

Summary and review of the Lancaster Lecture

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Preliminary remarks

My decision to proceed with the present research and publish it, was motivated as a defence to real, in my opinion, and external to our known scientific culture, dangers to our civilisation and humanity (1998). It is also devoted to the inductees everywhere in the world.

In the next 70 pages it is tried to describe a part of the physical reality as really is and for which we are blinded by our own theories and systems of equations. It is a positive attitude. But conversely we could focus, as a negative attitude, only on what from our physical theories and assumptions makes us blind about significant parts of physical reality. This is quite easier and it takes not 70 pages but only one paragraph.

Here is a list of past Physics assumptions that I consider that the 21th century and the new millennium physics has already started and will eventually **turn all of them false**

- 1) The inertial mass of bodies (of constant amount of molecular matter) at low speed (non-relativistic) cannot be decreased.**
- 2) All matter starts with protons, neutrons, electrons. In other words, there are not smaller permanent particles (Quantum particles are excluded as they are not permanent)**
- 3) Nothing goes faster than photons**
- 4) All macroscopic electromagnetic interactions are described with the linear equations of Maxwell.**
- 5) All forces acting on laboratory macroscopic objects at low speed (non-relativistic) are of the next 5 types a) Inertial, b) by contact with other material bodies made from protons, neutrons, electrons, c) Newtonian gravitation forces d) Maxwell's electromagnetic forces e) no other type of forces.**

The article contains: A combined revision of the Newtonian universal attraction and Maxwell's Electromagnetised aether. Speculations about propulsion in the new electromagnetism and energy extraction in the new

universal attraction. It seems to the author that the ideas of this Lecture are relevant to the Hydrogen Energy model that has been decided by the US Congress, to initiate during 2004 . They estimate that till 2025 almost all car industries shall produce cars using engines compatible with the Hydrogen model. There are of course ways to implement the hydrogen model where the energy to produce hydrogen must be taken again from oil, or natural gas, or nuclear power etc. But some implementations give energy efficiency of remarkable measure compared to traditional engines. An example is the strange energy effects of the "Brown gas" (oxy hydrogen) which is a mixture of hydrogen and oxygen, directly obtained from water electrolysis. If we do not want to result in to using a kind of "magic" with modern technology that we do not understand rationally it seems reasonable to try to understand physics in a better and ecological way. The author believes that the extra energy that the "Brown gas" (oxyhydrogen) is giving at special types of electrolysis and special types of metal cuts, is subtracted from the potential energy of the gravitational field and the heat of molecular matter.

The original text has been modified in the next aspects:

- a) Instead of the use of the word aether we make use in this version, of the word field-gas which sounds less discredited to the ear of the contemporary physicist.
- b) The order of the paragraphs have been changed to follow the up-to-applications better order of ,a) inertia, b) new neutral macroscopic interaction (antigravity),c) electromagnetism, d) gravitation. The logical order of the discoveries was nevertheless different. First the new neutral interaction, then gravitation, and then the new electromagnetism. **In this version the details of the new equations are not presented directly as, it was in the original version, but only the keys to derive the new equations.** The main reasons are, a) luck of time to check again the derivation of the new equations b) To check the field new equations, I should have accessibility to basic laboratory experiments, and accessibility to quantitative measurements of the devices that are proposed as experiments proofs.
- c) The author prefers at this time (2002) to give the outline of the lecture even in the incomplete state of the present available information, with some improvements especially as he noticed that some industries proceed to massive production of generators that extract "free energy". I believe that we should not tend to become "magicians" seeking the result without understanding the causes , but rather tend to be more human with integrated rationalism and maturity about the ecological and social impact. Hiding discoveries from any experimental direction, or also exclusive private business exploitation, of such new physics, has also serious disadvantages, and one of them is not sufficient publications of the quantitative measurements, the second most important, is not sufficient use of the intelligent recourses of all the academic world, that would guarantee, faster and safer development, and rational integration, in all relevant groups in the societies. Hiding from any direction, destroys, democracy and creates crypto-totalitarian states and dual terrorism,

degrades the scientific world and the public, makes the planet's civilisation powerless, and endangered, and creates arrogant and dangerous minorities that seek only blind power, in spite the law or outside the law. It is only the collective societies of the scientists, that can decide what is safe and good for all to discover, and develop, and can give the consensus for working on various directions. What is really to trust is, not practicing research in inappropriate directions, and what should not be trusted is, making research, so as to hide it. It would not be fair to blame nevertheless such military groups or industries without also blaming the inertia of standard academic science, in shorting the gap between them.

My profession did not give me enough time to work on the subject since 1998, nevertheless the hours that I have spent on the subject as a hobby, gave some improvements to the original version. **The author's main objective is clear and true conceptions rather, than rushing in to applications. First we must correct existing theories before we advance.**

d) The wording of many phrases has been improved and many new phrases have been added. Some new references in to experimental facts and inventors have been added, like B. DePalma, Tewari, Ed. Gray, Paul Baumann (testatika), Dmitropulos (magnetisation effect), together with a first explanation of the “free energy” electric generators.

e) It has been added the idea that neutral Field-gas is the mixture of at least three partial sub-gases, a positive, a negative and a neutral with simple Coulomb-type only interaction for its particles, as the new simple hypothesis to derive the older Maxwell's electromagnetism and simultaneously to define the new equations of the non-linear electromagnetism that permits the new electromagnetic propulsion.

This idea was not explicit in the original version of the lecture and it was approximated with the remarks about the “Dirac's gas” and the “Maxwell's gas” as different conceptions of aether. (The latter can be of positively or negatively electromagnetised , while the former can only be neutral). Of course these gasses are non-traceable at the particle scale (a lot smaller than protons, neutrons, and electrons and still permanent particles) by Quantum Mechanics.

f) Nevertheless the main ideas and spirit of the lecture remain invariant: Free space to think clearly and truly without mind-traps, about the physical laws of nature, and reassurance of the rational spirit in the human consciousness, for many extraordinary encounters that the planet's civilisation may have. As long as the present physical insights and discoveries are not pushed to the scale of microphysics where Quantum Mechanics formulates physical laws, it seems that they are not dangerous as nuclear power is, while they have their advantages compared to nuclear power. What can really be used in practice is only new mathematical equations for the gravitational, electromagnetic and new neutral gravitodynamic (antigravity) field, with just new and more potentials, that correspond to the new experimental discoveries. The insights of the material layers are to be used as heuristics, and remain at the philosophical level and classical

macroscopic scale, rather, than be used at the scale of Quantum Mechanics.

The author's method to discover the necessary plot of concepts, definitions, arguments and proofs of the present new physics, was much alike (I assume) that of ancient Greek thinkers like Democritus and Leucippus that though of the atomic structure of nature, centuries before it was discovered experimentally. In other words with thought simulations, and under the assumption that all the necessary tools to explain the new discoveries are there in the older or modern books (in my case in books of fluid dynamics). **We only need to free our minds from the redundant details, buzzard conceptions or mysteries, and try as true the most probable scenario given the experimental data, assuming that there is an inner logic, consistency, and simplicity behind the observable phenomena of nature, that is after all the logic with which ourselves are made of.** *It took me at least 2 years (1996-1998) to contemplate with alternative scenarios before I chose the most consistent and plausible in discovering the possibilities of new electromagnetic propulsion and **the mechanism of gravitation** (or of universal attraction, a better term that Newton introduced). It took me one more year (1998-1999) to figure out where the "free energy" comes from and 3 more years to understand, partly, the social and ecological issues related to these new discoveries. My only contact with experiments during that time was through the limited information available in the Internet. Obviously many details should be added after sufficient experimental work by trained engineers. My role remains in the consistent, plausible clear creations of the necessary concepts that should be a natural continuation of the many centuries evolutions in the science of physics in the societies.*

g) The present text cannot be, but an outline as each of the interactions. A full description would require at least a separate paper for each interaction, and compared to other works in physics **a full deployment of the equations, upon published experimental measurements, would require probably separate Nobel prices for each of the three suggested interaction. With this I just want to indicate that the present work should correspond to work carried out not only by one person or a small group, but rather by many research groups in many different countries and Universities.** The author gave this lecture, and it was one of two only lectures at the Lancaster conference. The second lecture was by professor S. Dimitriou.

h) The conference where the lecture took place, created his own site at <http://www.greenglow.co.uk/lecture1.html>. This project was the English counterpart of the American Breakthrough propulsion physics of NASA at <http://www.lerc.nasa.gov/www/bpp/>. The author's interest is nevertheless mainly theoretical, conceptual and epistemological, for the continuity of the evolution of ideas in the sciences, and I hope for the interest of the wider area of all scientific communities in all societies. The more the publicity and involvement of the totality of scientific communities, the safer and the better the developments and the quality of the results. **The Greenglow project had the next**

seemingly outrageous objectives from the point of view of stanrad academic science: 1) Invent new propulsion for flying 2) Produce while flying the necessary fuels or not using fuels at all 3) Ability to go faster than light.

- i) As sufficient quantitative results of the new experiments are not available to the author, he can only speculate, indicate directions of research and suggest ways to derive appropriate system of equations for future researchers and experimentalists. He cannot verify completely the suggested field equations. If nevertheless experiments verify the suggested physics, then they should be accepted as true.

(Remark about Internet pages links: Since many Internet links after some years close or change, the reader is advised to make a search by one of the standard search engines in the Internet with the key words of the reference)

A new combined revision of the Newtonian universal attraction and Maxwell's Electromagnetised aether.

Speculations about propulsion in the new electromagnetism and new renewable energy extraction in the new universal attraction.

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0. Emerging new discovered effects and inventions

The are some new experiments and discoveries from the last half of the 20th century till the preset time that have remain relatively unknown before the emergence of the Internet. These experimental facts go beyond some of the conventional theories of physics like Maxwell's electromagnetism, and Einstein's gravitation etc. They have nevertheless common properties and hidden logic, that permits a common theoretical treatment suggested in the present paper. There is also some information that N. Tesla at the beginning of the 20th century had already discovered a relevant experimental effect on the Faradays homopolar generator, that he did not published as he could not explain it, but he recorded it in his private communication. There is also some information that similar discoveries and inventions were known to some German inventors from the first half of the 20th century, for which nevertheless I have not exact information. It seems that the required modifications in well established

theories of physics are much more profound than it might seem at the beginning.

The present paper is dedicated to the advancement of the physical thought, so as to be able to deal with such experimental facts without seeing them as “mysteries” or “scientific fictions” etc and preserve the rationalism in the evolution of ideas in the sciences. The main applications of these discoveries

- a) Support a dream of radical new, faster and silent transportation model (by new electromagnetic propulsion),
- b) and support a dream of a new energy model abundant for all nations (by extraction of energy from the gravitational field through the electromagnetic field), of lower engineering profile and more safe than nuclear energy. Of course, as any new technology, it requires from the societies to be careful and ecological and social mature in using them otherwise we may result in worse climate and ecological problems than what the increase of CO₂ has created for all the planet.

We classify these experimental facts in to the next categories

Class 0 Drag-volume pressures between the field-gas

(hitherto considered as "vacuum") and moving bodies. The most characteristic such experiments are

- a) The Aspden's gyroscope effect (see references) which has been also verified by experiments by the British Aerospace, as Dr Evans has reported to us. Dr Aspden, whom I met at the University of Portsmouth, (see references) and many other researchers, call this new dynamic effect “antigravity”.

The experiment can be described shortly as follows. It is a star from horizontal cylinders, that when it is rotated around a vertical axis, the cylinders rotate also. According to classical aerodynamics the Magnus effect of air pressure applies a force in opposite direction of the gravitational acceleration and lifts the rotating cylinders. What is the surprising nevertheless is that a similar but weaker lifting force is observed and measured, even when the rotation is carried out in absolute air vacuum! By repeated experiments has been measured and published the experimental relation $F=2 \cdot 10^{-5} M \omega r$ (gr*cm)/sec² for the lifting force. Where F is the lifting force, M is the mass of the gyroscope, ω is the angular velocity in radians per second, and r is the average radius of the gyroscope.

- b) The DePlalma's gyro drop experiment (see references)
In this experiment a spinning gyroscope with axis parallel to the gravitational attraction, closed inside a metal box, that can be of air vacuum, is let to fall. The measured acceleration is significantly different when the gyroscope is rotating or not! For some quantitative measurements see references.

Class 1: "Free energy" extraction through the electromagnetic field

In this category there are plenty of discoveries. It is even reported that N. Tesla, studying the homopolar generator of Faraday, discovered that it can give more electric energy than the energy given to it to rotate.

- a) There is the Swiss generator called testatika, invented by Paul Baumann, that for at least 25 years gives “free electricity” for 200

Christian monks at the area of Methernitha in Switzerland. The generator is a variation of the homopolar Wimhurst electrostatic machine and is of relatively simple construction. It gives a power that ranges from 300 w to 10 kw of continuous current of 10-14 ampere, according to the geometric size, with a slow rotation of approximately 30 rotations per minute. The generator consists of two rotating discs in opposite direction. The centrifugal force acting on the electrons of radial pieces from alumina magnetizes the discs. The inventors do not give any explanation for the source of this energy.

- b) There is the J. Searl motor (see references). It is a more advanced generator, with rotating magnets. It resembles a quite tall roller bearing, that for rollers it has magnet bars of diameter (originally) 70 cm. It gives a “free power” of approximately 180 watt per kilogram. The motor shows also an electromagnetic propulsion of explosive growth that lifts it on the air. The inventor suggests that the gravitational field is effected by the rotation of the motor.
- c) There is the invention of Ed. Gray, (see references) that extracted “free energy” from the discharge of electric current in space. He even used it to move an electric car without using any other energy source. Their technique is called by P. Lindenmann “cold electricity”
- d) There is the DePlama’s generator (see references) that is much more difficult to construct than testatika. It rotates fast at more than 3,000 rotations per minute, and the magnets that are rotated are rotated in the same direction and not, as in testatika in opposite direction. Again it gives more electric energy than it takes. The inventor does not give any explanation for the source of energy that attributes to “space”. The inventor has published an experimental relation at his generator that goes like this:

$$\text{Voltage (in Volts)} = 10^{-8} V (\text{tangential velocity in cm/sec}) B (\text{magnetic field in Gauss}) L (\text{distance of magnets and current collectors in cm})$$

The voltage refers to the voltage of the collected output current, the velocity on the tangential velocity of the rotating magnets, and the distance on the axial distance between the magnets (there are two of them).
- e) There is the Tewari’s generator (see references) which was a friend of DePalma, and is a variation of the DePalma generator, where instead of magnets are used electromagnets. The inventor does not give any explanation for the source of energy that attributes to “space”.
- f) There is the “free energy” motor of L. Szabo, (I have some advertising material, under the name EMB from “energy by motion” see references) that resembles that of DePalma’s generator. It is been reported that they have proceeded in massive productions of the generator in an industry in Hungary, financed by Canadian capitals. The inventors do not mention any standard academic explanation for the source of this energy and they call it “Energy-by-motion, EBM” but they have developed large scale production units from 3 to 50 megawatts or maybe more. From a point of view this was the reason that I decided to proceed faster with the publication of this paper at its

present form, so as to shorten the gap between standard academic science and industrial commercial production.

g) There is the technique of V. Dimitropoulos (see references) that extracts “free energy” of less than 100 watt, at the magnetization phenomenon (with magnetic hysteresis) in reading a magnetic tape.

h) (Remark added 2005) There are at least 10 different magnetic generators of different design but as we think based on the same physical principles discussed in this paper (see e.g. <http://jnaudin.free.fr/html/qedynmnu.htm>)

Class 3:Non-predictable by Maxwell's equations electromagnetic propulsion (momentum exchange of the electromagnetic field with charged and magnetized bodies)

The most characteristic, is the propulsion shown by the J Searl's motor. (Remark added 2005) Another example is the lifting devices of asymmetric capacitors based on the Biefeld-Brown effect discovered in 1928 without moving parts see e.g. <http://jnaudin.free.fr/lifters/main.htm> There are more than 300 inventors who have repeated this experiments and device in many variations in all continents (Europe, America, Africa, Asia, Australia).

Class 4: Changes of the earth's gravitational acceleration around bodies of temperature close to absolute zero.

The only experiment known to me of this kind, is that of E. Podkletnov (see references e.g. <http://www.rbbi.com/folders/tech/basic/gravity.htm>).

Class 5: Other. There are many more without doubt in the Internet, that might not be classified in the above categories and can be explained nevertheless by the suggested concepts about the fields in the present paper. Their number increases as time goes on. There is of course a percentage of them that are not genuine new discoveries and can be easily explained by the existing equations of Maxwell and other classical physics. A Pareto rule may very well hold: More than 80% of the (so called overunity devices) maybe false or tricked, and less than 20% original and true. But for this minority that are genuine new discoveries asking for explanation and advancement of physics at the right direction, it is worth publishing this paper. A search in the Internet with the above key words in the standard search engines will bring in your computer screen plenty many of them.

We must remark that most of the inventors although they have published many constructive details of their inventions, they have not published very elaborate quantitative measurements with a purely scientific orientation. Maybe it was their isolation their troubles, or the rushing in to business, but the result was that their measurements did not end in publications in standard experimental Journals, and it is therefore difficult for researchers of fundamental physics to deduce detailed deductions in some details..

Motivated from the existence of such remarkable inventions and experimental results, we proceed in to theoretical advancement and analysis of the classical electromagnetism, gravitation etc.

The author is not in favor of fast massive applications of the possibilities that open with the new physics from any direction in the societies (including military groups), before the wider groups of scientists, have worked out and elaborated in sufficient quality and reliability the mathematical and physical details of the new physics. First we must know how to think and account about such newly discovered phenomena, with continuity of sufficient historical depth but also with innovation ,in respect to the evolution of ideas in physics, before we are to know how to get useful results. *I am in favor of discovering only what we can apply for the good of all versus applying what ever we can discover.*

1.Nested physical systems and the second micro-scale reality (Field-gas, field material layer)

Although physics is one of the oldest and most perfect science, I consider the social sciences as highly useful, although imperfect. In addition in social sciences we are faced with too much complicated systems (including the physics and biology of the human beings) that also involve the free human will. That is why in management and economics, but as far as I know also in informatics, systems are always assumed to be multi-scale in size and time and multi -leveled or multi-layered. The units of the systems have, usually, a **nested structure**. The **Bottom-up and Top-down analysis** is one of the indispensable tools. In the practice of social sciences, this idea is not formulated mathematically, but it is common sense in economic interpretations and analysis.

It seems that this concepts of system, is not the one that is used in physics. We describe physical systems always in an almost flat way, and at most with one level ,in other words as consisting always of one only scale of units, that is related to the size of the particles. We apply very often the same mathematics for large scale cosmological phenomena, that their material units are stars or planets, or to systems consisting from laboratory objects or even from elementary particles.

