron shell-nucleus interact; then what model we use for the nuclei? FCC lattice, liquid or both, depending on the material of the probe, e.g. for the rubi probe

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[2]TB written from print-out.

[3]EM defines a $T^*M$ structure on the interacting parts of the Lab-Probe system, quantizing the angular momentum / spin; how long the quantum coherence lasts, is a natural question, and depends on the environment and isolation of the System from "noise".

[4]Why EPR frequency depends on the B-field strength? [14] p.2

of HRI experiment [5]

## 4.2  HRI AGNUE Experiment

"Dr. Frederick Alzofon developed a theory of gravitational interaction and modification based on the cyclic spin polarization of atomic nuclei called "AGNUE". In this theory, the cyclic polarization is akin to adiabatic demagnetization and results in an entropy change between the test mass undergoing polarization and nearby masses, e.g. the earth. This entropy change results in a small alteration in the energy of the gravitational attraction between the test mass and, say, the earth. Working for HRI, Dr. Alzofon's son Daniel has been spearheading the experimental verification of the theory which is on-going. Initial tests showed anomalous motion of a test mass and new, more accurate instrumentation is now being tested" [HRI:AGNUE].

Basically we measure the weight of a small (red) ruby ball attached to a thin ceramic rod which is attached to a horizontal microbalance. The ball and rod are inserted into a microwave cavity between 2 poles of an electromagnet. The cavity and microbalance are at high vacuum and the ball is cooled by radiation to a liquid helium surrounding the ball [GH1]. http://www.hathawayresearch.com/portfolios/agnue-anti-gravity-nuclear-entropy/

1. Regarding cyclic spin polarization, the simplest view is that proton spins are first aligned/oriented via processes such as Dynamic Nuclear Orientation (DNO), putting the ensemble of protons into a low energy state. In an adiabatic environment e.g. at LHe temperatures, when the spins de-align, i.e. return to random orientations, the only energy available to make this happen comes from the local gravitational field. This action temporarily removes energy from the local gravitational field thus affecting the "weight" of the protons. Evidently, the reduced local gravitational energy is made up from the global gravitational field. There is a slight hysteresis in this process, namely that the reduction in gravitational energy lasts a bit longer than the time required to perform the alignment/de-alignment process. Therefore by continually cycling this process, at a controlled rate dictated by a number of factors such as various decay rates, a measureable decrease (or increase) in the weight of the ensemble of protons can be detected as each cycle of weight change can build on the previous one. [Hope Dan can correct me on this interpretation!]

The spins are indeed relative to the direction of the magnetic field and the spins flip periodically but are not "pumped" in the way of cyclically pushing a swing, namely that once a maximum

2. The microwave cavity is needed to perform the DNO which relies on aligning (S orbital) electron spins (which is typically done at microwave frequencies) which

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then align proton spins via S orbital electrons "tunneling" into the nucleus.

3. The microwave source is seen to the right of the large grey electromagnets as "S-band" waveguides etc. The microwaves enter the cavity from the right, which is a cylindrical cavity between the electromagnet pole faces. Note in our experiment, the DC magnetic field from the electromagnets is in the vertical direction.

## 4.3   Back to Foundations: The Standard Model

An explanation of how the fractional charges of nucleons (baryons) produce a split in the electric force potential due to 3D-orientation (not just distance!) is provided in the upcoming presentation to Tesla Extraordinary Conference Aug. 2021 [LI:GC].

In brief Coulomb's law, distance / metric dependent, must be lifted to symplectic space of position-momentum (Hamiltonian mechanics on Poisson Manifolds to include connections / gauge groups; and break symmetry from SO to finite groups: point groups in 3D and their binary versions).

This explains why there are two EM-neutral states of slightly different energy, which is referred to above as Gravitational energy. By DNO the spins into the higher energetic state, akin to a LASER exciting and enriching the "inversion of population" [Correct me Dan/George] one "cools" the Gravitational potential "neutralizing" Gravity, or reducing it in a certain extent.

# 5   Conclusions

To simplify the picture, Gravity is not a fundamental force; the Gravitational potential behaves like heat and depends on the "capacity" of mater of storing it: it is the average of a directional Coulomb law over the orientations of the nucleons in the low state. This thermodynamic-statistic average defines the inertial mass, as a measure of the source of G-potential (once we fix units and Newton's constant). The same way we can heat or cool an object, we can modify this statistics and modify the gravitational potential, controlling Gravity, as opposed to the quantized charge of the electron.

The plan, resources and main ideas were provided above; the rest is hard team-work: to make things precise, write the equations and formulas, and write a Theory of Gravity that indeed explains how Gravity emerges and how to be controlled.

The current "stumbling block" in the advancement of Physics is trying to unify interactions starting from their current frameworks where they are fundamental and independent: GUTs. TOEs on the other hand already led by "accident" to exceptional Lie algebras, with their Weyl groups that are nothing else but the Platonic point groups; one should only forget the "Grand Unification", and just analyze the

Electroweak Theory more carefully, in the light of the above ideas. QCD has a lot of useful results, but it can be simplified once we understand that quarks are not free particles. It should already contain the way 3D-blobs called baryons interact and combine (Recoupling Theory).

# 6   Acknowledgements

The author thanks Hathaway Research International for valuable discussions on the subject and being open to share inside information, as well as planing for future experimentation in this direction.

To support the above theory, the reader is invited to visit the upcoming Kickstarter Project on Gravity [1].

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