

# On Anti-Gravity

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January 11, 2023

## Abstract

This is an informal overview in support of “antigravity”, as a real, observable and reproducible phenomenon, that now we begin to understand.

This corresponds to the highest energy level of interaction of two nucleons, nuclear spin dependent, in addition to the state that yields Newtonian Gravity, which is an average over spin directions, achieving a lower energy level, attractive at equilibrium, and much weaker effective force (Hierarchy Problem).

The Standard Model based Theory of Gravity is recalled.

Some of the lab experimental methods to control gravitational interaction are reviewed: microwave Dynamical Nuclear Orientation (Polarization) based (Alzofone, Hutchinson a.a.) and rotation based, which requires superconductivity (Podkletnov, Ning Li) to take advantage of the properties of the Bose-Einstein condensate.

Other observations and methods supporting the theory and experiments, are recalled.

A program to help implement the technology, within the new paradigm in Physics, is proposed: open source research and implementation.

## 1 Introduction

Antigravity is not a hypothetical phenomenon [4], since it was observed in Nature, experimentally and predicted by the Theory of Gravity of Quark Field Origin (TGQFO), based on further considerations regarding the SM of Elementary Particle Physics.

Gravitational interaction is nucleon spin-spin dependent and the two extreme cases correspond to attraction and repulsion, because *fractional charges of nucleons are three*, not two as for dipoles or magnets.

We refer to [9, 3, 6] etc. [43] for the development of the theory, its experimental bases and confirmations through observation of alternative technologies for flight (UFOs).

In this article we review two directions of achieving Gravity Control and antigravity: microwaves based DNO (Alzofone, Hutchison, Grebenikov) and rotation based gravity fields with (Searl Generator) or without conditions of superconductivity (Eugene Podkletnov, Ning Li) where Bose-Einstein condensates facilitate the DNP process.

The essence of this phenomenon relies on changing the almost random distribution of nucleons spins, using DNO: based on microwaves (EPR and spin-orbit coupling) or rotation (see Einstein-de Haas and Barnett effect). The averaging over a quasi-random distribution of nuclear spins, in steady-state regime found in Nature, yields the weakness of Newtonian Gravity, and explains the Hierarchy Problem [42, 7].

Other reports of antigravity effects are included, , as “clues”, without discarding them “ab initium”. Applications to a clean method of transportation and to cold fusion are recalled.

## 2 Recall on the Standard Model

A historical analysis on the origin of the theory of the four interactions explains why they are still considered independent [6]. The three separate gauge groups are part of the Hopf fibration (qubit space / quark states space), with  $SU(3)$  symmetry group of a 3D-frame of quarks states belonging to  $SU(2)$ . This allows to view a baryon as a source of one field, the quark field with three main directions in/out, corresponding to the fractional charges of quarks.

This unification has several consequences, including Gravity together with EM as part of the Electro-weak Theory; on the other hand the effective potential of the Nuclear Force exhibits these terms too [3].

A qualitative justification of how Gravity emerges from the quark structure of nucleons is contained in several previous articles and presentations [43].

Note that F. Alzofone adopted a similar point of view, that GR is not a justification of Gravity (yet a model), and Gravity is a result of an atomic process, universal for all “elementary” constituents of matter [10]. Note also the similarity in title and general direction of research, with [7].

In conclusion *SM already contains Gravity as a correction of electric force due to the quark field, and needs a conceptual rethinking of what quarks are.* The Weak Force should take into account the Platonic (Weil groups) geometry of baryons and color QCD needs unified with the Weak Force formalism, to include quark flavors.

Another main point is that nuclear force is spin-spin dependent, which includes Gravity as the long range component. The short range component is described in terms of mesons (quark flavors) and color QCD (gluons).

## 3 Experiments on Gravity Control

At experimental level, the DNO of quark spin directions of nucleons was proven to change the gravitational properties of a body in Earth’s G-field<sup>1</sup>.

### 3.1 DNO using Microwave

#### 3.1.1 Alzofon’s experiment

This was discussed in more detail in previous articles [9, 8]. We will focus on the rotation based effects observed in other experiments LI:Crisses-HP.