And when we have systems that include macro-scale or meso-scale or even also micro-scale bodies, we do not bother to discriminate the formulation of physical laws at different scales. In other words there is not differentiation due to **scalability** in the description of physical systems

Of course, this is not entirely like this. We can recall, for example, that the theory of diffusion in physics and chemistry, admits many distinct “diffusion equations” for the same substances and all are true, depending on the time and space scale of the phenomena. On the other hand we should not forget that we do not have mathematics that can discriminate, say, more than two levels of scale. We use, for example, differential manifolds where there are two-scales: The global manifold and the infinitesimal or tangent space, but we do not have “mani-folds” with three

or four or more scales! Thus each time we apply the tool of a differential manifold or a differential system we must specify the time and space scale that we interpret as infinitesimal elements.

Some times we admire how the ancient Greek thinkers like Democritus claimed that matter is composed from atoms, so many centuries before it was possible to prove it experimentally. Maybe it was not that difficult, if they noticed the night sky where the world has definitely a discrete form and induced from it, with sufficient differences, that also in smaller micro-scales nature would have similar discrete constitution. I would like to point out here that probably what holds is the more sophisticated principle of “**Nested Atomicity Principle**” of the world .

In the light of such a principle, not only planets and stars are composed from atoms, but also the electrons ,protons and neutrons may be composed from permanent tiny particles.

There is of course the theory of quarks that asserts similar ideas.

But may be the reality goes beyond the three quarks for each electron. Maybe the electrons have internally again a nucleus and rotational random motion, from a vast number of small particles of Field-gas. We might call such particles *aetherons*. They might be as permanent as the protons and smaller in size from an electron as the electron say from the sun. That is by a factor more than 10^{-40} or even 10^{-70} Thus in a scale smaller than the one investigated by *superstring* theory. The ordinary density changes of Field-gas might be less that 10^{-17} than that of the air. Why the smallest *permanent* particles should be the electron, proton and neutron? Where do we stop? If history may prove that we have not yet reached the bottom of the physical reality and shall never will, why should we rush to close ourselves with absolute dogmas about the “vacuum” or space-time, in a coarser world, not leaving open the possibility of a finer material reality? From this point of view Field-gas can very well be, in the future, the object of a particle theory.

There is a remarkable sequence of almost all the great scientists of the past that claimed the existence of aether :

Phylosophers of the Hellinistic ages,

Newton ,

Euler ,

Laplace,

Thompson (Lord Kelvin),

FitzGerald ,

Maxwell ,

Lorenz ,

Michelson (and Morley),

Sir Ed. Whittaker, F.R.S.

Dirac etc .

The very word aether is a Greek word, probably at least from the Hellenistic ages: (αιθέρας) and its etymology comes from the root αιθ- which is an other word for fire (there is the modern Greek word (αιθάλη) which means “smoke”) and the second part (-ερας) which is almost like

the word ($\alpha\text{-}\epsilon\rho\alpha\varsigma$), which means air (there is also the English word aerodynamics which is actually a Greek word).

There is an old saying that goes like this :It is not necessary to have witness the murderer in order to prove that someone is the murderer.

For our arguments we accept as sufficient proof for the existence of aether the next, well proven, facts by many experiments for which we consider the aether responsible:

0. That any wave, and so also the light, needs a material medium to travel and is the same also with the electromagnetic interaction.

0. That the momentum of the electromagnetic field and of the gravitational field is real, we place in the “vacuum of atoms”, but it is meaningless and contradiction in terms if it is not the momentum of a finer material medium.

1. That also the gravitational interaction requires a material medium to be propagated .

2. Field-gas is responsible for the random motion (quantum motion) of electron ,protons and neutrons in the Bohr’s atom. The situation is similar to that the Brownian motion is a proof for the existence of atoms.Only that here we have a Shroendiger motion rather. The previous motion proves that there are permanent particles in the “vacuum” no matter how small, that make the Field-gas and its random fluctuations. Otherwise we must abandon the “*principle of sufficient physical cause*”.

3. The buoyancy forces in the motor of J.Searl, of Aspden’s, gyroscope, and DePalma’s gyroscope, cannot come from the “vacuum” as really vacuum, but from a material medium in it. The same with the energy generated by the motor of J.Searl, the Swiss motor of P. Baumann (testatica, at Methernitha), B. DePalma’s generator, Ed. Gray’s “cold-electricity” EMA generator, V. Dimitropoulos magnetic tape portable generators, Tewari’s space energy generator, L. Szabo’s EBM generator, and many other more than 10 inventions that exist in the internet. This energy no-doubt comes from the internal energy (mainly heat) of this material medium, or field-gas, that had been called aether.(For relevant Internet sites see the references)

The claims that are made often in the books that 20th century physics have proved that there is no aether, is a misconception. What could only be proved as impossible, are the wrong conceptions of aether. Otherwise we are led to inexact and non-viable theories. Reversing the ironic talking of Einstein about the “ghost-field” in microphysical phenomena, we could safely claim that the only “ghost-field” is Einstein’s “space-time curvature” field . It is a self-contradicting concept where the “empty or vacuum” space-time is also a field with energy and momentum , but still it is only “mathematical” and of no material existence! The very propositions that it is “vacuum” and at the same time it has energy density and momentum density are self-contradicting. A field that has energy and momentum density cannot be of a different ontology than matter, it has to

be simply matter of a different time and space scale , a different material layer made in its turn from particles.

We discriminated at the beginning of this page the concept of epistemological layer and the concept of physical material layer. It could be said that the former are the creation of the collective human civilisation trying to understand the natural reality while the former are closer to what we call nature and reality (the only common country as Camus was putting it). To show an example of how the concept of physical material layers can enhance our perception , let us count them using a human centered approach, and try to conceive usual arguments in cosmology. We should remember the ancient Greek quote "Παντων χρηματων μετρον ανθρωπος" which means among other "The measure of any kind of money is the human being" or "The measure of anything in the human world (but not all of the world) is the human being".

Let us call physical **P-Layer 0 (or of we do not want 0 and negative numbers but only positive numbering , P-resolution 3, or P-density 3)**, the usual matter of the every day life (that is consisting of protons, electrons, neutron, like water, a piece of wood, the ground of the planet etc).

Let us call **P-Layer +1, (or P-resolution 2, or P-density 2)** the planets of a solar system, star constellations, including galaxies , and clusters of galaxies.

Let us call **P-Layer -1 (or P-resolution 4, or P-density 4)** the material layer of the classical fields like the electromagnetic field.

We cannot be sure of course that e.g. between layer 0 (or in the positive numbering 3) and layer -1 (or in the positive numbering 4), there is not an intermediate layer, like in the case of layer 0, (in positive numbering 3) and layer +1 (in positive numbering 2), that we are somehow sure. In that case simply the counting is not the densest counting.

We can speculate on the validity of a "**locality or contact principle**" according to which "*Any physical interaction can be derived from that of collisions, if sufficient many physical layers are included*" but would appear as "non-local action at a distance" or "non-mechanical" if less than the necessary physical layers are included in its definition.

Let us stop there at the moment and investigate.

a) How many layers are involve in the attraction of two planets? Layer 0, (or in the positive counting 3) for sure, as planets are made from human layer, matter. Layer 1 (or in the positive counting 2), of course as the planets, as celestial bodies, are the elements of layer1 (or in the positive counting 2),. But as the gravitation propagates through the neutral field-gas, the layer -1 (or in the positive counting 4), is also involved. Thus 3-layers already are involved in a simple celestial interaction of two planets.

. Maybe in the future we shall discover that for a more sensitive description of an interaction it is required the involvement of more layers (e.g. five (5) layers) but for the present known description it seems that three layers are adequate.

We may of course think of layers -2, (or in the positive counting 5), and layer +2 (or in the positive counting 1) in addition. We refer to layer -2 (or in the positive counting 5), in discussing the "non-mechanical" character of the classical electromagnetism. For the layer +2, (or in the positive counting 1) we could think of a larger "ball" that contains other smaller "balls" each one like the universe or cosmological manifold of the traditional cosmologists. The smaller "balls" that are like the universe of the traditional cosmologists are everywhere that the light of their stars can go. **We may think of the cosmological manifold of cosmologists, as a vast "star" or "gaseous planet" of layer +2 (or in the positive counting 1)** . It is most probably a vast star or a vast gaseous planet. *This makes us of course already habitats of the atoms of a gaseous star or planet!* It is gaseous at layer +1 (or in positive counting 2) , as the system of stars, planets, and galaxies, is in gaseous state rather than of anything else. So if we want to look, the atoms, of a gas, with naked eye, there it is: We may just look at the stars in the clear night sky, it is the gaseous layer +1 (or in the positive counting 2)!

The concept of nested material resolution balls is, I think, a cosmological concept closer to truth, about the constitution of reality.

We might assume that the whole of the physical world as conceived from the human mind, has countable infinite many physical layers, but that every conceivable physical entity can consists of finite many only, physical layers. But I am not in favour of using the infinite at all in mathematics , so I would suggest the assumption that the physical reality consist of finite only physical layers too, but always more than any observable physical system. In this way any physical system must also have external influences from the rest of the physical layers, so that it can not be entirely isolated, but these influences are also deeper physical layers (and not from "emptiness") so that the principle of sufficient physical causes is not abandoned. We would had to abandon it only if we would consider the particles, and systems of the last, finest physical layer, where physical reality stops (from the point of view of the human being) and probably consciousness starts. In other words, a situation similar to the present situation of quantum mechanics, that sends to exile all the rest of the physical reality and its permanent particles, finer than the permanent particles (electrons, protons, neutrons), under the terms "quantum vacuum" or "curved space time". In addition, the present approach, keeps classical electromagnetic field , and Einstein's gravitation field, in the

highly contradictory realm of “vacuum” but with energy and momentum placed at the “vacuum” !

I must admit that in spite the disadvantage of abandoning, the principle of “sufficient physical cause”, there is an advantage in permitting physical systems of the last, finest physical layer, and this is, that everything starts from particles, and their action at a distance, which is a more robust, magical, hard and powerful concept. This is one advantage that the present quantum mechanics shares. This advantage follows from a similar advantage in mathematics that would be to reformulate the various areas of mathematics, without the infinite. The alternative in physics would be to start considering physical systems from the particles of an intermediate physical reality, without action at a distance, but with a little known, particle structure of the finest layer, and only a statistical mechanics, fluid observable approach of it. For some, this latter approach, that the present civilisation did not made during the 20th century, would be physics of an effortless technology, a lot safer than nuclear power, and of abundant energy too.

2. Can the inertial mass be reduced at low (non-relativistic) speeds? Is it always equal to gravitational mass?

Every physicist is familiar probably with the definitions of mass as number of particles (material mass) mass defined by the relation of momentum giving in a body and acquired speed by it (inertial mass) and mass defined as a source of gravitational attraction (gravitational mass).

Most of the physicists are also familiar with the claim of Einstein that always inertial mass is equal to gravitational mass.

In this paragraph we shall try to discuss the subject as the new experiments seem to be incompatible with classical concepts of special and general relativity.

There is a historical irony in which at the end of the last century there were people claiming that if particles were a kind of spin motion of condensed field-gas, then their inertia should change as they move in field-gas. They were rejected with the argument that “as we know very well, bodies do not change their inertia as they move”! Some years later came Einstein claiming the same thing with the formulas of special relativity, but avoiding field-gas.

The misunderstanding in the history of physics followed three phases. At first it started as light was falsely identified with the compression wave of the Field-gas (at that time called aether) which is a purely mechanical wave. This does not have nevertheless so much grave consequences as the two types of waves, the purely mechanical compression waves and the light waves, although of different nature, have the same speed. Second and mainly it was falsely thought that the aberration of light that we observe (which is in the same direction of motion of the receiver) cannot occur if the receiver applies drag forces to the field-gas medium of

propagation of light and makes it follow it at some area around it .This is not so!. **The aberration does occur, has curvilinear light paths** and is not annihilated by the fact that the receiver may apply drag forces to the surrounding medium field-gas and take it with it, as far as it holds that at sufficient larger distance of the receiver, the medium field-gas is not influenced by the motion of the receiver. Of course a whole range of velocities occur, from a point of the field-gas that has zero relative speed to the receiver, (at the receiver) ,to a point of the field-gas that is sufficient away not to be influenced by the motion of the receiver. All that it takes for the aberration to occur is a) that there is an external area of the medium of propagation field-gas that it is not influenced by the motion of the receiver where we assume the source of the light placed and b) that the receiver is moving relative to the source. Of course **the aberration path of the light is curvilinear! (not because of gravitation! Neither in the sense of Newton neither in the sense of Einstein's general relativity!)** and the aberration direction is given by the tangent of the relative to the receiver motion -path, at the point of the receiver!

Both facts

a) that, at the round table of the Michelson-Morley experiment, the field-gas follows the motion of the source of the light,(and in fact it could be for many thousands of kilometers above the surface of the planet as the atmosphere puts also a drag force to the field-gas)

b) that the aberration could still hold, if outside the planet's atmosphere the field-gas does not follow the motion of the planet ,

both these facts had been suggested by Lorenz himself (for b) Lorenz rightly remarked that it is little more difficult to analyze because of the curvilinear line of the light path) and silently supported by Poincare and others. But Einstein hushed to publish his conceptions before Lorenz and Poincare could explain also the increase on the inertia of particles, due to their motion. (And this is how the third misunderstanding occurred, after the publications of Einstein).

Thus the results of the Michelson-Morley experiments and the experiments on aberration of light of distant stars are perfectly consistent between them without the need of Einstein's conceptions.

This by no means requires any abandoning of the Galileo's relativity transformations neither proves the necessity of introducing Einstein's special relativity and replacement of Galileo's transformations with Lorenz transformations.

What Lorenz and Poincare did not explained, (the third misunderstanding) in other words, **the increase of inertia because of the motion**, is still explainable and derivable within Galilean relativity in the following way, as I suggest. All that is required is:

a) To make the assumption that increase of the inertia of the bodies due to motion, comes from the total resistance in their flow inside the material layer of the field-gas.

b) That the motion of the particles is constrained by the field-gas so that at every state of the motion the relation of non-following the motion surrounding field-gas and the part of the field-gas which follows the particle (e.g the volume inside the effective ball of an atom), is such that can be described by a transformation that leaves invariant the speed and rectilinear propagation of compression (or light) waves in the field-gas.

c) Furthermore, we assume a mathematical property of the coupling of a particle with the ambient field-gas, that is in conformance to the transformations in b) and gives the familiar formula of the increase of the inertia of the particle. This would then be an additional independent hypothesis, derived by experiments but not in contradiction with Galilean relativity.

Although it would be possible to make a detail model of the microstructure of the interplay of the particle with the field-gas that would give the required consequence with less assumptions, as the interest here is not to analyze phenomena of the micro-world but to account for their macroscopic effects, what is adequate, is to prove only that such phenomena do not require the abandoning of the Galilean relativity.

The three conditions obviously define a *special type of coupling* of the particle and the field fluid. It is undergraduate university physics exercise to prove that *the group of transformations in a fluid that leaves invariant the rectilinear compression waves propagation (in other words the group of automorphisms of the D' Alambert's hyperbolic 2nd order wave equation) is exactly the group of Lorenz transformations.*

It is said sometimes that Einstein's approach is equivalent with the aether explanation. It is not true. It is far from equivalent (e.g. with aether explanations as above, the speed of light is not a universal constant, and it does not have an upper bound of 300.000 km/sec)

It is direct from these, that the extra energy and momentum absorbed by the particle to bring it to some speed compared to its rest mass, is given to the field-gas close to the particle that follows it. A phenomenon similar to the well-known phenomenon of *added-mass* in fluid dynamics, which has the equivalent phenomenological effect as if of an increase of the mass of the particle.

We get also as a consequence that if we represent the effective volume of a particle as a ball at the state of rest, at the state of motion it becomes an ellipsoid contracted in the direction of motion! And that any standing waves, in the effective volume, acquire a slower period.

These contraction results had already suggested and published by Lorenz himself (in his paper "Electromagnetic phenomena in a system moving with any velocity less than that of light" *Proceedings of the Academy of sciences of Amsterdam*, 6, 1904). *It is obvious that although*

these results have the same mathematical formulas as the Einstein's concepts of space contraction and time expansion, they are conceptually totally different, as the former are derived within classical Galilean relativity and may lead to different predictions.

We should also notice that it would not be surprising at all, that new experiments on the inertial motion of laboratory size bodies, would give totally new types of coupling of particles and the field-gas when the motion is not simple rectilinear but rotational or under other specific conditions. Thus it could turn out that the dependence of inertial on various parameters, including the speed and type of motion, is something on which we may very well know very little! There are celebrated experiments, at least since the decade of 1980 that prove such phenomena (e.g. The Aspden gyroscope effect [University of Southampton], Hayasaka-Takeuchi experiment, British Aerospace experiments, etc)

If only Lorenz or Poincare had fallen upon the right hypotheses of coupling of the particles with the field-gas (Electromagnetised field-gas or electromagnetic field, if they are electrons or protons) and derive its increase of inertia, the whole landscape of 20th century physics would be different as far as the conceptions of space-time and Einstein's relativity is concerned!

Fundamental Physics still can be as simple as Galilean relativity and there is no need to obscure it! And also we can still make use of flat space and an independent time, even though the light ray paths may follow a curvilinear motion (due to aberration or Newtonian or other gravitation) . Not only because one day we may discover other means to measure space, than light rays, but also because Physics had decided that whenever we discover a cause that influence the measuring devices, we should not assign it as a space curving but as an influence to the measuring device, that has to be abstracted to find the right strait distance. This is how the temperature expansion of material rulers was treated, when it was discovered. They did not claim a space expansion or contraction, but only such of the measuring device. And by correcting the measurement we get the result. And so is the case with the influence of the aberration or gravitation to the light rays. The argument that any measurement of distance with light rays cannot avoid curvilinear light paths is not different to an argument that would say that any distance measurement would eventually refer to a material instrument (even that reading the light) and in any such instrument we cannot avoid temperature expansion or contraction, too! But it was long ago the choice of physics that, (and there are significant advantages of this choice), that this is not a reason not to define the space as flat Euclidean, independent from temperature , aberration , gravitation or other parameter.

In the light of the above correct accounting of the Michelson-Morley experiment (which is not that given by Einstein and his special and general relativity) and the aberration of light, and the, above mentioned, new experiments on the inertia of bodies, it should be considered that there are already sufficient many laboratory experiments (neither astronomical, neither microphysical or of quantum physics) that reject

both special and general relativity! On the other hand, almost all of the experimentally established formulas of special relativity are also derived in the above Galilean approach.

We may notice here how a little wrong turn in the history of theories, may have such severe limitations in our understanding of the world in our spirit and shape our beliefs for a whole century. It is not of course the first time in the history of the civilization. During the time of Galileo, all of the well-established physics believed that the earth is not moving and is square, and till the end of the 19 century all the theories of the atomic structure of matter, were rejected and discredited. At least we improve. At each new century the new misconceptions become subtler and subtler!

In this paragraph we shall discuss how the basic formulas of special relativity like the :

(2.1)

$$E^2 = m^2 c^4 + p^2 c^2$$

can be derived and interpreted as a special phenomenon of “**added mass**” of moving bodies in a the field- fluid .

According the phenomenon of added inertial mass, a body moving in a fluid, experiences resistance, even in non-viscous fluids, making the fluid following the motion of the body around and at close distance of it. In modern terminology we are speaking of **coupling** of the particle and the fluid .

After calculating the momentum of the fluid created by the motion of the body, the equations are such that we may **de-couple** the system particle-fluid asserting that the fluid does not exist and that instead the particle has an additional inertial mass depending on the velocity!

The mathematical derivation of the formula (2.1) or of
(2.2)

$$m = \frac{m_0}{\sqrt{1 - \frac{u^2}{c^2}}}$$

in special relativity from the Lorentz invariance of the expressions of the energy and momentum is exactly what we need in our situation also ,so we shall not repeat it, only that we shall interpreted in a completely different way and in Galilean inertial systems!

The necessary **assumptions** are the next:

a) There is a phenomenon of **added mass** for a moving particle in Field-gas as is the normal and usual in fluid dynamics, even for non-viscous Field-gas .

This in modern terminology, we call the coupling of field-gas and **any** particle .

b) The formula that connects the energy and momentum of the total system field-gas+particle has the **same symmetries** with the **D'Alambertian wave (hyperbolic) operator :**

(2.3)

$$\nabla^2 - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2}{\partial t^2}$$

At his point we need a lemma which can be proved without much difficulty. (We shall not state its proof but it can be solved as an undergraduate exercise in physics or mathematics department) :

Lemma 2.1 :*The symmetries, (or group of automorphisms ,or transformations) that leave invariant the D'Alambertian hyperbolic wave operator is exactly the Lorentz group .*

So we notice that we can have, even in acoustics, the Lorentz group only that the speed c would be the speed of sound. In the case of field-gas we make use of the Lorentz group, only with its **active interpretation** (not in its passive interpretation as co-ordinate transformations of reference systems). We leave the Galilean group with the passive interpretation as reference systems transformations. The whole phenomenon that we study, takes place *in the gravitational field and in a system which is at rest with the sources of the dominating local gravitational field.*

An inertial system is one that is at rest on the field-gas and at rest relative to the dominating gravitational source. The "dominating" contains a quantitative assessment which is translated to a choice of space and time scale..

This solves the old question which systems are the inertial systems.

So on earth this system is earth ,on Mars its Mars and close to the sun it is the sun . A more detailed definition of it would resort to the time and space **scale** of interest for the phenomenon. Thus we should introduce *scalability* in our description of the physical systems.

After this parenthesis we go back to the arguments.

The conclusions to the previous assumptions is:

Conclusion:

c) We can consider the usual de-coupling of the particle and the field-gas (field-gas) in which we can ignore the fluid (field-gas) but instead we have an increase of the inertial mass of the particle depending on the velocity .The exact formula is :

(2.2)

$$m = \frac{m_0}{\sqrt{1 - \frac{u^2}{c^2}}}$$

or (2.4)

$$E^2 = m^2 c^4 + p^2 c^2$$

where E and p are the energy and momentum of the system.

We are accustomed to derive classical non-relativistic formulas as an approximate limit of relativistic formulas. **But what we observe here is that conversely the relativistic formulas are derived from a non-relativistic field-gas!** So a non-relativistic layer -1 (or in the positive counting 4) , physical reality gives a relativistic behavior to the layer 0 (or in the positive counting 3), physical reality composed by protons ,neutrons ,electrons etc .This means that when the speed is not very close to the speed of light the formula (2.2) is not a very bad approximation ! Formulas such the (2.2) are of a very familiar form to aerodynamics .The term u/c is called the **Mach number** . Different assumptions for the coupling would , very well, lead us to the existence of speeds for protons electrons and neutrons much higher than the speed of light !

In addition we should remark that if the theory of the Newtonian gravitation, as an field-gas heat effect, is correct, then the gravitational mass and the inertial mass need not coincide! .The gravitational effect depends, strictly speaking, on the field-gas temperature as we shall discuss in the paragraph 7, while the inertial effect on the number of field-gas particles, accumulated, and the resistance in field-gas.

So we should keep that maybe the analysis of new experiments shall give that inertial mass \neq gravitational mass. And even if inertial mass =gravitational mass, the new gravitation that we shall discuss below, may give that the inertial mass of a body at low (non-relativistic) speed can be decreased (without changing the amount of matter) by appropriate decrease of the gravitational mass (decrease of the universal attraction).

In most situations, and under normal conditions, we may have that the inertial mass and the gravitational mass, coincide.

3. A new macroscopic universal neutral interaction. Post-Newtonian and non-Einsteinian “antigravity” effects, as field-gas flow dynamics or gravitodynamics .

3.0 Introduction

In this paragraph we shall try to describe, speculate and suggests equations for some dynamic effects, that sometimes are called in the Internet as “antigravity”. Having the concept of “vacuum from protons electrons and neutrons” as a gaseous fluid (field-gas) of a finer material layer, the phenomena discussed in this paragraph correspond simply to the kinematics of flow of the field-gas. Different researchers tried to include in their study and theories, these phenomena at different space and time scales. At the macroscopic planetary level, A. Einstein tried to include them (the neutral field-gas “antigravity” effects) in his formulation of gravitation, and thus extent Newtonian, static gravitation. Although at the macroscopic level (planets) his quantitative account was not very wrong , at the middle scale of Laboratory objects, turns out to be a wrong quantitative description as the gyroscope experiments, below, of Aspden, and De Palma prove. An other scientists from psychology and medicine, Wilhelm Rich tried also to describe these phenomena at the middle

laboratory objects scale and at the inorganic context of his so called “aether orgone energy”. He did not proceed though to give a physical quantitative description relating it to the known classical fields, as it is natural, because he was mainly a doctor. Also at the microscopic atomic level, De Broglie, and E. Shroendiger, described early in the 20th century such effects as “material waves” (of layer –1, (or in the positive counting 4)) following the motion of particles (of layer 0,(or in the positive counting 3)), like electrons, protons, and neutrons. The later development of quantum physics, substituted their initial physical insights in to “mathematical probability waves of the vacuum”. In the present suggested approach we suggest new quantitative description of such (“antigravity”) phenomena, of the non-electromagnetised, neutral field-gas at the middle laboratory object level, and eventually, improved (compared to Einstein’s) quantitative description also at the macroscopic planetary level. Personally I feel that we should not include them, even at the macroscopic planetary level, in the gravitational field (as A. Einstein did), neither at the middle scale of laboratory objects as gravitation. Some would be inclined to include them in a new theory of inertia. But a clear fluid dynamics conception of the non-electromagnetised neutral field-gas, suggests by itself and their very physics, that it is a separate to inertial and gravitation, field phenomena. The present suggested quantitative description is at the middle laboratory bodies scale and need not neither should be correct at the microscopic atomic or quantum level. Therefore we propose and suggest that for the moment we need not and should not change anything from the quantum mechanics. On the other hand we should and we must not do otherwise, than change Einstein’s equations of special and general relativity. *We must notice that Einstein’s gravitation gives gravitodynamic interactions of bodies , significantly different from the Newtonian gravitation (=gravitostatics) , but only at high relativistic speeds. What it is suggested here is the we do gave significant and similar to Einstein’s gravitodynamic interaction of bodies even at slow non-relativistic speeds.*

3.1 New relevant experimental facts

New: a) Aspden's gyroscope effect

b) DePalma' gyroscope effect

Old: a) Mercury's orbit deviation

b) Quantum random fluctuations of particles

3.2 Justification of the chosen theoretical innovations and modifications

In order to explain the buoyancy forces of Aspden gyroscope, we believe that we must describe a new interaction which is neither Newtonian gravitation neither Maxwell’s electromagnetism. We could classify it as Einsteinian gravitation, and as changes of the “space-time curvature” around the gyroscope. For this we would need a definition of gravitation which says that “any space-time curvature is gravitation” . But then what happens is that Einstein’s gravitation goes wrong and the observed experimental results are not predicted! (See exercise 3.2.1) The velocities are well below of the speed of light so the only prediction from Einstein’s gravitation is that the machine should attract with the usual

Newtonian attraction. We need not say that Newton is violated with this experiment for the same reason that when flying a helicopter we do not violate Newtonian gravitation .

We believe that the best solution is to introduce a new interaction which is nothing else of course than the old and controversial **field-gas drag force**. In the role of air is here the field-gas . Air drag forces on wings or airplanes is the object of intensive research .

With the next list we describe the type of modification of the conventional equations needed to predict numerically the observed experiments.

- 1) It is required a system of equations and a theoretical model of the field interactions that predicts both the known experiments and the new with consistency
- 2) It is required that the old equations are derived as an approximate limiting case or other special case.
- 3) It is required to describe the field as a gaseous material fluid.
- 4) It is required that the modifications are minimal or simplest so as to meet the properties 1,2,3.

Why we do not make use of Einstein's physics (relativity) to explain them:

Exercise 3.2.1: Prove that Einstein's field equations (hint make use of the linearization of the equations e.g. see [Misner C.W., Thorn K.S Wheeler J.A.]chapter 35 pp943-950) do not derive the experimental facts in the Aspden gyroscope effect

Exercise 3.2.2: Prove that Einstein's field equations (hint make use of the linearization of the equations e.g. see [Misner C.W., Thorn K.S Wheeler J.A.]chapter 35 pp943-950) do not derive the experimental facts in the DePalma's gyroscope effect

3.3 New physical hypotheses and laws

H1: Coupling of layers 0, -1(or in the positive counting 3, 4)

Any material body (layer 0, (or in the positive counting 3)) is immersed in the field-gas (material layer -1, (or in the positive counting 4)).

The (compression) waves of the (neutral) field-gas can go through bodies as the electromagnetic waves do too.

H2: Quantitative relation of drag pressures between the two layers

Any body charged or neutral, at motion, exchanges momentum and energy with the (neutral or not) field-gas. If \vec{J}_1 is the vector momentum density of the body at a point and \vec{J}_2 the corresponding of the field-gas it holds between them a simple proportionality relation:

(Drag-volume forces at the neutral state)

$$\vec{J}_1 = c_{1,0} \vec{J}_0$$

3.4 Derivation of the new equations from momentum conservation

In this paragraph we shall indicate how to obtain the equations of the new macroscopic neutral interaction from the momentum conservation

equation of fluids (Navier-Stokes, Euler equations). At this phase we assume absence of mater of layer 0, (or in the positive counting 3) and only the field-gas (mater of layer -1, (or in the positive counting 4)) .

Exercise 3

Step 0

Let us consider the momentum conservation of fluids in the form of differential equation as e.g. in the book of [Anderson] equation 2.61 p 101. (Navier-Stokes and Euler equations)

(3.4.1)

$$\frac{\partial(\rho u_i)}{\partial t} + \nabla(\rho u_i \vec{V}) = -\frac{\partial p}{\partial x_i} + \rho f_{xi} + (F_{xi})_{viscous}$$

i=1,2,3

ρ for the density, u_i for the i-coordinate of the velocity, \vec{V} for the vector of the velocity, f_{xi} for the xi component of the external volume forces, and F_{xi} for the xi component of the viscous force.

For non-viscous case with no drag- volume forces

(3.4.2)

$$\frac{\partial(\rho u_i)}{\partial t} + \nabla(\rho u_i \vec{V}) = -\frac{\partial p}{\partial x_i}$$

i=1,2,3

For steady flow of the non-viscous with no drag- volume forces
Field-gas

(3.4.3)

$$\nabla(\rho u_i \vec{V}) = -\frac{\partial p}{\partial x_i}$$

i=1,2,3

Step 1 Define corresponding variables for the neutral field-gas and state the equation. In the fluids there are usually 5 or 6 parameters: 3 for velocity, one for the pressure, one for the density, one for the internal energy density.

Step 2. Making use of the new physical law of coupling of mater with the field-gas as in the previous paragraph 3.3 and described by the equation

(3.4.4)

$$\vec{J}_1 = c_{1,0} \vec{J}_0$$

where J_0 is the vector of the momentum density of the field-gas and where J_1 that of the mater, supplement the equations of step 2. with the presence of matter. In order to it you must relate the volume force of the equation in step0 and step1 with the exchange of momentum density.

3.5 New predictions

1) Neutral waves at the speed of light :Would it be possible to have a compression wave that would not result in to a field-gas charge wave that is light? That is, neutral field-gas compression waves. If it is possible then we can anticipate the existence of a new type of neutral waves. Should we call them *neutral sub-light* or *potential* or *virtual light*?

The neutral field-gas density waves are waves governed by the equation

$$\frac{\partial^2 p}{\partial^2 x} + \frac{\partial^2 p}{\partial^2 y} + \frac{\partial^2 p}{\partial^2 z} - \frac{1}{c_d^2} \frac{\partial^2 p}{\partial^2 t} = 0$$

where p is the field-gas pressure and c_d is the speed of field-gas compression waves .

Notice that c_d need not be equal to the speed of light c but my speculations is that most probably $c_d=c$ as the electromagnetic waves do create also compression waves for each of the partial sub-fluids that they consist.

It is a challenge to technology to trace them. Their idea goes probably back to de Broglie. But we must not confuse the random motion of a particle in field-gas that is formulated by the Shroendinger equation and the field-gas density wave that is created by its motion ! Strictly and mathematically speaking they are different. The de Broglie waves may be at a larger scale around a particle, and are not compression waves! After the Aspden experiment we know that such weak **density waves in the neutral field-gas are created also parallel not only to light but to sound too!** This may explain why many people that for some reasons have become more sensitive than the usual, complain that they “hear” “voices” and the speaking (actual or internal) of other people miles or thousand of miles away. In actual speaking and because from the air compression waves (sound) by the previous laws , are created compression waves in the neutral field-gas at the same audible frequencies and word sequence and timbre too, except that they travel at the speed of light. If such waves reach the structure of the brain of the sensitive person, they reach the same areas of the brain that reach also the electromagnetic vibrations in to which the local air sound waves are converted by the ears. We do not have a proof that these areas and neuron structures of the brain are sensitive only to vibrations of electromagnetised field-gas , maybe they are sensitive to the neutral field-gas waves too, at audible frequencies. If it is so, then the sensitive person would “hear” in a more faint way “voices”. This also explains why some children born without ears at all and without even holes in their scalp in the place of ears, and without any of the physical mechanical function of the hearing of the ears, do can hear perfectly with the aid of standard devices that aid hearing, and which are designed for people that do have ears but cannot listen well. (Such an example in the history of known celebrities was the story Blair Hill, the son of the famous Napoleon Hill, author of the book “Think and grow rich” His story is written in the second chapter in this book)

2) Solar wind , Sun's ball pulsation (Helioseismology) , neutral field-gas waves, and earthly meteorology and seismology.

The physical effect that justifies mostly the term "antigravity" (a term that I hesitated much to use, I do not prefer, but I use only because it is already used widely in the web), is most probably the field-gas effect that goes parallel to the solar wind and creates the "northern lights" (aurora borealis) effect, close to the poles. It is known in classical physics of course that the solar wind already creates a pressure to any body close to the sun, e.g. to the planet earth, which has opposite direction to classical gravitational attraction. Nevertheless this pressure is due to particles of layer 0 (or in the positive counting 3), and not due to the field (layer -1, (or in the positive counting 4)). The laws of interaction of any moving body in the neutral field that we described, obviously give that also the neutral field gas, acquires a velocity parallel to the moving particles of the **particle solar wind** (layer 0, (or in the positive counting 3)) , that could be called **neutral solar field-wind** (layer -1, (or in the positive counting 4)). It is a challenge to experimental physics to separate its existence from the particle solar wind, the light pressure, and the gravitational attraction, and measure it as a separate effect. *This "antigravity" effect should not be confused with the Bernoulli effect (due to motion of the neutral field as well and because of the rotation of the sun) of higher (than the usual Newtonian) gravitational attraction of the planet Mercury by the sun,* which was noticed by Einstein and was considered an experimental proof of his theory of Gravitation. (**A very poor confirmation** for all that his space-time theory claims!). It should not be confused with the neutral solar field-wind antigravity effect as, they have just opposite directions as forces. In addition the discovered in the last years **pulsation of the sun's ball** within almost every 5 minutes at spherical harmonics ($m=3, L=6$), gives obviously **flow waves** and **elasticity waves** in the neutral field gas, that are in the context of the present 3rd neutral field macroscopic interaction (antigravity), that **do not have to propagate all of them, at the speed of light** (as the compression waves of the neutral field-gas do propagate at the speed of light), and are most probably **a lot easier to detect than any other fluctuations of the classical universal attraction field** (see remark in the paragraph 7.10 about the failure of the J. Weber experiments to detect "gravitational waves")

Helioseismology is a relatively new (after 1965) and beautiful discipline, with much pictorial material worked out my NASA, and Universities and easily found in the Internet. It is often called in the old style of Kepler, as the "**music of the sun's sphere**", with trapped in the plasma ball sound waves , standing waves at spherical harmonics etc. What is was not seemed to be understood, and is obvious in the light of the present theory and paper, is that this "music" is not really trapped in the sun, but as it induces, similar compression waves ("antigravity" waves), on the underlying neutral field gas (not light waves, that are waves involving charged fluctuations of the field-gas), it is a "music" that travelling in the speed of light reaches the earth's atmosphere! In their turn these waves by the reverse induction (as in the experiments of Aspden and DePalma), they influence the meteorological, and geological parameters and events. Therefore, not only the 11 years Magnetic cycle of the sun (and sunspots cycles) influences the fertility of the nature on earth, but also the sun's pulsations, may very well influence the earth's meteorology, and the

triggering of meteorological events, and earth's seismic activity. This influence is additional to the obvious through e.g. Alignment of the moon and sun, at moon's eclipses, or new moons, that create by classical gravitation, increased stress-tides, on the earth's solid surface, and atmosphere, that obviously result to increased probability of extreme weather, and seismic activity. (on the other hand of course celestial bodies in this way smooth-out earthly seismic activity, as they trigger in a periodic way many small earthquakes, that work-out the earth's surface stresses)

3) Medicine and Chinese acupuncture

The existence of such neutral field waves, may have significant applications in **Medicine**. If in addition it might be proved one day that, the living tissues of the human organism extend from the plasma of the cells (layer 0, (or in the positive counting 3)) to field-gas flow structures around the cells (layer -1, (or in the positive counting 4)) , then the view of this vorticity flow structures of the neutral field-gas or neutral currents, around the living cells, may give significant information about their state of health. Such information might be crucial one day for the **cure of the cancer**. There is extensive work by Wilhelm Reich, whose "orgone energy" at the inorganic level seems to be simply the kinetic energy of the field-gas at neutral state. With his "orgone accumulator box" it seems that his was collecting with the "green house effect" energy from the diffuse density waves of the field-gas at neutral state, in the box which was converted also to air heat. In addition the role of the neutral field-gas flows or neutral currents, for the life of the cells, might give explanations to the effects of the **Chinese acupuncture**, which for the moments is measured experimentally, with the differences of the electric conductivity, or resistance of living tissues. But as it is apparent from the paragraphs in this paper, the electric conductivity definitely depends on the flow of the neutral field-gas.

Some people in older cultures like Chinese or Indian, claimed that with sufficient exercise of the eyes, it could be possible for someone after having acquired this power, even to see this "glow" of the "neutral sub-light" and all the flow patterns around the human body, at very close distance to the skin probably like the fibbers of a woollen pullover (it could be called "floware" of neutral currents) and **knots and links of turbulent flow lines**. There is also the technique of **cirlian photography**, that takes pictures of the patterns of electric conductivity of the air around objects.