#### 3.1.2 Hutchison Effect

The use of radio and microwave radiation to change the structure of various materials resulted and antigravity effects and changes in the chemical / nuclear structure of the materials subjected.

These experiments are not documented, but the effects are consistent with the idea that spin-spin dependence of nuclear force is also responsible for Gravity.

The facts reported are based on [18]. John Hutchison (heffect@infinet.net) is well-known for his research on the “Hutchison effect” (HE), which will be briefly mentioned here. ” (loc. cit.).

The HE includes “levitation of heavy objects (including a 60-pound cannon ball), fusion of dissimilar materials such as metal and wood, anomalous heating of metals without burning of adjacent material, spontaneous fracturing of metals, and changes in the crystalline structure and physical properties of metals.” (loc. cit.).

The combination of using microwaves and Tesla coils seems to have deeper impact in the change of the structure of materials (most likely spin orientation dependent: E, G and nuclear; see [3]).

These effects were obtained experimenting without preliminary recording of the setup and documentation, so are difficult to reproduce [23].

### 3.2 Rotation Based Effects

#### 3.2.1 Bodonyi-Sarkadi experiments

These were mentioned already in [7]. The rotation of a body may produce magnetization, and possibly further effects due to nuclear spin [16].

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<sup>1</sup>We tend to ignore that we are in a massive gravitational field due to the Sun!

### 3.2.2 Ning Li Experiments

The remarkable experiments of Ning Li were interpreted in terms of the Theory of Gravity and Gravity Control in [7]. Her explanations [13] are consistent with the nuclear spin origin of Gravity, which just determines the 3D-orientation of the quark directions (fractional electric and color charges). Her explanations were going in this direction, falling short of mentioning the spin and quark structure of nucleons.

For a historical account of her work, see [14]. Note that her first experiments apparently did not involve rotation of the disk, and she planned experiments including rotation (Part of the US DOD grant?).

Supraconductivity allows for an efficient alignment of nuclear spins based on Bose-Einstein condensates. This probably allows for an amplification effect reminiscent of Lasers.

### 3.2.3 Podkletnov Experiments

Similarly, for superconductive disks, rotation generated a field with similar properties with the G-field. Weight was reduced, hence consistent with the nuclear spin origin of gravity (underlying quark field sources and sinks).

### 3.2.4 Henry Wallace Gyro Experiments

“His devices consist of rapidly spinning disks of brass, a material made up largely of elements with a total half-integer nuclear spin. He claimed that by rapidly rotating a disk of such material, the nuclear spin became aligned, and as a result created a ”gravitomagnetic” field in a fashion similar to the magnetic field created by the Barnett effect.” [4]; see also [17].

The idea that alignment of nuclear spin causes gravity is hence not so new after all.

A resulting weight reduction was also reported [19].

### 3.2.5 Searl Effect Generator and Flying Disk

See [21]. The SEG was filmed to demonstrate anti-gravity effects. The rotation of the disks and magnets (rollers), with special material properties, is in principle capable of involving a feedback loop in the DNO of nuclear spins, which was demonstrated to affect the G-properties of the object, reversing attraction to Earth into repulsion (see Podkletnov, Ning Li; Alzofon used direct microwave stimulation of “inversion of population” of spin statistics [9]).

How the vector potential, magnetic field and rotation of rollers create the feedback loop is not clear at this time. Better understanding of the Faraday disk should be helpful (there are debates about this too).

The result is a high electric field voltage ( $\partial A/\partial t$  term due to vortex-like field  $A$ : see Hopf fibration and Rodin Coil [32, 33]) as observed directly through reported ionization effects.

The factual antigravity effect is well documented via film and reports. Same with the SEG, allowing Searl to disconnect his energy supplier, leading to dire consequences for the inventor [21]. His story is clearly far from a hoax. There are similarities with the case of Tesla, regarding how Searl got insight into the design of the SEG. But more importantly, now we know such an effect is predicted by the theory and experiments of others [9, 7].

The investments should be based on the more modern experiments that worked, combining the different technologies available for DNO of nuclear spins: with microwaves, rotation, supraconductivity and rollers design.