It has been published in the Journal "**Scientific American**" one such cirlian photograph, showing the network of capillary vessels as pattern of electric conductivity in air around a whole tree leaf, a long hour after half of the leaf has been cut-off! We must remind the reader, that vorticity flow structures (in this case not of air but of the field-gas) as it is rotational motion, is quite stable and lasts for a long time.

I was always wondering how it could help at all putting **leaves** on a wound or on the skin of a patient, (botany methods of cure), which was one of the most common ancient techniques of cure. No transfer of chemical substances seemed to take place, which is the basis of the Hippocratic and Asclepiads principle of cure, which is also used in

modern Medicine. Nevertheless if we know that the living cells have around them field-gas vorticity flow network, that is used for their reproduction and function, and that this can be taken either as direct structure, or indirectly as (kinetic) energy from that of the leaves, and used for the energising (kinetic energy) of their own flow structure, and finally as chemical energy of reproduced molecular plasma structures, then we get a rationale for this practice.

The author believes that Medicine shall face gradually a major discovery, that would be a **4th circulation system** in the human body (at the layer – 1, (or in the positive counting 4) of field-gas), if blood circulation, nervous impulses circulation, and lymphatic circulation system, are the first three. This 4th circulation system, acts probably like a (field-gas) **ventilation** and control system, and it has of course its nodes (that eastern tradition and terminology calls “Charkas”). Obviously it gives an excellent opportunity to Medicine to reach and influence internal organs, without surgery, from exterior points of the skin, in apparently, distant and irrelevant points to the organs, at the arms and legs etc. This is so for the same reasons, that it is easy in a building to reach interior rooms, from external nodes of the ventilation system, or reaching internal organs, through injections in blood vessels.

The author speculates also that, it is not so much the concept of “energy” that is crucial in this 4th circulation system, but rather the concept of “**information of life functions**”, with which the field-gas can be modulated to carry. The author speculates that much of the information for the organisation of the body, at the process of embryo-genesis, might very well be stored in such flow structures of the field gas instead in molecular structures as we believe. The information storing capacity of the field-gas (layer –1, (or in the positive counting 4)) is obviously vast compared to the information storing capacity of molecular matter (layer0, (or in the positive counting 3)). Maybe much of the theories of causes of inherited properties in living organisms, that today we attribute almost exclusively to **gins**, may change in the future, by supplementing the causes, to information stored in the layer –1, (or in the positive counting 4) of the field-gas structure.

I can recollect the theory of a German scientist during the 70s-80s whose name I cannot remember, who had a theory of field structure around the cells and the living organism, (similar to the neutral field-gas flow network that we mention), that when destroyed or torn apart, gives rise to cancer, and loss of the mutual coordination of reproduction of cells.

He had made a **remarkable experiment**, *in which he had put two groups of cells separated by a solid barrier made from some crystal. Although in contact with the barrier no , chemical molecule, or molecular virus, or other microbe could pass. One of the groups of cells had cancer the other was healthy. Nevertheless after some time the healthy group of cells got the cancer too! It is obvious that the patterns of field-gas flow can pass the glass, as the electromagnetic waves can do so too!* This experiment proves that the reproduction of the cells (the uncontrolled reproduction of the cells is the cancer) is also controlled by the flow patterns of the field-gas, and also **that ill field-gas flow patterns are sufficient to produce cancer**. It seems that we must shift our causality of events of functions of

the molecular plasma of cells (layer 0, (or in the positive counting 3)) to events in field-gas (layer -1, (or in the positive counting 4)). This is closer to truth in the same way e.g. that in a computer, the events of electromagnetic flow of bits in the **hardware**, have their causes in the **software** rather, than in the hardware. Once we may think of the neutral field-gas vorticity flow network, as a living structure, we might speculate of course for the existence of living micro-entities at the level of field-gas that in the form of field-gas viruses could be also responsible for the loss of the control of reproduction of cells, in other words the cancer.

The well known causes of cancer like excessive smoking, (action of the poison **nicotine** in the cells, which is at the layer 0, (or in the positive counting 3), that is due to particular molecules) etc, may not contradict this rational, as they may lead to the loss of coordination of the molecular cells with the field-gas flow pattern layer, thus again to the loss of the control of reproduction of the cells in other words to cancer. Scientists early in the 20th century were producing cancer to experimental mice simply by brushing repeatedly their ears with tar! **Tar** (which is also produced at smoking) is a strong electric insulator, and this property may block seriously the control of the flow of the field-gas in the 4th field-circulating system in the body, on the electrochemical functions of the cell plasma, and consequently to cell reproduction too.

Going back to the **Chinese acupuncture**, we might try to speculate on the basic principles on which it functions, in the light of the above new physics. We should not fail to notice that the acupuncture needles increase obviously the coordination and electric **conductivity** between the molecular tissues and the field-gas flow structure above the skin. In addition the well known effect of electrostatic **outflow of charge** from any vertices of a charged object (in this case the outward end of the needle of acupuncture), indicates that it takes place an outflow of electrons, if the point and the needle is negatively charged (or inflow, if it is positively charged) that obviously changes the electric potential of the tissues, at the point of the acupuncture needle. This in its turn influences the flow of the (neutral) field-gas and **restores the circulation** of the field-gas, along the channel, that passes from the point. Restoring the circulation, in this 4th **field-gas circulations system** of the organism, restores part of the original health of the organism.

As a new measuring instrument for such a research based on the new physics of the neutral field-gas *I would suggest an instrument that would measure the linear and rotational flow of the neutral field-gas around living tissues and the skin.* This could be of course a purely mechanical instrument, as the Aspden gyroscope effect proves that there is an induced mechanical force on objects, but as this induced force is very weak, and the flow also must be already quite weak, an electrical instrument would be more effective. The principle here could be to use the induced electric currents in very sensitive wires or tiny coils, from the linear flow and vorticity of the neutral field-gas. If this again is very weak (it is the equations that should derive the expected quantities prior to the design and testing of the instrument), then we should provide currents to the circuits, and then measure the changes in resistance, and conductivity in the circuit as we move it across various areas of the air very close to the

tissues. This is the method actually used to trace the channels claimed by the charts of acupuncture, and again it is the electric conductivity that is photographed by the cirlian photographic technique. We can produce in this way **charts of conductivity** of all the surface of the human body.

Then the design of a set of experiments to verify methods of prevention and cure of the cancer would be as follows

a) Measurement of the electric conductivity of all the body, preferably at a very small distance from the skin (1-2 mm), and plot of a chart of it.

At the areas that the conductivity is low, lower than a level, (which means low flow of the neutral field-gas at these areas) there is increased probability of occurring of cancer, or other uncontrolled, cell multiplication. If the chart would give a uniform smooth pattern with low variations, then this might be the sign of good health. A parallel chart of the molecular temperature distribution and also of the (no matter how weak) gravitational field of the body (as we shall see its potential, is the field-gas temperature) , would be also of good help for comparisons to find the “weak” areas.

b) Next there should have a method to revive and increase the vorticity flow of the field-gas at these areas. Would this be, with direct mechanical vibrations on the surface of the skin? Would it be with the use of sound waves of a wide range of frequencies? Would it be with the use of magnetic field of particular forms e.g. uniform? Would it be using light and heat? Would it be with the use of acupuncture needles? It is something that experiment, and medical practice should choose. The results should be tested again with the electric conductivity and potential of the of the body

c) Once a) and b) have been practiced we should measure, correlations and dependencies of statistical frequencies on organisms, that get cancer with the factor (and confounding) that their electric conductivity charts had “dark” areas of low conductivity. Statistical study of the correlation of restoring the smoothness of the electric conductivity chart, with the cases that resulted in cancer. Finally a direct measurement on the effects of such “reviving” techniques and restoring of the electric conductivity smoothness, to the speed of spread of the cancer, or even to stopping of spreading it, in other words posterior cure of it , if at all.

d) If the statistical results confirm that cancer follows, after some time, with higher, probability, areas of low conductivity in the conductivity chart of the human body, then a preventive treatment, can be designed, that monitors the conductivity chart, at check-ups and restores the conductivity, in the "darker areas" with one of the methods, that it is tested that it does so.

As far as I know there were experimentalist that performed experiments, of measuring the electric conductivity and potential of areas of the skin or of the air close to the skin. They did that with not very sensitive and sophisticated devices for small space-scale areas close to cells, without appropriate fundamental physics about the results, and what they were indirectly measuring behind the electric conductivity. In addition to interpret the results they were transcending from the life functions of the

cell to the states of consciousness of the human subjects they used in the experiments.

The reader should be warned nevertheless, that the discovery of how life extends, depends and is controlled by the layer of the field-gas has also its **dangers**. These dangers are of the same nature as those that appeared in the discovery of chemistry and biology. The discoveries did not only give new methods to cure in Medicine, but under criminal will, they produced also new forms of subtler crime (e.g. poison murders, chemical weapons etc). It is obvious that deeper understanding of life and higher control of it, requires also **higher maturity** in the consciousness of the individual and the society. Maybe that was also one of the many reasons, that such knowledge has remained partly and officially in “exile” during the 20th century, in spite the obvious suggestions of the existence of the layer of the field-gas by the great masters in Physics, like Newton, Euler, Laplace, Maxwell etc.

4) Neutral-field magnetic effects. We may anticipate of course as possible predictions a large range of dynamic effects of moving bodies in the air-vacuum of the type of aerodynamic effects. They could be both repulsive or attractive or neither.

They should be weak and neutral dynamic effects not supporting very practical propulsion applications. A much stronger can be obtained if in addition the field-gas is electromagnetised and the Lorenz forces are in action

3.6 Short explanation of the experimental effects.

a) Aspden’s gyroscope experiment.

Once we have described the neutral field-gas as a fluid with energy density and momentum, it is of no surprise that the Magnus effect appears not only in air but also in the vacuum.

Exercise 3.6.1 Try to derive the experimental relation of $F=2 \cdot 10^{-5} M \omega r$ ($gr \cdot cm$)/ sec^2 (see [Aspden, H] and [Hayasaka, H. Tackeuchi S.]) from the equations of the field-gas

(e.g. for 50 cm device and 3000 rotations per minute the buoyancy force in vacuum is of the order of 0.05 cm/sec^2 multiplied by the total mass. Compare it to the corresponding buoyancy force in air, of the same device at the same speed of rotation and due again of the Magnus effect but this time of air and not of the neutral field-gas in air-vacuum.)

c) DePalma’s gyro drop experiment.

It seems to me that it is created a fluid-dynamic effect to the spinning (in air vacuum) gyro, while it is falling, and when it is rotating which does not occur when it is not rotating. This should give the difference in the speed of falling. I cannot give an accurate explanation not even qualitative as the inventor does not indicate in his description the orientation of rotation of the gyro. The gyro drops faster when it is rotating.

3.7 Experimental facts to investigate:

1) Exact and more experiments in order to determine the field-gas drag-force constant in the relation of moving bodies in the vacuum.

$$\vec{J}_1 = c_{1,0} \vec{J}_0$$

2) By using such experiments together with other in the new electromagnetism and new gravitation an estimation of the average density of the field-gas. It should be higher than the density derived from say the energy density of the electromagnetic field or the conventional gravitational field when converted to mass density.

3.8 Final remarks

Remarks about the definition of inertial mass:

Strictly speaking, if a flow-dynamic effect of resistance or not, is always attached to a state of motion of a body in the field-gas, then we might attribute it as change of the inertial mass. But from the logical point of view it is always better to keep as mass the material mass (number of particles) and derive the dynamic effect by flow dynamics. This is I think the way we should deal with either with increase of inertia of bodies due to linear velocity (Einstein) or the rotational dynamic effects of Aspden's gyroscope, and DePalma's gyroscope.

The new macroscopic neutral interaction of bodies could very well be called ***Kinetic universal neutral interaction*** instead of ***antigravity***. And the term interaction would refer obviously not so much as dynamic effect between moving bodies as dynamic effect between the neutral field-gas and the moving body.

4. Review of the Maxwell's Electromagnetised field-gas.

We shall try to go back to the original mentality of Maxwell, that talked not of the electromagnetic field but of the electromagnetised field-gas. It seems as if the linear equations of Maxwell, (that can also be summarized by the D'Alamberts hyperbolic wave equations on the scalar and vector electromagnetic potentials) were design specifically and only for one only category of applications: "*Communications through electromagnetic waves*"! As we see it under the light of the present article's new physics, the conventional equations are hardly appropriate for "*Propulsion*". It has also been remarked that the conventional electric motors (a design usually credited to N. Tesla) are to be as if a "wrong turn" in the future history of electromagnetic motors, and I say in a milder attitude, that maybe they were a necessary "hard twisted design" in order to get as much as possible in exchanging electric energy with mechanical energy under the limited validity of a system of linear equations (Maxwell's equations) that are nevertheless exactly appropriate for communicational applications. Maybe behind this order of steps in the evolution of science there is a hidden wisdom: First to develop the mind before we proceed to power.

The equations that govern the Maxwell's electromagnetism are the next:

The Langrangian of the Maxwell's Electromagnetised aether :

$$L = \frac{1}{8\pi} (\vec{E}^2 + \vec{B}^2) + \frac{e}{c} A u - e a_0 - m c^2 \sqrt{1 - \frac{u^2}{c^2}}$$

(4.1)

Where the vectors E and B are the intensity of the electric and magnetic field in the vacuum relative to matter made of protons, electrons and neutrons (1st micro scale matter) and are given by the scalar and vector electromagnetic potentials a_0 and A by the formulas :

(4.2)

$$\vec{E} = -\frac{1}{c} \frac{\partial \vec{A}}{\partial t} - \text{grad} a_0$$

(4.3)

$$\vec{B} = \text{rot} \vec{A}$$

The other terms are also self evident : m for the particle's mass ,e for its charge u its velocity .In a continuous formulation we may use ρ for the charge density and j (= ρu) for the current density .

The conservation of charge gives

(4.4)

$$\frac{\partial \rho}{\partial t} + \text{div} \vec{j} = 0$$

this, by its turn, gives for the potentials :

(4.5)

$$\frac{\partial a_0}{c \partial t} + \text{div} \vec{A} = 0$$

By variation of the previous energy density relative to the velocity of the particle we get the Lorentz force.

(4.6)

$$\frac{dp}{dt} = eE + \frac{e}{c} v \times B$$

This force is a momentum exchange when the electromagnetised field-gas and charged matter do not balance.

By variation of the potentials we get the Maxwell's equations :

(4.7)

$$\frac{\partial^2 a_0}{\partial x^2} + \frac{\partial^2 a_0}{\partial y^2} + \frac{\partial^2 a_0}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 a_0}{\partial t^2} = -4\pi\rho$$

(4.8)

$$\frac{\partial^2 A}{\partial x^2} + \frac{\partial^2 A}{\partial y^2} + \frac{\partial^2 A}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 A}{\partial t^2} = -\frac{4\pi}{c} j$$

From these equations we get directly the familiar form of the Maxwell's equations :

(4.9)

$$\text{rot}E = -\frac{1}{c} \frac{\partial B}{\partial t} \quad (4.10)$$

$$\text{div}B = 0 \quad (4.11)$$

$$\text{rot}B = \frac{1}{c} \frac{\partial E}{\partial t} + \frac{4\pi}{c} j \quad (4.12)$$

$$\text{div}E = 4\pi\rho$$

Maxwell calculated the electromagnetised field-gas energy density as:

(4.13)

$$\varepsilon = \frac{E^2 + B^2}{8\pi}$$

while he also calculated that the electromagnetised field-gas **excess** pressure (due to electro magnetisation) matrix as :

(4.14)

$$\sigma_{ab} = \frac{1}{4\pi} \{-E_a E_b - B_a B_b + \frac{1}{2} \delta_{ab} (E^2 + B^2)\}$$

He made no distinction of these stresses as being inside a dielectric and magnetised material body, in which case E and B must include the constant of dielectrics and of magnetisation ,or if it is in field-gas or the "vacuum" as we say to day.

From these formulas is deduced the momentum density of the electromagnetised field-gas by dividing with c^2 the Poyning vector :

(4.15)

$$S = \frac{c}{4\pi} E \times B$$

(4.16)

$$P = \frac{1}{4\pi c} \vec{E} \times \vec{B}$$

In the modern fashion, we write these as the entries of the energy momentum matrix (tensor)

(4.17)

$$T^{ik}_{(em)} = \frac{1}{4\pi} \left(\frac{1}{4} g^{ik} F_{mn} F^{mn} - F^{il} F^{km} g_{lm} \right)$$

or

$T^{ik}_{=}$

ε	S_x/c	S_y/c	S_z/c
S_x/c	σ_{xx}	σ_{xy}	σ_{xz}
S_y/c	σ_{yx}	σ_{yy}	σ_{yz}
S_z/c	σ_{zx}	σ_{zy}	σ_{zz}

The previous review was made in order to make use of the formulas and proceed to the concepts of non-linear Electromagnetism.

5.The Maxwell Electromagnetised aether and the Dirac's neutral aether. Speculations about the new electromagnetism.

5.0 Introduction

In this paragraph we shall suggest what is the new electromagnetism and how to try to obtain equations for it. The main applications follow from the possibility of new electromagnetic propulsion. As there not sufficient published quantitative measurements, we follow here the path of figuring out the necessary equations from the qualitative description of new experimental discoveries, in the Internet, and the most probable scenario for modification of the equations, that is consistent with the insights of the old great masters in physics and their visions for future developments in the science of physics. Only detailed experimental measurements could prove a system of equations as valid in the details. So for the present, the author is not in a position to verify the suggested equations but only

qualitatively. If future experimental researchers verify the suggested equations then the underlying physics suggested here should be accepted as true.

5.1 New relevant experimental facts

The most relevant discovery is the new electromagnetic propulsion of the J. Searl's motor (see paragraph 0 and references).

5.2 Justification of the chosen theoretical innovations and modifications

The new experimental discoveries lead to the next requirements:

- 1) It is required a system of equations and a theoretical model of the field interactions that predicts both the known experiments and the new with consistency.
- 2) It is required that the old equations are derived as an approximate limiting case or other special case.
- 3) It is required to describe the field as a gaseous material fluid.
- 4) It is required that the modifications are minimal or simplest so as to meet the properties 1,2,3.

The idea is that it is required a minimum modification of the equations that with some coupling equations of mater and the field-gas give the Maxwell equations.

The first to give key was Mie (see [Weyl] paragraph 26 pp206-217).

Mie suggested to interpret the scalar electromagnetic potential a_0 as the pressure of a gas in field-gas and the scalar electromagnetic potential A as its momentum.

In the light of the above interpretation the Maxwell's equations

Formulated for the potentials :

(5.1)

$$\frac{\partial^2 a_0}{\partial x^2} + \frac{\partial^2 a_0}{\partial y^2} + \frac{\partial^2 a_0}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 a_0}{\partial t^2} = -4\pi\rho$$

(5.2)

$$\frac{\partial^2 A}{\partial x^2} + \frac{\partial^2 A}{\partial y^2} + \frac{\partial^2 A}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 A}{\partial t^2} = -\frac{4\pi}{c} j$$

acquire fluid dynamics meaning and are obviously forced waves of some sub-fluid of the field-gas created by the motion or presence of protons and electrons.

The similarity with the wave equation of sound waves in air with the D'Alambertian hyperbolic partial differential operator is remarkable:

(5.3)

$$\frac{\partial^2 p}{\partial^2 x} + \frac{\partial^2 p}{\partial^2 y} + \frac{\partial^2 p}{\partial^2 z} - \frac{1}{c^2} \frac{\partial^2 p}{\partial^2 t} = 0$$

This suggest nevertheless, that if (5.3) is linearised approximation, derived from the Euler equation (momentum conservation) of gasses. In [Landau-Lifshitz] the equation (5.3) is derived from the equation of Euler with the assumption of potential flow (see [[Landau-Lifshitz] pp 245-246).

This definitely not the case here because the equations

(5.4)

$$\vec{B} = \text{rot}\vec{A}$$

that defines the magnetic intensity as the vorticity (angular velocity) of a sub-fluid of the field-gas .

As we have already made use of the dynamic parameters of the neutral field-gas, in the paragraph 2, we must deal here most probably with sub-fluids of the neutral field fluid. Thus we are lead to introduce three sub-fluids of the neutral field-gas: The plus, the minus and the neutral. Their superposition in naturally balanced proportions must give the neutral field-gas (Dirac's gas) as in the paragraph 2.

In the present approach of the three sub-fluids, the electromagnetism is a "non-mechanical" interaction relative to the two layers, layer 0, (or in the positive counting 3) and layer -1, (or in the positive counting 4) that we consider. To make it a purely mechanical interaction we should include at least one more material layer, layer -2, (or in the positive counting 5). In the case of gravitation it was necessary also to include three layer, layer +1, (or in the positive counting 2), layer 0, (or in the positive counting 3), layer -1, (or in the positive counting 4), to explain in a purely mechanical way the gravitational interaction of celestial bodies. In the present approach we assume at least three different types of aetheron particles, (we could call them the micro-proton, the micro-electron and the micro-neutron) that interact by simple Coulomb electrostatic type interaction with "infinite" speed. We do not assume any "magnetism-type" interaction for them inside the field-gas (layer-1, (or in the positive counting 4)). The first as far as I know during 20th century, to conceive the charge of the field-gas (not the material charge) was Shroendinger in his analysis of the two slit electron experiment (see [Jammer M]), an analysis that was unfortunately soon forgotten after the dogma of the "quantum vacuum".

The traditional magnetism is derivable with this simple "electrostatic" interaction after fluid dynamic effects. Nevertheless we are still with "non-mechanical" interaction. If we would like to derive it from neutral fluid dynamics, we should include the fluid dynamics of layer -2, (or in the positive counting 5). There (at layer -2, (or in the positive counting 5)) the duality of positive and negative charge (of field-gas particles of layer -1, (or in the positive counting 4)), is resolved to the concept of force

interaction of fluids at motion and the right hand and left hand orientation of geometry.

Then in its turn the electrostatics derive ordinary magnetism in its layer after fluid dynamics! Thus the details of a purely mechanical derivation of electromagnetism would require layer -2, (or in the positive counting 5) too! But we do not intent to do so with electromagnetism as far as the mathematical formulation is concerned and prefer to include in the equations only the momentum and energy of layer-1, (or in the positive counting 4), in order to be as close as possible to the Maxwell's equations. And thus by introducing the "approximating" three sub-fluids , the non-mechanical energy terms of Maxwell are necessary in the equations. History of physics supports only layer -1, (or in the positive counting 4), and even this was partly withdrawn during 20th century, so it would be too daring for the moment to introduce it. And this approximation is good enough to give the required new macroscopic effects of electromagnetism.

5.3 New physical hypotheses and laws

Macroscopic keys for the new electromagnetism

H 5.1 The neutral field fluid consists of three sub-fluids, the plus, the minus and the neutral. In natural balance they give the neutral field fluid. When the mixture is disturbed by charged matter (layer 0, (or in the positive counting 3)) , one of the two sub-fluids the minus or the plus is of higher density. This makes the electromagnetised field-gas of Maxwell. Around electrons is accumulated the minus sub-fluid, and around protons the plus sub-fluid.

H 5.2 We may write simple equations about the three sub-fluids from the standard equations of mixture of gasses.

The +,0,- subscripts mean that the quantity is of the plus or neutral or minus partial sub gas of the field-gas .

P: pressure of the field-gas

$$P=p_0+p_++p_-$$

ρ : density of the field-gas

$$\rho=\rho_0+\rho_++\rho_-$$

E: internal energy of the field-gas

$$E=e_0+e_++e_-$$

U velocity of the field-gas

$$U=(v_x,v_y,v_z)$$

$$\rho U=p_0U_0+p_+U_++p_-U_-$$

Or

$$J=J_0+J_++J_-$$

Where J is the momentum density.

H 5.3 *Macroscopic keys for the electromagnetism.*

The relation of the classical electromagnetic potentials and the dynamic variables of the three sub-fluids are as follows.

Vector electromagnetic potential

$$A = \lambda_1(p_- U_- - p_+ U_+) = \lambda(J_- - J_+)$$

Scalar electromagnetic potential

$$a = \lambda_2(p_- - p_+)$$

H 5.4 The coupling of the charged mater (layer 0, (or in the positive counting 3)) with the three sub-fluids of the field-gas (layer -1, (or in the positive counting 4)) is also described in the next paragraph. We assume that there is a simple proportionality of the momentum density of charged mater with the momentum density of the corresponding reversed sign plus or minus and neutral sub-fluids. The positively charged mater influences the neutral and negative sub-fluids, the negatively charged mater influences the neutral and plus sub-fluids.

Remark: This coupling is more fundamental than Biot-Savard law in electromagnetism and it derives the later by field-gas flow arguments. Notice that including the influence of the new neutral interaction at paragraph 3, we deduce that only the neutral sub-fluid takes drag-pressures from all states of mater , neutral , positively or negatively charged.

5.4 Derivation of the new equations from momentum conservation

We describe in this paragraph how to obtain the equations of the new electromagnetism. They are non-linear and they do not constitute a Hamiltonian or Langrangian system. In addition the potentials are not gauge invariant, as they represent real material (field-gas or material layer -1, (or in the positive counting 4)) states. What is combined here is a the electrostatic version of electromagnetism, in other words of Coulomb's law of attraction and repulsion (but for the field-gas rather than for mater) and the new neutral interaction of the Field-gas. The results is the new electromagnetism and also after a special type of linearization, the conventional equations of Maxwell's electromagnetism.

Exercise 5.4.1 Field equations in the absence of matter

Step 0 State the equations that relate the Maxwell's electromagnetic potentials with the dynamic variables of the plus , neutral and minus sub-fluids of the field-gas

Step1 Start with the equation of momentum conservation (Navier- Stokes) For each of the three sub-fluids of the field-gas. You may use it in the form of differential equation as e.g. in the book of [Anderson] equation 2.61 p 101. (Navier-Stokes)

(3.4.1)

$$\frac{\partial(\rho u_i)}{\partial t} + \nabla(\rho u_i \vec{V}) = -\frac{\partial p}{\partial x_i} + \rho f_{xi} + (F_{xi})_{viscous}$$

i=1,2,3

ρ for the density, u_i for the i-coordinate of the velocity, \vec{V} for the vector of the velocity, f_{xi} for the xi component of the external volume forces, and F_{xi} for the xi component of the viscous force.

The way that the three partial sub-fluids combine to give momentum and energy conservation of the total field-gas is simple superposition of

momentum and energy (see e.g. [Woods, L.C.] chapter 9 "Fluid mixtures" pp 200-222)

The resulting system of equations describes only the mechanical field-gas properties of the new electromagnetism. Not its interaction with charged mater. We have not included any interaction between the parts of say plus sub-fluid or between minus and plus sub-fluid. At this approach of the three sub-fluids, the electromagnetism is a "non-mechanical" interaction relative to the two layers, layer 0, (or in the positive counting 3) and layer -1, (or in the positive counting 4) that we consider. To make it a purely mechanical interaction we should include at least one more material layer, layer -2, (or in the positive counting 5). In the case of gravitation it was necessary also to include three layer, layer +1, (or in the positive counting 2), layer 0, (or in the positive counting 3), layer -1, (or in the positive counting 4), to explain in a purely mechanical way the gravitational interaction of celestial bodies. As we do not do so in electromagnetism, in order to be as close as possible to the Maxwell's equations, and not to introduce layer -2, (or in the positive counting 5) in the equations we result in introducing the "approximating" three sub-fluids , the non-mechanical energy terms of Maxwell are necessary in the equations. History of physics supports only layer -1, (or in the positive counting 4), and even this was partly withdrawn during 20th century, so it would be too daring for the moment to introduce layer -2, (or in the positive counting 5).

Step2 State the energy conservation of each sub-fluid and make the assumption of absence of heat and constant temperature in time and space and of negligible viscosity and diffusion among the partial sub-gasses. In the energy terms of each of the two (plus or minus) sub-fluids we add a term of electric energy density, so that for their combination we take the conventional energy density formula.

$$\varepsilon = \frac{E^2 + B^2}{8\pi}$$

Add the equations of this assumption σ in the system of equations.

Step3 State the conventional equations of Maxwell that define the vectors of electric E and magnetic field B from the scalar a and vector electromagnetic potentials A , in order to define the traditional quantities of E (electric intensity) and B (magnetic intensity).

$$\vec{E} = -\frac{1}{c} \frac{\partial \vec{A}}{\partial t} - \text{grad} a_0$$

$$\vec{B} = \text{rot} \vec{A}$$

To these equations add the continuity equations of the partial sub-fluids of the field-gas that give the Lorenz conditions of the potentials in the conventional equations.

The result is the system of equations of the new electromagnetism in the absence of matter

Exercise 5.4.1 Field equations in the presence of matter

In the above picture we add the coupling with the charged matter. The plus and minus sub-fluids need not behave like positive and negative charge by themselves in this formulation. The only assume that the "negative" subfluid is because it is accumulated around a material positive charge. In the same way the "plus" sub-fluid is accumulated around negative material particles.

$$\frac{\partial^2 a_0}{\partial x^2} + \frac{\partial^2 a_0}{\partial y^2} + \frac{\partial^2 a_0}{\partial z^2} = -4\pi\rho$$

Step 0 Make use of the new law of coupling (simple proportionality) of moving charged matter with charged field-gas. Make sure that the static interaction of static charged matter with the field fluid results in the simple equation of the conventional Maxwell electrostatic field around say a charged particle, in other words the Poisson equation

Step1 Make use of the new law of the neutral interaction of coupling (simple proportionality) of moving neutral matter with neutral field-gas.

Step2 We have described how the mater is coupled with the field fluid, which is a symmetric effect. On the other hand conventional Maxwell's electromagnetism has different equations of how the field is created by mater, and how the field acts on mater. It is not direct how the present formulation might give the conventional Lorentz force equation.

$$\frac{d\vec{p}}{dt} = e\vec{E} + \frac{e}{c}\vec{v} \times \vec{B}$$

The reasons is that this Lorentz equation is only approximate. We must assume nevertheless the electrostatic part of the Lorenz forces, of the action of the electrostatic field on material charges as part of the derfinition of the plus and minus subfluids.

The difficult part is to obtain the action of the magnetic field on a moving charge. For this you have to resort on that the Magnetic field is the vorticity of a sub-fluid, and the effect of a spinning gyroscope, that when a force is acting on it, the gyroscope moves exactly on a vertical direction to the acting force.

Step3 Add all the above equations to obtain the full system of non-linear equations for the new (field-gas) electromagnetism in the presence of mater.

As the Faraday law is thus only a coarse approximation the energy-density flux and also the energy-momentum matrix are only in this measure approximate!

As we do not have electromagnetic measurements data of the J Searl experiment we cannot verify that this modification can give the quantitative measurements of the new electromagnetic propulsion but only assume and deduce it qualitatively.

5.5 Derivation of the old equations

This task is even more difficult than the task of deriving the true equations of electromagnetism.

Exercise 5.5.1 5 Derivation of the classical Maxwell's equations from the new equations of electromagnetism.

$$\frac{\partial^2 a_0}{\partial x^2} + \frac{\partial^2 a_0}{\partial y^2} + \frac{\partial^2 a_0}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 a_0}{\partial t^2} = -4\pi\rho$$

Step 0 We state the system of equations of the new electromagnetism and the system of linear equations of Maxwell in the form where it is stated for the potentials, of conventional electromagnetism, which is the target system of equations. In other words the target system of equations is

$$\frac{\partial^2 A}{\partial x^2} + \frac{\partial^2 A}{\partial y^2} + \frac{\partial^2 A}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 A}{\partial t^2} = -\frac{4\pi}{c} j$$

Step1 We notice the similarity of the above equations with the hyperbolic equation of compression waves in a fluid by D'Alambert

$$\frac{\partial^2 p}{\partial x^2} + \frac{\partial^2 p}{\partial y^2} + \frac{\partial^2 p}{\partial z^2} - \frac{1}{c^2} \frac{\partial^2 p}{\partial t^2} = 0$$

As this equation is derived by linearization from the Navier-Stokes equations of fluids, this gives as a hint that we can also derive it from the Navier-Stokes equations that we have used. But beware! The traditional way to linearize Navier-Stokes is by making the assumption of potential flow, that does not therefore gives vorticity, while here, the magnetic field is already the vorticity of some sub-fluid. Therefore we have to make use of alternative paths to linearize, with alternative hypotheses.

State carefully all the used assumptions to make the linearization

$$\sum_{k, k \neq j} \frac{\partial^2 A_k}{\partial x_j \partial x_k} = 0$$

For example if you use in the derivations that

Then you must put it in the hypotheses.

Step2 Having obtained the equations of conventional electromagnetism in the form for the potentials, make use the standard procedures to derive the classical equations, over the E, and B. Verify the equation of energy density and tensor of energy-momentum of classical electromagnetism (or electromagnetic pressures of Maxwell on neutral bodies)

Step3 The above complete the derivation of the old electromagnetism from the new electromagnetism.

Simple experimental devices can be defined, where the Maxwell's linear electromagnetism predicts absolute balance and the magnus effect does not occur, while the non-linear electromagnetism predicts the magnus effect and buoyancy forces

We can hope, that with this non-linear electromagnetism together with the new insights for the gravitational field, we might be able to predict quantitatively why the J.Searl's magnet motor gives its levitation. Notice on the other hand that such equations cannot help us to predict the buoyancy force of the Aspden's gyroscope as it is the magnus effect of the neutral field-gas. Thus even the previous non-linear electromagnetism would require modification to include the interaction of the field-gas charge with the neutral field-gas and of the neutral field-gas with neutral or not bodies. In other words a modification of the non-linear electromagnetism in order to include neutral aetherodynamics

5.6 New predictions

An important feature of the new non-linear equations is that they permit predict the **magnus effect** which is the basic idea of the **principle of wings** and the idea of a **propeller** for the new electromagnetic field. Thus we may anticipate the existence of a simulation of propellers with electric currents configurations and the existence of electromagnetic field-helicopters or electromagnetic field-tornado generators . This propulsion is not the weak propulsion of the neutral field-gas, but of strong momentum exchange as the Lorenz forces are in action, for charged material parts. We may anticipate also the existence of simulations of the turbine engine, with electric currents. Nevertheless it is not direct to realize if it is adequate for transportation in the vacuum if only conventional forms of energy supply are used. But if power not only by the energy in the currents but also with the energy of the gravitational field then there is no doubt about it. For this we shall discuss more in the next paragraphs. Simple primitive or miniature flying discs have been manufactured all over the world by at least 300 different inventors.(see Lifter device replications in <http://jnaudin.free.fr/html/liftbldr.htm>) They exhibit the half of what is required in a flying disc, that is only the electromagnetic propulsion or lifting effect, not the energy production effect.

This should be considered the new electromagnetic propulsion that may change the landscape in the technology of transportation, inside and outside the planet.

5.7 Short explanation of experimental effects.

New propulsion at the J Searl's motor:

It seems to me that the rotating magnets and the rings in this motor create a small tornado in the electromagnetised field-gas. Simple momentum conservation should give that there is absorbed momentum by the motor, in a axial direction opposite to the gravitation acceleration. The system should not be much different than the momentum exchange by a propeller in air or a turbine engine, or rather of a tornado pushing up an object at its top, only that here is not the air but the electromagnetised field-gas, and not only the neutral field-gas drag-forces that are weak, but the Lorentz forces that are much stronger. For more details for the explanation of the creation of an electromagnetic small tornado at the base of the motor we must come back to this after the new insights in the gravitation. Assuming here nevertheless that such a small tornado is indeed created, and its energy for rotation is powered by the gravitational field, then it is simple Lorentz forces analysis to derive the observed propulsion. The electromagnetic tornado, has magnetic field B parallel to the axis of rotation and also electric field E also parallel to the axis of rotation. The axial currents of the motor which are created, by the centrifugal force, are acted by the magnetic field of the (external) tornado and the result is after the formula of the Lorentz forces, an acceleration of the rotation. Which is indeed observed. The outflow of electrons has rendered the motor, electrically charged, and the action of the axial electric field E of the (external) tornado, gives the linear upward buoyancy force. The above explain both the rotational and linear propulsion.

It is obvious that

- a) **The same effect can be reproduced without mechanical rotation, but simply with circuits.** An obvious such configurations of circuits would be 1) a lower spiral-conic (the vertex of the cone pointing downwards) coil that would initiate the external tornado which must have upward spiral motion, and which once created is supported by the potential energy of the gravitational field. 2) An upper ordinary cylindrical coil, of a separate circuit, with opposite downward magnetic field to the magnetic field of the lower coil and the external tornado, to take as repulsion the upward magnetic field of the (external tornado) as a "wing". The results is a small miniature flying disc powered with DC current.! Care must be taken to regulate the lower electromagnetic tornado to keep its intensity within limits.

Remark added 2005:Also I would like to draw attention to the old **Biefeld-Brown effect** discovered by **Thomas Townsend Brown in 1928** and the patent of T. Brown on asymmetric capacitors. See <http://jnaudin.free.fr/lifters/main.htm>

The construction described in the previous internet link (lifter project, it lifts a small mouse!) of a triangular lattice with hexagonal symmetry ,and with triangular capacitors, that are asymmetric (the one pole is with a foil instead of wire) is the simplest toy-flying disc with DC current that I know. It seems to me that this effect of lifting can be explained with the new insights of gas-field dynamics when a small

wind or tornado is created in the gas-field) Exactly as in the molecular air there different designs that may lead to flying (e.g. Helicopters, Turbine engine airplanes, wind airplanes without engine etc) so there are many different designs that in the field-gas would produce the flying or lifting effect. In the field-gas (electromagnetised or not)

- b) **It is also obvious that there are modifications, and improvements to the usual electric motors, so as to take advantage of such rotational only propulsion effects, powered by the gravitational field, and give more mechanical rotational energy than the electric energy consumed to power them!** The gain here is not electric energy but, mechanical rotational energy. To do so, we should take advantage of the rotation already existing in an ordinary motor, and create a cylindrical magnetic field parallel to the axis of rotation. (e.g. interior of an external enclosing coil, or magnet on the rotor with B parallel to the axis of the rotor). This magnetic field is amplified by the potential energy of the gravitational field as described in the paragraph 7.8. If we have provided in addition the rotor of the motor with radial currents vertical to the axis of rotation, the magnetic field above would act on them by Lorentz forces and would amplify the rotation of the motor (at the cost of the potential energy of the gravitational field and not at the cost of the electric power supply!) **The above explain the existence of at least 30 different type of generators in the Internet that generate more energy that is given to them. There are plenty many different designs that are possible besides that of DePalma, Searl etc**

5.8 Experimental facts to investigate:

The next seem to be necessary if it is to clarify the necessary modifications for the new macroscopic electromagnetism.