Further info is available [22]. Reading John Searl story from this book will convince the reader that this is a “real life” story, at the level of facts. One should not have high expectations regarding the explanations. nevertheless “The Law of Squares” has some interesting congruence arithmetic behind it: think a Hamiltonian spiral on a torus  $Z/p \times Z/q$ .

This is related to a toroidal source of spinning A-flows, “pulsar type”, i.e. spiraling In/Out, rather than confined in a toroidal coil (see also Rodin Coil [33]); compare with Hopf fibration [32], as a model for the basic block of matter: neutron [6]).

Some insight can be gained regarding the resonance phenomenon of  $A$ -flow on twisted coils, by the educated reader, from [34].

These are of course only hints to “clues” to be related, to understand the feedback mechanism in SEG, that generates internal energy via magnets that are rotated between disks.

### 3.2.6 Overunity and Isotope Isomers

Inversion of spin direction to achieve antigravity requires energy, perhaps mechanical is enough. “Switching” the attraction from Earth to ambient G-field, essentially Solar, may act as a switch to a different source of energy ... accounting for lift-off. Yet the reported overunity energy produced, is not, in author’s opinion, from Zero-Point-Energy of the “vacuum”<sup>2</sup>, but rather could be a result of the re-orientation of spin directions affecting the nuclear force potential, a sort of re-arrangement of nuclei interactions which is also responsible for isomers of isotopes ... This in principle can be computed and tested.

The main point is, overunity is an extraction process we do not fully understand, which is associated with Gravity and Nuclear Force (quark field [3]).

## 3.3 Other experiments

We report on a few other similar experiments, mentioned in [21], attempting to reproduce the effects of the SEG.

### 3.3.1 Roschin and Godin

From [29] we retain a few aspects: Gravity effects obtained by rotating magnets; weight reduction to 35%; circular magnetic walls, “orbital like” (clear resonance effects and standing waves; recall “Bohr model”); self-generation of electric power; corona discharges, ionization and ozone smell; visible wave patterns; fall of temperature around the device; thin magnetic walls felt cold “by hand” (conductivity; human chi ball etc. has similar effect / sensation; it is related to the EM vector potential [25]).

The experimenters did not have a scientific explanation at that time, especially for the gravitational effects. Now we know that these are a result of DNO of nuclear spin [9, 43, 13, 14]. Rotation build a stronger magnetic field [16], with an associated circular *A*-flow<sup>3</sup>; an orbital-like structure may have been created, similar to a “chi-ball” clearly created with bear hands (Biofields / *A*-flow / electronic orbitals have all “ether-like characteristics”).

See [28] for more general info.

### 3.3.2 Paul Murrad

See [21]: “We ran all these tests in series, working carefully on each series for about a month, and overall we were able to repeatably generate a net reduction in weight of two to five pounds.” For further details see [30].

A common mistake when trying to explain such phenomena, is to consider Maxwell’s equations, as simplified by Heaviside<sup>4</sup>, without considering the vector potential as a central concept, as Maxwell did m[31].

A second even more wide spread misconception is that using Einstein’s GR Theory, one can interpret these fields as a result of “curving Space-Time”: that would require many orders of magnitude higher energies (recall that even the sun’s G-field can barely curve a light ray) [31].

As explained in detail, based on the current SM and theory of Nuclear Force [6, 3], the explanation is much simpler and natural: the three quarks in a nucleon form *one* field, called the quark field, with its three electric fractional charges (aspects relevant when probed electrically, in electron scattering experiments) providing an electric field interaction spin orientation dependent; the correction term to the Coulomb model for the electric force is a stronger form of Gravity. The weakness of Gravity (see Hierarchy Problem [7]) is due to averaging over an almost random distribution of spin directions.

At low temperatures, due to the properties of the Bose-Einstein condensate and increase in the *relaxation time of electron precession* (see [8]), the orientations align in the ambient magnetic field

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<sup>2</sup>... although this is a convenient way to explain it ...