1) Measurements of the constants λ_1, λ_2

2) Measurements of simple dynamic effects around simple electric current configurations that are not predictable from Maxwell's equations.

E.g. can we simulate the magnuss effect of rotating cylinders in air with coils and appropriate configurations of the electromagnetic field. And get a force not predictable by Maxwell?

3) The new non-linear electromagnetism which is a synthesis of the neutral interaction called often antigravity and the older linear electromagnetism of Maxwell, has experiments that prove it more correct compared to the Maxwell's linear electromagnetism. Such experiments are of two kinds:

- a) **Interaction of moving charged or magnetised bodies**
- b) **Interaction of two moving bodies or one moving and the other not, from which only one is charged or magnetised and the other is neutral and non-magnetised.**

The second case gives the most spectacular deviations from the Maxwell's electromagnetism as, the latter predicts no interaction at all of a neutral and non-magnetised body, moving or not with a charged or magnetised

body. E.g. *A insulator cylinder as core of a coil, has certainly according to Maxwell no influence at all to the current of the coil. But in the present non-linear electromagnetism, if the insulator cylinder is fast rotating, then according to the Aspden experiment, it applies drag forces to the neutral field-gas, which in its turn starts rotating, and applies drag forces to the wires of the coil. The drag forces, act to the free electrons too, which, because they are free, start a weak current, which may be measured directly or measured as change of the resistance, or conductivity in the coil. In its turn this has as effect change in the Magnetic field of the coil.*

In this effect that can be called **interaction of neutral currents-with electric currents** is based the measurement of the neutral field-gas flow of a living body (e.g. acupuncture channels and centres) with the changes in the electric conductivity of the skin or of the air close to the tissues.

And I would not believe easily someone that would perform an experiments as the above, and would hush to conclude that no such effect occurs. In an experiment there are some small but crucial details, that if they are not determined appropriately, the effect is not observed. It is this that shows if the experimentalist knows well the physics of the phenomenon, and expects the result, or if he does not and expects that no effect shall occur. For example when British Aerospace tried to repeat the Aspden experiment, it ended with no result at all for a whole year, in spite the efforts. It was only much later, when they discovered, a “minor” difference in the orientation, of the device and the orientation of rotation, compared to the original setting of Aspden. A better understanding of the effect as the familiar Magnus effect of aerodynamics, but for the neutral field-gas would give them from the beginning the right placement of the parts.

5.9 Final remarks

Although applications of new electromagnetic propulsion, without the involvement directly of the gravitational field, and with conventional energy supply, are a simpler evolution in the societies, it seems to me that is more difficult in theoretisation, because of the non-mechanical nature of the electric interactions. So although it is easy to anticipate dynamic effects of the field-gas as a mechanical ideal gas as in the paragraph 2, it is not obvious how to modify the Maxwell’s electromagnetism which is not of a mechanical character.

We should try also alternative ideas so as to derive Maxwell’s equations from the momentum and energy conservations of fluids plus some more non-mechanical assumptions. I would not insist in the idea of the three sub-fluids so much, as I would insists to involve the energy and momentum conservation of fluids, that model the field-gas. Only more than two layers of material fluids (at least layer –2, (or in the positive counting 5) too!) would render electromagnetism to a purely mechanical phenomenon.

6.The possibility of electromagnetic field-gas propellers and turbines engines as new propulsion technology of the new electromagnetism.

Once the electromagnetic field is treated as a true material fluid (material layer -1, (or in the positive counting 4)), parallel to the familiar matter (material layer 0, (or in the positive counting 3)), it becomes plausible and can be anticipated that we might design engines that simulate the interplay of material propeller, or turbine engine with air, but this time with the electromagnetised field-gas. This is of course easier to say than to implement in engineering. But the possibility exists. This should be the new electromagnetic propulsion, which is not only the weak propulsion of the neutral field-gas as e.g. in the case of the Aspden gyroscope effect, but also the strong propulsion, as in the case of Searl's motor, where the Lorenz forces are in action. In the case of the Searl effect we have also power supplied by another dimension of the field-gas, that we partly describe as gravitational field. Only further published experiments can verify in detail if the propulsion discovered by changing, the equations of electromagnetic field only, without involving the gravitational field, is significant or not for transportation. In case of course we take advantage of the power of the gravitational energy, there is not such a doubt. But how the gravitational field is another set of properties of the same field – gas, that in its charged, state is known as electromagnetic field is something to analyze more in the next paragraphs. It is also natural to design electromagnetised field-gas propellers that do not require mechanical rotation, but the rotation of field-gas is provided by a spiral coils or other similar devices. An example is the Lifting construction based on the Biefeld-Brown effect discovered in 1928 of asymmetric capacitors. See <http://jnaudin.free.fr/lifters/main.htm>. There are at least 300 inventors all over the world that have experimented with different versions of such smaller or larger lifting devices. Exactly as in the molecular air there different designs that may lead to flying (e.g. Helicopters, Turbine engine airplanes, wind airplanes without engine etc) so there are many different designs that in the field-gas would produce the flying or lifting effect. In the field-gas (electromagnetised or not)

7. Newton's universal attraction (gravitostatics) as dynamic effect because the field-gas's heat conduction.

7.0 Introduction

When Newton was asked why his inverse square law holds and if there is a mechanism behind, it is said that he answered that what matters is that it works in order to explain the celestial dynamics.

Maybe, close to the beginning of the 21st century, we may be able to explain the mechanism behind his formulas.

7.1 New relevant experimental facts

- a) New 1) "Free energy" extraction in the J. Searl's motor
- 2) "Free energy" extraction in the B. DePalma's generator

- 3) "Free energy" extraction in the P. Baumann's motor (Swiss testatika)
- 4) "Free energy" extraction in the Tewari's generator
- 5) "Free energy" extraction in the V. Dimitropoulos method at the magnetization effect from magnetic tapes
- 6) "Free energy" extraction in the L. Szabo's generator

b) Old: Pitfalls of the "vacuum" dogma

7.2 Justification of the chosen theoretical innovations and modifications

The new experimental discoveries lead to the next requirements:

- 1) It is required a system of equations and a theoretical model of the field interactions
That predicts both the known experiments and the new with consistency
- 2) It is required that the old equations are derived as an approximate limiting case or other special case.
- 3) It is required to describe the field as a gaseous material fluid (Not of 1st resolution).
- 4) It is required that the modifications are minimal or simplest so as to meet the properties 1,2,3.

We should start making the discrimination between gravitostatics and gravitodynamics. Gravitostatics should be practically the classical Newtonian universal attraction, while gravitodynamics should its combination with the new universal neutral interaction ("antigravity"), which an incorrect way was described by Einstein's gravitation.

If we compare the Poisson equation of Newtonian gravity
(7.2.1)

$$\nabla^2 \varphi = 4\pi G \rho$$

with the Fourier heat conduction equation
(7.2.2)

$$\nabla^2 T + \frac{q}{k} = \frac{1}{a} \frac{\partial T}{\partial t}$$

$$\nabla^2 T = \frac{q}{k}$$

we get the right idea:

The scalar electromagnetic potential φ must be proportional to the temperature of field-gas.

Of course we should no confuse the temperature of layer 0, (or in the positive counting 3) matter, composed from electrons, protons and neutrons with temperature of the layer -1, (or in the positive counting 4) matter, in other words of the field-gas. Different constants, different scale and units but still similar concepts.

So the macroscopic key to the understanding the mechanism behind Newtonian gravitation is the correspondence:

Scalar Newtonian gravitational potential ϕ

Proportional to

Field-gas temperature T

In symbols :

7.2.3 $\phi = \lambda T$

The author tried many scenarios that would give an inverse square law of attraction. For example we could postulate, radial symmetric distribution of pressure of the neutral field-gas, or radial symmetric distribution of velocity of the neutral field-gas that might give an inverse square law of attraction after some coupling of matter and the field fluid as in the paragraph 3. But only the choice of temperature distribution had the least contradictions, with the inverse square law of interaction in electromagnetism, that coexists with it, and also coexists with the newly discovered neutral interactions (“antigravity”) as different type of interaction. In addition the explanation of the “free energy” generators became straight forward.

The fact that when Maxwell estimated the electromagnetised field-gas pressure matrix he assumed the field-gas as an ideal gas, that is with adiabatic changes and constant temperature distribution, may explain why Einstein considered electromagnetism as disjoint to gravitation. Einstein also assumed null gravitation wherever the Maxwell’s equations hold in an exact way. Having the exact formulas of heat transfer, we no longer need the indirect equations of Einstein through the curving of the propagation of light waves.

The coupling with matter of layer 0, (or in the positive counting 3) with the field-gas (layer -1, (or in the positive counting 4)) is as in the Newtonian universal attraction in other words that mass (of material layer 0) creates heat at material layer -1, (or in the positive counting 4) or field-gas proportionally to the mass density in layer 0, (or in the positive counting 3).

In the next energy exchange description between field and matter we shift radically from the classical concept of field as mathematical field of conservative forces in vacuum, to a concept of field as another finer material (gaseous) layer (layer -1, (or in the positive counting 4)) which is essentially a renewable form of energy.

The mechanism of the Newtonian gravitation is the following image:

a) Creation of universal attraction

As static Newtonian universal attraction is created by the heat conduction of the field-gas, the real source of the gravitation in its static version is the creation of heat in the field-gas whenever there is material (layer 0, (or in the positive counting 3)) mass. So the phases go like this

1. Field-gas heat is created due to friction (viscosity) by any material body (material layer 0, (or in the positive counting 3)).

2. This heat is created even when the body is at rest. The created heat is due to the motion and the spin of the electrons in the atom, the motion and the spin of the protons and neutrons in the nucleus, and also the material thermal motion and spin of the atom as a whole. The field-gas heat is proportional to the density of the body. If the body is moving then additional heat is created.

2. This field-gas heat is propagated according to the Poisson heat conduction equation around the body in a spherically symmetric distribution. This is nothing else than the Poisson equation of Newtonian gravitational potential.

b) The dynamic effect due to field-gas heat conduction

The explanation of why the bodies accelerate in the direction from where the heat is coming is a little bit not so obvious.

We must recall that in a gaseous fluid, the speed of the compression waves is almost equal to the average speed of the atoms due to thermal motion. So for instance in air the speed of sound is equal to the average speed of the molecules of the air. The warmer the air the faster the speed of the sound. The cooler the air the slower the speed of the sound. Any changes in the temperature of the air would create accelerations or decelerations in the speed of the sound waves. It is this acceleration or deceleration that is the key to derive the gravitational acceleration, in the field-gas this time of course.

Description at the -1 layer, (or in the positive counting 4) , at the scale of an atom (with the Bohr model)

Let us recall that in the field-gas interpretation, that the Bohr model of the atom, the motion of the electrons, create standing waves in the field-gas, which are responsible for the “quantization” (or wave discretisation) of the motion of the electrons. Among these standing waves the compression waves play a significant role are tight to the electrons, protons, and neutrons. So when there is a temperature gradient in the field-gas, these standing compression waves, accelerate at the direction of higher temperature in the field-gas. As they are tight to the particles, they have as a result that the particles too are accelerated, in the direction of higher temperature in the field-gas. This is the mechanism of gravitational acceleration. The particles and the atoms, act as *tiny motors*, that convert the thermal energy of the field-gas into kinetic energy of the atoms and the particles!

To conceive the situation even clearer, we might create an analogue in the material layer 0, (or in the positive counting 3), e.g. a spherical shell, inside which, there are standing sound waves, and the ball is inside the air, with significant temperature gradient. It is an exercise to compute the momentum exchange of the compression waves, with the shell, at reflections, and the resulting acceleration.

3. As a result the macroscopic bodies (inside field-gas), experience an attraction towards the celestial bodies (that are a heat source in the field-gas proportional to their mass density)

c) The circulation of energy between the layers

The whole image becomes even more remarkable if we follow all the phases of circulation of energy in the two layers (matter of layer 0, (or in

the positive counting 3), and the field-gas (layer -1, (or in the positive counting 4)))

- 1) Energy is transferred from the thermal and quantum, and macroscopic motion of material bodies, to the thermal energy of the field-gas. The atoms and the particles act as tiny generators-converters.
- 2) At the gravitational acceleration, the thermal energy of the field-gas is converted in to macroscopic kinetic energy of the material bodies. The particles and the atoms act as tiny motors. At the gravitational deceleration of bodies, the kinetic energy of the bodies is returned in to thermal energy of the field-gas.

So from this point of view, a production of electricity from hydroelectric effects, has some common characteristics with the discovered “free energy” generators.

The Newtonian gravitation (gravitostatics) is derived with the field-gas heat conduction, while post-Newtonian gravitation (gravitodynamics) is derived and corrected through combination of the static universal attraction with the new neutral interaction (usually called “antigravity”), in other words by extending from heat conduction to field-gas heat convection. This suggested post Newtonian universal attraction is also post-Einsteinian and corrects Einstein’s equations at non-relativistic speeds.

7.3 New physical hypotheses and laws

We summarize the new hypotheses about gravitation.

UA1: Creation of field-gas heat by mass at rest

$$q = \lambda_4 \rho$$

Where q is the heat in the field-gas created by material mass (layer 0, (or in the positive counting 3)) of density ρ .

UA2: Dynamic effect of static universal attraction at field-gas heat conduction

The gravitational acceleration g is proportional to the temperature gradient of the field-gas

$$g = \lambda_5 \nabla T$$

where g is the gravitational acceleration of the body and T is the field-gas temperature.

7.4 Derivation of the new equations from energy conservation and conservation Poisson's law at spherical heat conduction.

In this paragraph we suggest to make use of the energy conservation in fluids or the general heat transfer equation for the field fluid, to derive the equations of new dynamic universal interaction, which is the static universal attraction of Newton combined with the new macroscopic neutral interaction (Laplace's remark or antigravity). We suggest it in two steps. First we derive Newtonian static universal attraction. Then we combine it with the new macroscopic neutral interaction and we derive its equations. We do not include electromagnetisation of the field-gas.

Finally we include the case of non-neutral field-gas that is electromagnetic field.

Exercise 7.4.1: Derivation of the classical universal attraction of Newton.

Step 0

Let us begin with the Poisson equation of heat conduction e.g. in the form (7.4.1)

$$\nabla^2 T = \frac{q}{k}$$

where T is the temperature, q the heat, and k the conductivity constant

Step 1 Identify relate the scalar Newtonian gravitational potential with the temperature by the new law described in the paragraph 7.3 and by the equation :

$$(7.4.2) \quad \phi = \lambda T$$

Step 2. Use the second new law of gravitation which relates by a simple proportionality. the heat creation in the field-gas with the density of matter (layer 0, (or in the positive counting 3)) in the field- fluid

Step 3 Derive the classical equation of Newtonian gravitostatics in the form of Poisson equation.

$$(7.4.3)$$

$$\nabla^2 \phi = 4\pi G \rho$$

where G is the gravitational constant and ρ is the density of matter (0, (or in the positive counting 3)).

Exercise 7.4.2. Derivation of the combination of the new universal neutral interaction and the static universal attraction of Newton, in other words of the new gravitodynamics.

Step 0. Let us start with the energy conservation of fluids, or the general heat transfer equation e.g. as in the book of Landau-Lifshitz eq 49.4 p 185, or 183-188.

$$(7.4.4)$$

$$\rho T \left(\frac{\partial s}{\partial t} + \vec{v} \text{grad} s \right) = \sigma^{ik} \frac{\partial v_i}{\partial x_k} + \text{div}(k \text{grad} T)$$

where ρ is the density of the fluid, s its entropy, v its vector velocity, k the conductivity constant, T is the temperature, and σ^{ik} are the coefficients of viscosity.

Step 1 Define corresponding quantities for the field-gas and for the matter, define the density, and momentum. State the relation of matter density with the creation of heat in the field-gas and of the relation of momentum of matter with the momentum of the field-gas as in the new neutral interaction.

Step 2. Then state both equations of energy conservation and momentum conservation of the field-gas and the state equation of ideal gases, and also for the system of field-gas and material body. These are the equations of

the creation of new dynamic universal attraction combined with the new neutral interaction.

Step 3. By using the relation of that gives the speed of the compression wave in a fluid, from the temperature of the fluid, and the state equation of ideal gasses, you can derive a formula, that relates the scalar Newtonian gravitational potential with the speed of light and other parameters of the field-gas.

Step 4. Make use of the new law that relates the gradient of the temperature of the field-gas with the gravitational acceleration of a body, and supplement the equations to a complete system of equations for this interaction.

Step 5. If in the previous equations you substitute the viscosity pressure with the standard formulas as in the previously mentioned book of Landau-Lifshitz eq 49.4 p 185, or 183-188 you get still an other form of the equations.

7.5 Derivation of the old equations

Exercise 7.5.1

Step 0

Derive the old Newtonina equations of attraction by the inverse square law by the new equations.

Step 1 Derive not only Newton but also some of the facts of Einstein's gravitation as a special case.

Notice that the new equations are as is the standard with the equations of Fluids do not define a Hamiltonian system (in contrast to Einstein's field equations)!

7.6 Discussion about Einstein's general relativity:

There are two types of modifications that Einstein's special and general relativity can undergo in order to fit with the experiments:

- A) To keep the mathematics of special and general relativity and change the interpretation and logical axioms so as to be a theory in a flat Galilean system. *The Lorentz transformations are interpreted only as symmetries of the D'Alambertian operator in Maxwell's equations (a linear behavior of field-gas disturbances) and not as coordinate system transformations.* The relativistic increase of inertia, is interpreted as an added mass phenomenon in the motion of bodies in fluids and space-time curvature is interpreted as the curvature of the light propagation structure only, and not of space or time. So his theories became compatible with the field-gas in place of the "vacuum".

This can lead to a theorem

Theorem 7.6.1 *There is a model of Einstein's mathematics as a field theory within classical Galilean Flat space and separate time.*

This model should not be confused with the Cartan's model of gravitation. The concepts of Lorentz system remains not as inertial system but only in its active interpretation as a structure invariant by the symmetries of the usual coupling of 1st resolution material particles with the Field-gas. The 4-velocity, 4-momentum etc are simply some mathematical invariants of

this structure with nothing to do with speed and momentum that is always measured and interpreted in Galilean relativity.

Of course if an Lorentz structure is defined in an inertial system that is at rest in the Field-gas then deviations from this state are analysed by

- 1) Relative velocity of the inertial system of reference with the Field-gas
- 2) Heat-Flux or Temperature grad in the neutral field that defines gravitostatic forces.

These two parameters certainly affect the D'Alambertian wave operator which is equivalent with the 4-dimensional Lorentz quadratic form. The chart coordinates are here the usual coordinates of the inertial system together with the time coordinate. Thus in the Field-gas approach is also definable a manifold that describes the compression waves-propagation . Such a manifold can be defined to be 4-dimensional but describes only the **structure of waves propagation in the Field-gas** and not of any empty-space-time or Einstein's inertial relativity. Nevertheless the two formulations (Einstein's and the Field-gas) are not equivalent as in the present the moving 1st resolution matter have different couplings with the Field-gas producing different equations that relate the "matter-energy tensor" as Einstein was putting it with the curvature tensor of waves-propagation manifold of the Field-gas.

That the equations are different is evident from the inability of Einstein's field equations to predict the Aspden's gyroscope effect!

In addition the causes of curvature of the waves-propagation manifold are not discriminated to be of two types:

- 1) Due to motion of the Field-gas (Field-Dynamics)
- 2) Due to temperature variations (Static Field)

B) In addition to the modification 1) the mathematics of the generation of gravity (Einstein's equation) are changed in order to include the field-gas drag force as a cause of curving of the light paths thus of space-time

In Einstein's waves-propagation manifold is not possible to predict any Universal repulsion around bodies. In the present theory the gravitation of bodies does not depend only on the amount of mass or energy but also on the additional parameter of Field temperature at the body relative to the ambient Field temperature ,a parameter not appearing in the equations of Einstein.

C) An alternative approach would abandon completely the formalism of Einstein.

The equations of general relativity cannot predict the new experiments and should therefore need correction. Let us assume that we avoid the Einstein's conceptions of restricted relativity, and space-time curvature. Let us assume that we replace them with change of inertia with Lorenz symmetries inside Galilean relativity (instead of special relativity) and by curvature of a manifold of light propagation with flat space and separate time (instead of space-time curvature). That is by resorting to the theorem of existence of a model of Einstein's physics within classical physics, with the same mathematics but different physical concepts. We might ask in this situation if there is a modification of the field-equations of Einstein,

that would be equivalent to the present formulation. The author thinks that this is not very probable and rather impossible. The reason is that although a manifold defined by the curvilinear propagation of light does exist, and can be defined, and although the space distance of light paths can also be defined, a Minkowski quadratic form is definable only by approximation on the true light paths. This approximation would be defined, by that the field-gas equations of conservation of energy in the general state, could be approximated with the field-gas equations in the case of infinitesimally constant temperature and no field-gas wind! On the other hand the manifold of the curvilinear propagation of light due to temperature changes and wind in the field-gas, is indeed a 3-dimensional Riemannian differential manifold, if the temperature changes and wind are stationary in time, but it is not exactly a pseudo-Riemannian 4-dimensional manifold with Minkowski quadratic distance. Thus we could define a best-possible correction of Einstein's field-equation, within Einstein's mathematics, and it would still be less accurate than the present formulation! So I think the better attitude is to abandon totally the Einstein's formulation.

As the neutral Field Fluid is in contact and at close distances that fall normally drifted by the motion of 1st material resolution, the determination of the state of motion of the neutral Field-gas is decisive for the correct applications. The Michelson-Morley experiment refers to light and is not directly relevant. As in most laboratories the measurements of the increase of inertial are on particles in these laboratories we must assume that the Field-gas of the laboratory follows the motion of the earth. The light aberration refers to other kind of waves than compression waves so it cannot be used as indication about the motion of the Field-gas. So the increase of inertial is a property relevant to the relative speed of the particle and the neutral Field-gas and is measured as the same number in all inertial systems of reference. The definition of inertial system of reference is always a limit approximation relative to the surrounding and dominating universal attraction fields.

A system of reference at rest with the field-gas is a classical inertial system of reference.

7.7 New predictions

1) *Universal repulsion*

We must notice that the present theory of the Newtonian gravitation as an field-gas heat effect, leads directly to the possibility, at least theoretically of universal repulsion. By universal repulsion meaning the universal repulsion around a body due to field-gas heat temperature, instead of universal attraction .:

If we could by some advanced technology make the field-gas temperature to drop below the average temperature of the ambient field-gas, then the above equations give universal repulsion instead of universal attraction. Under normal conditions what we get is universal attraction .

2) *Podkletnov's experiment.*

In the Podkletnov experiment, a ceramic superconductor (moving or not!), when its temperature is close to the absolute zero, obviously produces less field-gas heat due to motion of its molecules. We have, obviously, in addition, a threshold and discontinuous phenomenon as the stochastic dynamic systems have new stability solutions than their deterministic counterparts (quantisation). Thus the earth's gravitation which is based on the field-gas's temperature gradient, is partly reversed because the superconductor creates lessening to the average field-gas temperature due to earth due to very low layer 0, (or in the positive counting 3) material temperature, at its points!

It seems to us that the well known phenomena of gravity changes of superconductors tend to confirm our conception of Newtonian gravity as field-gas heat conduction effect.

Probably this is partly the effect in the Podkletnov's experiment. Also mention the additional effect of significant dependence of the gravitation on the layer 0, (or in the positive counting 3) material temperature.

3) *Warm-holes*

The classical cosmological subject of "warm-holes" takes a totally new meaning. The warm-holes are no longer some "space-time" curvature curiosities, but rather stable cyclones of the field-gas as those met in the atmosphere of the Planet Jupiter, but not in air, in the field-gas and of larger space and time scale.

4) *Shape of galaxies*

The shape of galaxies becomes also a more easily explainable effect. It is just the pattern of cyclones of the field-gas reflected this time with the material layer 0, (or in the positive counting 3), in other words matter of the stars and planets. This also may explain the Dihedral symmetries of order 0,1,2,3,4 etc of some galaxies.

The shape of galaxies was a subject about which, prof. R. Feynman spent much time to admire, investigate, and try to explain.

5) *"Black holes" or at layer x, (or in the positive counting 5 or higher) bright stars?*

"Black-holes" also take a totally new meaning. As the creation of gravitation is by the heat of the field-gas, such strong gravitational sources, reflect very high temperatures in the field-gas, that betray the fact that such celestial bodies we may speculate are most probably very bright "stars" at an even finer material layer e.g. layer -2, (or in the positive counting 5) or if not maybe at even finer layers.. Their "light" we might suppose that is "visible" and propagates to the space scale of layer +2 or larger, (or in the positive counting 1 or less), that is beyond the usual layer +1, (or in the positive counting 2) the Field-gas ball that we use to call "world" in cosmology, and is in the larger ball defined by the field-gas of layer -2 or finer, (or in the positive counting 5 or higher). Here we must remark that what cosmologists call World, is everywhere that light can travel. Therefore in our approach within the ball of field-gas (aether) that planets, stars, and galaxies are immersed. It can be conceived as a field-gas world-star! Anything larger than that it would be layer +2, (or in the positive counting 1).

6) *Mercury's orbit deviations*

The old discovery of deviations in the Mercury's orbit as predicted by Newtonian gravitation, takes a different meaning. By adding the effect of the rotation of the sun, in the system, we easily deduce by Bernoulli equations that there is an additional drag-force of the field-gas towards the sun for the Mercury, and as this planet is the closest to the sun, and of small mass, it is easily measurable. Compared to Einstein's predictions we should be able to get even more exact fit with the experimental data, if we make use of the present suggested equations. Also the explanation is qualitative more simple and of a new light.

7) *Deviations in the orbits of satellites*

Similar corrections to the prediction of the orbit of Mercury should also occur for satellites around the earth. The rotation of the earth must create also a rotation of the field-gas, that affects the conventional gravitostatic orbit of the satellites. NASA has indeed reported such deviations in the orbits of satellites non-predictable by Newtonian or Einsteinian gravitation. The latter predicts gravitodynamic effects only at relativistic speeds.

8) *Electromagnetic energy does not gravitate!*

As gravitostatics depend totally on the heat conduction in the field-gas, and the new neutral interaction on the drag-pressures of the flowing field-gas, the non-mechanical electromagnetic energy does not enter in the new equations. This is contrary to the Einstein's approach that claims that electromagnetic energy also gravitates. As far as I know there is no experimental evidence for this claim of Einstein.

9) Possibility of conversion of the dynamic energy of the gravitational field (or field-gas heat) to electric energy. We discuss about it in the explanation of the "free energy" generators.

10) The possibility of non-equal force of universal attraction between e.g. sun and the earth.

In the classical two body system, the gravitational attraction of say the sun to the earth is always equal and opposite with the attraction of the sun by the earth. (action-reaction and momentum conservation. But as in the present approach the system is much more complicated and together with the two bodies, we must include the energy and momentum interplay of the field-gas, such an equality may not hold. The energy is conserved including the energy terms of the field-gas not only of the two celestial bodies. This may lead to claims about non-equality of inertial and gravitational mass, but it all depends on the definitions. The concept of material mass (number of particles) of course does not change.

11) *The Bode's law of the distance of planets from the sun.* According to Bode law, which is empirical, the distance of the nth planet from the sun is in the average given by the formula: $R_n = (1/3)(2^{n-2} + 1)$! In other words, the distances increase in a geometric progression. This empirical law has remained quite of a mystery, within the old Newtonian gravitation as well as within the 20th century Einstein's gravitation. We do not give here, a

detailed quantitative derivation of it, but we suggest, a most probably true direction for its origin. It seems to me that its origin is mainly a fluid dynamic one. And with this I do not mean only the gasses (of layer 0, (or in the positive counting 3)) in the formation of the planets in the Laplace's theory, but mainly the fluid dynamic effects of the neutral field-gas (layer -1, (or in the positive counting 4)) , in which all the planets, and the sun are immersed. The whole solar system, especially in its early stages, with the sun moving rotationally and linearly too in the galaxy, was mainly at the field-gas layer, a siphon-like (or Tornado-like) flow with spiral flow-lines , of the field-gas. In a siphon, the pressure from the boundary, to the center falls in a geometric progression too! This together, with the inverse square law of fall of the field-gas's gradient of the temperature of the field-gas, from the sun to the distant planets , seems to me to be the right hints and assumptions to derive such, a planetary distribution. This also would suggest, in a more probable way, that the place where the asteroids are rotating, should be the place, in the past, of a real planet, which has been lost!

7.8 Short explanation of the new experimental effects.

1) "Free energy" generators by rotation.

In this category are included the J. Searl, motor, the P. Baumann's testatika, the DePalma's generator, the Tewari's generator, and the L. Szabo's generator. In all these cases in spite the differences in the details of the construction, the principle seems to be the same: It is created a small tornado in the electromagnetised field-gas (material layer -1, (or in the positive counting 4)). As is the case also with air tornados (layer 0, (or in the positive counting 3)), it takes place an expansion while rotating of the fluid, which as is natural means drop of its temperature. The thermal energy that is subtracted by the fluid is converted to macroscopic kinetic energy (rotation), and as the fluid is electromagnetised, it is collected as excess electric current energy by the generators. It seems also that it takes place at a small percentage a similar effect at the air surrounding the generators, as at the functioning of testatika has been reported a small drop of the air temperature. Nevertheless the major part of the energy is taken from the heat of the field-gas. The conduction of this heat is responsible for the gravitational attraction of the planet as we mentioned in the previous paragraphs. Therefore the reservoir of energy from which these "free energy" generators take their energy is the thermal energy of the field-gas, or equivalently the dynamic energy of the gravitational attraction of the planet.

In the case of the Searl generator which is a motor too, this external small electromagnetic or field-gas tornado, acts by Lorentz forces as described in paragraph 5.6 , accelerates the rotation and also lifts the disc or motor up while at the same time ionizes the air around the disc.

In a similar way can be explained more than 30 different designs of "free energy" generators that exist in the internet. See e.g. <http://jnaudin.free.fr/html/qedynmnu.htm> The main idea is that they extract energy from the heat of the field-gas (potential energy of the gravitational field) to convert it to electric current energy.

2) *"Free energy" generators by electric current discharge.*

In this category belongs as far as I know, only the technology of Ed. Gray. In this case, we have a direct linear expansion in the field-gas induced by the direct current discharge, that again drops the temperature, of the field-gas. The extracted thermal energy becomes translational energy of the electromagnetised field-gas which is collected as excess electric current energy.

3) *"Free energy" generators at the magnetization phenomenon.*

In this category is included as far as I know only the method of V. Dimitropoulos. In this case, the atoms with their random rotating electrons, act as tiny generators, as in the case 1) above. They create standing-waves and tiny tornados at the size of the atom (quantum scale), in the field-gas. As in the case 1) above, the tornados drop the field-gas temperature because of expansion. The extracted thermal energy from the field-gas is converted to kinetic energy of the electrons which means amplified magnetization. This gives the excess output energy with this method. The phenomenon goes parallel to magnetic hysteresis, but magnetic hysteresis alone would not explain it, as in magnetic hysteresis, as defined and described in the books, we have energy conservation.

To the question if the "Free-Energy" devices mentioned above are safe for practical applications my answer is that I cannot know.

Some of them are working for decades in a safe way. Nevertheless their inventors have taken care to function in a smooth non-greedy and mild way as in the case of testatika. In the macroscopic version of the rotating generators, the field-gas "tornado" is better regulated, than say the case of magnetization, where some atoms might "break". On the other hand an out of control field-gas "tornado" at the sale of a generator, is much more fearful. Without significant theoretical and mathematical work on them by many university groups and for many years, it cannot easily be decided. Maybe irresponsible functioning of them in inappropriate conditions might create explosions or unknown type of ecological pollution. We should remark here that as the source of the gravitational energy, passes and is created by the motion of protons, neutrons, electrons, and also their spin in atoms, such extra energy can be also considered a **soft atomic energy. We state the term soft, because it occurs no atom split or fusion, and even in many cases, not alteration of the atoms chemical bonds.**

7.9 Experimental facts to investigate:

I believe that future experiments, if the present suggestions are somehow confirmed, should be in the next directions:

- 1) Measurement of the constants λ_4 , λ_5 and other constants in the new equations.
- 2) Measurement of the average density of the neutral field-gas.

3) It is obvious that we can have "free energy" devices, that convert gravitational energy (and energy from the motion of protons, neutrons, electrons, and even molecular heat) to electric, without macroscopic mechanical motion, but simply with configuration of

circuits. As in the case of the miniature disc of paragraph 5.6, a spiral-conic coil would be sufficient to initiate the required small field-gas tornado, for the energy conversion. The whole device would look, much like a “**transformer**”, and, if at a small size and if put, inside ordinary electric devices it would amplify their performance at the cost not of the electric supply, but at the cost of the potential energy of the gravitational field.

(**remark** added 2005: When this paper was written during 1998, the author was not aware of the devices of **MEG generator** (see bibliography now : <http://jnaudin.free.fr/meg/meg.htm>). I have added it now in the bibliography. The physical principles to explain them too, are the same for the other mentioned “free-energy” generators. There are no moving parts in this type of generator that looks like a transformer. The good news is that at least 15 serious university professors of physics, electric engineering etc are aware of such phenomena and try to understand them.)

4) The method of linear electric current discharge technique of E. Gray, that does not involve rotation at all, to extract energy from the gravitational field, suggests obviously the next: *A careful new design of a type of neon-kind light giving lamps, might be devised so that a great percentage of the resulting luminosity energy is consumed from the gravitational field rather, than from the electric power supply of the lamp.*

5) The power of Field-gas heat conduction per square meter, for a given gravitational acceleration g . ***This measurement, for the standard average value of earth's g , would give , an earthly constant for the extraction of "free energy" (ironically speaking of course) , beyond which we force the planet to non-natural cooling (at the layer of the field-gas and eventually at the layer of material magma). This constant resembles the constant of 1.3 kw (approximately), of the solar power, on the surface of earth, per square meter.***

7.10 Final remarks

A more comprehensive and true concept of waves than the Einstein's “gravitational waves”

Notice that this theory does not claim that the speed of gravitational (or field-gas temperature) waves is unique and equal to the speed of light!

There is obviously the possibility of temperature waves that propagate with the speed of compression waves in a fluid and of temperature waves that propagate with lower speed, too.

As the temperature waves depend much on the speed of heat convection (flow of field-gas) we may have a wider range of phenomena much more subtle. Of course in a field-gas with viscosity the electromagnetic wave would also create a temperature wave with the speed of light. We believe that there are not sufficient experimental evidence to confirm Einstein's claim that all gravitational effects propagate with exactly the speed of light. Especially when as we remarked at the beginning in the paragraph about inertia, the light itself has constant speed only relative to a system

attached to the motion of the field-gas and only when the field-gas temperature is constant, but not relative to a more distant system of reference, relative to which the field-gas may be moving (Galilean addition of velocities). This means that light itself can very well have speed much higher than 300.000 km/sec. (This does not contradict with the fact that the known measurements of the speed of light give only the value 300.000 km/sec as they have been carried out in specific systems of reference and in specific conditions.)

In the light of the above analysis of universal attraction “gravitational waves” could be

- 1) **Temperature waves of the field-gas (“gravitostatic” waves)**
- 2) **Fluctuations of the conductivity constant k of the field-gas, and thus of the gravitational constant G that depends mainly on it. (“gravitostatic” waves)**
- 3) **Compression and density waves of the field gas (“antigravity” or “gravitodynamic” waves)**
- 4) **Velocity waves of the field gas. (“antigravity” or “gravitodynamic” waves)**

All the above waves would have been classified in the old and obscure gravitation theory of Einstein as “**gravitational waves**”

If the famous **J. Weber experiments** (1969) to measure gravitational waves failed so remarkably is not a surprise. It is often said that those experiments were designed to measure fluctuations of the gravitational constant. There could not be much hope to measure such fluctuations as in the light of the present theory would have been fluctuations of the conductivity constant of the field-gas. In a fixed place inside the planet it is not very probable that this constant change. Although it may very well change slightly when we change positions among the planets and the sun. On the other hand the experiments of Weber were actually measuring vibrations of a solid metal heavy bar inside vacuum. Again if the experiment was set to measure temperature waves of the field gas that result in to fluctuations of the weight of the bar, there would have not been much hope to detect them, as we do know that in a fluid (here the field-gas) temperature waves are rare. On the other hand it seems to me that the easier to detect are the compression and velocity waves of the field gas. (thus “antigravity” waves rather than gravitational waves). In that case, nevertheless, the experimental setting with a heavy and massive metal bar is totally inappropriate for such a task. A more appropriate experimental setting would have to put in the vacuum, large thin surfaces, like a large microphone.

8. “Free Energy” electric generators as converters of field-gas heat (and partly molecular matter heat) in to electric current’s energy.

We saw in paragraph 7 how the “free energy” generators are explained with the new ideas about what is universal attraction.

In paragraph 3 we suggested equations for the new neutral interaction (“antigravity”)

In the paragraph 5 we tried to combine it with Maxwell’s electromagnetism.

In the paragraph 7 we tried to combine the new neutral interaction with classical Newtonian gravitation.