<sup>3</sup>The magnetic field  $B = curl(A)$  is the analog of angular momentum of a rotating body. There can be a *A*-flow with zero magnetic field. Note that fluxons are units of rotating *A*-flows: the correct concept of *magnetic charge* [35]. It is interesting to compare this with the intuition of Leedskalnin about magnetism [36].

<sup>4</sup>The same scientist that decoupled quaternions into “Vector Calculus”, with separate cross and dot product.

reversing the G-interaction from attraction (lowest energy state) to repulsion [13]; there is a need for an excitation mechanism, besides rotation itself and the interaction with the magnetic field, which is present in Alzofon's experiments (microwave DNO), yet lacking in Ning Li's experiments (even rotation, absent in her first set of experiments<sup>5</sup>).

### 3.4 DNO using Sound and other methods

There are other reports of antigravity effects obtained using sound. It is conceivably based on the piezo-electric effect (phonons theory), e.g. Tibetan monks levitation report by Doctor Jarl, Coral Castle built by Edward Leedskalnin [36] etc.

Other methods to achieve coherent states associated to levitation are mentioned in [25], including meditation and even simply getting into the “zone” (see accounts of basketball players, jump measurements; accounts of runners etc.). These point towards a different direction: the potential of human body and mind [27].

### 3.5 Credibility gap

This can be bridged via education, learning from the scientific reports: theory, experiment and technology, and reassessing the “incredible reports” as if building the “case for antigravity”, to provide a feedback loop (motivation). <sup>6</sup>.

## 4 Antigravity Meta-Materials

Similarly with EM, where we have electro-magnets and permanent magnets, the later including forms / rocks with such properties found in Nature, we point to the existence of materials with special gravitational properties, natural and man-made.

### 4.1 Grebennikov Platform

For a multitude of accounts of this “story” (§3.5), see [39]. The Structural Cavity Effect was reported in many instances, and it is related to EM *A*-flow. But the properties of the wings of the insects used to build the platform suggests to consider that the possibility that they are grown in such a way to involve a preferred spin orientation of the nuclei (DNO). How to test this? Using Nuclear Magnetic Resonance, perhaps?

### 4.2 Is “cavorit” real?

Wells' fiction could be just sci-fi, precursor of science fact [40]!

Meta-materials possessing such properties could be in principle made using spin glasses structures and quantum locking of spins in conditions of super-conductivity and magnetic fields / DNO (rotation based, or microwaves based).

If we think how steel is made, this may be the opposite temperature regime. Also think of hysteresis of magnetisable materials.

The need for understanding Solid State Physics with input from Nuclear Physics, is obvious at this point.

The combination of macro-structures and quantum properties of the material, maybe the solution to manufacture such materials (cavorit), e.g. carbon nano-tubes etc.

Applications? G-surfboards [38] ... (Picture SciFi: Silver Surfer).

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<sup>5</sup>Was rotation present in the experiments replicating Ning Li experiments, if any?

<sup>6</sup>The fact that a “story” exists raises the question regarding what to extract and what not, from the info provided, for further use; Science, of course, rules many of these as “inadmissible in the Court of Scientific Laws” (as it should) ...

## 5 Further developments and proposed experiments

### 5.1 The Double Disk Setup

The rotation of a disk under superconductivity conditions, subjected to a system of microwave generators, e.g. 3 spherical Tesla antennas, like those used by Konstantin Mayel for scalar waves [24], should yield an improved experimental setup to demonstrate gravity control and weight reduction. Note that between such two (or several) spherical Tesla antennas a standing wave is created, capable of supplying energy at a distance, as first envisioned by Tesla himself [37]. This is an arrangement of the excitation sources similar with the one used for achieving the recent breakthrough in LASER-fusion [41] targeting the Strong Force component of the nuclear force, except using microwaves. A coherence of phase for the 3 sources could be achieved via a beam-splitter analog technique (or electronically).

Enclosing the system in a resonant cavity, e.g. made of two aluminum disks / bowls (like a UFO), should increase the efficiency. Compare this setup with that pictured in [20].

The use of a design similar with Searl's SEG, including rollers, should be also attempted.

In order to advance the work on Gravity Control, an open source R&D approach is needed, together with an "education campaign" of the various approaches, pros and cons.

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