In order to have exact equations for quantitative predictions on the “free generators” we must combine all the three interactions:

- a) The new neutral (“antigravity”) interaction
- b) Electromagnetism
- c) Gravitation

As the extracted or converted energy is from the vast reservoir of the planets field-gas heat, which is measured as the more familiar total dynamic energy of the gravitational field of the planet, we understand that a global use of such a form of energy has even deeper influence on the planet than the over accumulation of CO₂ with the conventional energy sources. In the next paragraph we calculate the total dynamic energy of the gravitational field of the planet, and we compare it with the total consumption of energy by all the human civilization in one year. The calculation gives that planets reservoir is really vast compared to what humanity can consume, but this should not make us act again with ecological immaturity. Global disturbances in the planets gravitational field, may have influences in the falling of the rain, the frequency and probability of earthquakes, and volcano explosions and many other that I have not thought about. This form of energy according to the law e.g. of European Union, can be classified to renewable sources of energy, and the closest category is geothermic energy. Although according to law geothermic energy is a renewable form of energy, it is not totally so from the point of view of the physical economy of energy of the planet.

AN APPROXIMATE ESTIMATION OF A GLOBAL USE OF FIELD-GAS HEAT CONVERSION TO ELECTRIC ENERGY.

0) We assume that the extractable field-gas heat has the equivalent effect of decrease of gravitational potential energy of the planet.

1) We assume that in one year humanity consumes approximately
150,000 terra Joules (see reference to Eurostat.)

Which is $4.167 \cdot 10^{10}$ Kw-hr

(1 joule= $2.778 \cdot 10^{-7}$ Kw-hr ,1 terra Joule= $2.778 \cdot 10^5$ Kw-hr

2)The radius of a ball with the same volume with earth is= $6.371 \cdot 10^6$ meters

Mean density of earth= 5522 Kg/m³

Earth mass= $5.983 \cdot 10^{24}$ Kg

3) Making use of the Newtonian formula of gravitational potential energy $dU = -G(Mdm)/r$, where G is the gravitational constant. We integrate for all spherical shells that as it is known are attracted as if only by the mass with smaller distance from the center of the ball. In other words we repeat what Newton initially did to prove that a sphere attracts like a concentrated mass point.

4) The mass of a ball of radius r density ρ is $M(r) = (4/3) \cdot \pi \rho \cdot r^3$

And the infinitesimal mass of the spherical shell of thickness dr is

$$dm=4\pi\rho r^2dr$$

So after integration we get the next formula for the total gravitational potential energy

$$E=(16/15)*(\pi^2)*(\rho^2)*(r^5)*G$$

Which after replacement with numerical values and calculations gives 2.2485×10^{32} Joules = 2.2485×10^{20} terra Joules = 624.634×10^{23} Kw-hr!

5) Also the consumption of humanity in energy, can be estimated to be less than the Black Body radiation of earth at temperature 14 Celsius degrees

6) Nevertheless for larger consumptions with population increase and many centuries exhaustive energy extraction, or with unlimited power per square kilometer energy extraction, the relative quantities may not be entirely insignificant compared to the total reservoir of energy and might have local or global effects that should be calculated and discussed, and protected by international ecological agreements. It should be noted too that the above form of energy of the mentioned in this paper "free energy devices", that subtract energy from the potential energy of the planet's gravitational field, are not the only physical phenomena that do so. It seems that the same holds at least partly for the extra calories "free" energy, obtained when a flame of Brown's gas (a mixture of **Hydrogen** and Oxygen, exactly in the analogy and directly obtained after electrolysis of water) heats, say, a metal boiler with water. The energy given for the electrolysis of it, is less than the energy obtained in that case. It seems to me that this extra energy, may come from the heat of the neutral field gas (which is the potential energy of the gravitational field) that surrounds the flame of the Brown's gas in its peculiar implosive combustion. (see <http://www.svpvriil.com/svpweb9.html> or just the key word "Brown's Gas" (oxyhydrogen) in the Internet search engines).

9. Remarks on the cognitive, social and ecological problems of asynchronous developments in discovered inventions, developments in academic theoretical understanding of them and developments in appropriate international ecological agreements.

I believe that social functions reflect the individual's functions and vice versa. So a social situation where, inventors discover phenomena, that "ruin" the conventional academic theories, and in addition other social groups rush in to demanding applications of the older academic discoveries (both military or business industrial groups), without ecological and global considerations, do create serious problems.

It is like an individual that is acting without having the ability to think about what he is doing, or an individual that is jeopardized and his work is used for objectives opposite of his original intentions. As any problem, the cure requires first realization that it is a problem, then detection of its causes, taking action about it and finally communicating with others about it, thus socializing concepts and solutions.

Should we talk about the present situation in the sciences and technology as a syndrome of a "**Soulless Science?**", and **jeopardy of collective consciousness of scientific groups?** There may be certainly some serious

points in having such a concept as the above. Especially as the spirit and social status of those that have given the main ideas in the sciences, is far away from the spirit of those that have chosen the applications, and still far away from the spirit and social status of those that apply them. We could reverse of course the attitude, and raise a question if it might be possible at all to have the effect of increase of the level of consciousness and social maturity of individuals, by using the technology that sciences can provide. The best I can think of such a reverse process that could cure the syndrome of the “**Soulless Science?**” is through, the computer science and the new era of telecommunications (mobiles, “**Society of Information**” etc). Individuals do find a support to improve, their concepts, quality of emotions, human relations etc, through, the implementation of the Internet, and the communicators (mobiles etc). There is no doubt also that the implementation of scientific methods in **Medicine** and **Wellness** does help too, a lot.

Let us hope that this new science shall help to reverse, the dangerous syndromes, that the applications of the older sciences like physics, and chemistry have created in the societies.

Such new physics as the previous, of energy conversion and electromagnetic propulsion and of the neutral field-gas fluid dynamic effects, have at least four positive elements:

- 1) ***Propulsion and Peace***: A way out and close to the planet , with more efficient technology than the rockets technology that might reduce the problem of mutual aggressiveness of nations due to overpopulation and scarce resources.
- 2) ***Energy conversion and peace***: A more fair distribution of the energy resources (as renewable energies) among the national economies, and the continents that may reduce the power controversies and wars, between nations, suppliers and consumers and overcome the necessity of propagation of nuclear power with all its dangers. Starting with *Solar* and other *soft environmental energy* from *wind*, daily temperature changes of the water, and *sea waves*, we might proceed with electric energy from the potential energy of the new gravitational field (and new electromagnetic field) as renewable energy, and with even lower priority, if at all, from nuclear power (as alternative to traditional from oil, coal , gas etc) . *Since renewable energy from the field (gravitational and electromagnetic) is at significantly lower cost (even lower than coal's cost) and as also this form is not capital intensive, it is the number one candidate to develop and deal with the CO2 emissions and climate crisis.*
- 3) ***Desirability?*** A combination of the 1) and 2) as it seems in the future might reduce some of the troubles inside the planet and we may hope that it shall not create new problems to what is outside the planet.
- 4) ***Medicine***: The role of the flow of the neutral field-gas (layer -1, (or in the positive counting 4)), around the living cells, may give new methods in **Medicine** for the cure of the cancer, or new healing

methods in general and possibly a better explanation of the effects of Chinese acupuncture.

- 5) ***Dangers:*** As far as the present physical insights remain only in the classical fields macroscopic level and not at the quantum scale level, and what is really used in practice is only new mathematical equations for the gravitational, electromagnetic and new neutral field, with just new and more potentials, that correspond to the new experimental discoveries, then the practice seems safe and in fact a lot safer than quantum physics, and nuclear power. But this is, I think, so, *only* if they are developed at the macroscopic classical fields scale. Neither the present heuristics should be used to change, for the time being, any of the axioms or standard formulations of Quantum Mechanics.

On the other hand we should not fail to realize the importance and dangers of the involved consequences.

The transportation model suggested by this new physics, even if powered also with traditional forms of energy, would permit us to convert traveling hours to traveling minutes, within the planet, and would easily lead us around the planet in a way that the rockets technology compared to this transportation, would seem like the technology of steam engine trains, compared to airplanes. This step in the developments is from an ecological point of view much safer as it seems, compared to the energy technology step. Nevertheless it is apparent that it increases the gap of first-world and third world countries.

The new energy model suggested by this new physics, strictly speaking is indispensable, only for long range space-traveling, outside the planet. Nevertheless if applied inside the planet, it requires an international ecological-sensitive regulation. It should be remarked that it is certainly safer than the nuclear energy and of significant lower engineering profile, that would make it of interest, practically to every nation, reducing the differences in the use of energy between first and third world countries. Europe is obviously highly interested in it, as it is the first world continent with the highest dependence on energy sources outside it. But it should also be remarked that it is not really much more safer than the traditional energy model with the **CO₂ emissions**, as it requires more ecological maturity than what we already prove that we have. Humanity can chose to control first the CO₂ emissions , through the development of the Hydrogen energy model and other classical soft forms of energy (like solar energy, energy from the winds, and energy from the sea waves), which for the moments has economic disadvantages or can proceed to reduce the CO₂ emissions, through the oxyhydrogen energy model and of the above electric generators that extract energy from the gravitational field of the solar system, which is economically more attractive. As it seems for the moment (2002) what is followed is the slow way of the first choice. The second choice seems as if that it will follow conditionally and later. The difference is that the second is economically more attractive (it also permits energy independence of households outside the electric grid) and also permits transportation beyond the boundaries of the planet, while the first does not. *But obviously we should learn first not to be dangerous*

to ourselves and not to be dangerous to the greater environment of the planet, the solar system and beyond, before the new freedom of humanity is to occur. A freedom that does not have us obligatory on the surface of the planet (grounded and in quarantine as some would say) or make us move in vehicles (cars) only in contact with the ground (like snakes as some would say). There is a vast number of beautiful things in this planet, but their value is better felt if the freedom to travel outside the planet is a reality too.

Hydrogen model of energy and this form of energy: It is been discussed that the new technology in the industry of cars and transportation, shall be the use of hydrogen. The Brown's gas is a mixture of hydrogen and oxygen directly obtained from electrolysis of water (oxyhydrogen) . It is reported that extra calories "free" energy are obtained e.g. in heating metals . Also the energy used for special types of resonant electrolysis if appropriate set, is less than the energy obtained! The most plausible is that it is subtracted from the perpetual motion of the protons, neutrons, electrons of hydrogen, of oxygen, but also from the local gravitational field. So it , seems to me that at least partly comes from the same reservoir of the present's paper "free energy generators". In other words from the heat of the neutral field-gas, or again in other words from the potential energy of the gravitational field of the planet. Obviously the physics of the Hydrogen model are easier to understand and also simpler to develop, nevertheless, they are not really convenient for transportation outside the planet. In my opinion the oxyhydrogen energy model should start developing directly and with priority to the hydrogen model, and to the above electric devices that extract energy from the potential energy of gravitational field, as it a smaller step in the same direction and requires less changes in fundamental physics. .

Rocket's Space propulsion technology and the new electromagnetic propulsion.

It seems to me that it is obvious that the new electromagnetic propulsion is way superior to the present rocket's propulsion for space transportation. It is not only that the spaceship does not have to carry huge volume of fuel, but also in the return in the planets atmosphere, does not have to be a free fall that leads to such high temperatures of the surface of the spaceship by friction. The entrance in the atmosphere can be controlled in speed and direction. Thus the main source of well known tragic accidents of the space-busses can be eliminated. From some point of view rocket's propulsion might be appropriate for destructive war objectives but is hardly appropriate for transportation as it is bound to the problem of high temperatures by friction at the free fall in the atmosphere. We may parallel it with an even more insisting and clumsy attempt than to try to fly a propeller airplane with a steam engine of the 19th century. In spite the admirable sophisticated engineering developed in rocket's space propulsion technology, the overall intelligent assessment of this method to an alternative based on the new electromagnetism propulsion, should favor definitely the later.

Still, we should not be naïve about the troubles ahead that should be dealt, with such an energy model. Greedy, global and for a long time (of many centuries) extraction of energy from the heat of field-gas (an energy resource of the planet that may be renewable according to the law like geothermic energy, but again like the geothermic energy it is non-renewable from the point of view of the planet.) without regulation with international laws, would bring even deeper effects in the life of the planet than what the emissions of CO₂ of the old energy model, have brought. (Namely changes in the climate). A weakening or strengthening of the gravitational field of the planet would have effects in the falling of the rain, the climate, and the probabilities and frequencies of earthquakes and volcano explosions. **Nevertheless such speculations might simply be unrealistic and the fluctuations in the gravitational attraction in practice not significantly affected by the above energy extraction , given that the potential energy of gravitation in the above analysis is replenished from the molecular heat of magma of the planet, and given the incoming energy from the sun. All of these are vastly larger than all the energy needs of all of humanity** Besides the present state of the climate crisis requires ability to stop the overheating of the planet. Still all these speculative dangers are less than the present use or propagation of use of nuclear power. There is a limit of power per square kilometer , for this form of energy, (it could be called *natural power density constant P_0 of the planet earth, at its surface*) that when the extraction is less than that limit we only take advantage of the heat that would be lost anyway, and push and distribute the diminishing results to effects away from the planet. But if the extraction is higher than this limit then we might consider that we “force” the energy resource, quickening the natural cooling of the planet, if we do not account for the incoming energy of the sun. This constant is of similar meaning as the constant of the solar energy (solar constant: 1340 watts/per square meter). *Obviously extraction of energy in such a way from places outside the planet, e.g. closer to the sun, is safer, may be considered safely renewable, and it is simply an other form of solar energy, that converts in to electricity the potential energy of the gravitational field of the sun.* Before a massive use of this form of energy is implemented, a thorough analysis and experimental study of its properties should be carried out, together with proposals for an ecologically mature and friendly regulation of it.

The author is not in favor of global, fast applications of the possibilities that open with the new physics, before the wider groups of scientist have worked out and elaborated in sufficient quality and reliability the mathematical and physical details of the new physics. First we must know how to think and account with appropriate mathematics, about such newly discovered phenomena, with continuity of sufficient historical depth but also with innovation relative to the evolution of ideas in physics, before we are to know how to get useful results. By simulating first the phenomena with mathematics in computer experiments we can chose what to discover and what is useful for all.

I am also in favor of shorting the gap between academic science and groups (military or business industrial) that

practice applications of similar devices without the adequate academic scientific covering of them

I am in favor of discovering only what we can apply for the good of all versus applying what ever we can discover.

From this point of view, **energy from the sun , the wind and the sea waves**, is simpler to understand, and has also the properties of fair, renewable equidistribution, at least, at a zone of altitudes on the planet. It seems that the in the new age, the **renewable** forms of production of electric and mechanical energy, may be a prevailing characteristic, and may very well **replace the need of the propagation of the nuclear power, in many nations with all the dangers that this may contain.**

Overpopulation peak and the new energy models:

The charts of the increase of the global population in the planet, suggest, from a simple logistic-curve best-fit, that it is quite probable that the peak of the population in the planet, can be in the time interval between the next 60 years and the next 2 centuries or more. We remarked about the fact that the groups in power in the various societies have not yet solved the problems of the old energy models. The failure to develop in the universities, and industries, the new energy models, as alternatives to oil and nuclear energy, before the population peak in the planet, might have, as I speculate, grave consequences, in relation to the developments in the humanity after the population peak. I think that the more these, new energy models, are understood and developed, the more, the distribution of the resources in the planet shall be fair, humanly meaningful, and the more, peace, democracy and intelligence shall prevail in humanity. Without this perspective, in the human civilization, life in humanity and the planet after the population peak, might be seriously threaten, due to unbearable differences in wealth, energy resources, technology differences, increased mutual hate, terrorism, and despair. **Therefore it is critical that such new energy models should most probably be developed, before the population peak, and this should happen with the right procedures and the global scientific consensus.**

It seems better ,of course to visualize and work for the positive aspects of the new perspectives for the new millennium but also to try ourselves in solving the problems already accumulated with the old technologies.

10. Epilogue

Let us hope that the reinstatement of rationality in physics shall come after sufficient research work that involves free thinking as well as good practice in peaceful times and shall be globally, only after a partial at least but adequate, reinstatement of rationality in the more powerful regions, as well as in the wider regions of the societies.

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VIRTUAL QUESTIONS

1) Is it required new mathematical concepts and methods for the present theory?

In this version I have not introduced new mathematical methods that do not already exist. But I believe that systems of much different time and

space scale require a totally new differential calculus, that might be called multi-resolution differential calculus based on new mathematics that do not use limits and the infinite.

2) Why the present theory is not formulated in a relativistic way?

I am afraid we cannot answer this question without challenging somehow the common sense of widespread concepts in modern physics. The situation is like the tale of the emperor that went to a parade to show his new magnificent cloths, but the truth is that the emperor was not wearing any cloths. It required the free mind of child to realize it.

So there are some contradictions in modern physics that even a high school student can understand but from the moment you became a PhD career physicist you would never mention them from the fear that you would be accused that you do not understand the advanced concepts. It is never realized how advanced concepts can become mind traps for the real understanding of physical reality. For me also these mind traps worked well till I was able to look again back to physics from the mindscape of social sciences and only when I became active in research in the social sciences so that a career in physics was not of interest anymore.

The attitude with which we try to re-found all of the physics in a relativistic formulation with the excuse that the changes of the system of reference for the physical description follow the Lorentz transformations is all wrong! I explained in the paragraph 2 of this paper the reasons. The science of physics has long ago decided that in a situation that we discover distortion effects in the space and time measurement devices we do not make a theory that space or time is curved or distorted but that new factors that we did not account for so far enter the experiment and we try instead to make a theory of these factors within flat space and time. For example when in the history of physics was discovered that temperature influences the length measuring rods we did not make a theory that temperature curves space and time but rather that it simply influences the material devices that measure space and time. It is the same with special and general relativity, what is curved is nothing but the propagation of light and this is far different from a curving of space or time.

In this paper we aim to free the mind from such mind-traps like “vacuum curved space-time or “quantum vacuum”. Therefore we could not possibly formulate a theory of the new experimental facts within a conceptual approach that tries to lock the mind about them.

Thus we definitely chose a classical conceptual approach which is natural, true in spite its approximate limitations. It is obvious to us that any attempt to explain these macroscopic experiments as relativistic or quantum paradoxes, not only it does not put them inside academic science but instead would have as a result to obscure them.

Evolution of science is not an easy matter. We understand of course that as well established science is full of professors with hundreds of publications in relativity (happily I have only one), it is hard for them to accept any new true approach even if they witness themselves the experiments. It is their natural commitment to their papers and students that would make it almost impossible. Thus it is expected from new

scientists with independent thinking and free access to the Internet that shall make this evolution..

To them are dedicated these papers.

I find that special and general relativity is in the history of science what is in the history of NASA the first lancing of the Humble telescope, that had a wrongly design mirror, which gave a distorted image of the world. It certainly takes a "Costar" project to correct it!

A believe that a relativistic formulation of such phenomena is not a serious approach and sooner or later shall lead to a deadlock.

3) Why the present theory is not formulated in Quantum Mechanical Formalism? Is there quantization of this field theory?

Or conversely, why it is derived Maxwell's Electromagnetism and Newton's Gravitation and not quantum electrodynamics also?

The answer is that **we do not intent and we should not intent** a microscopic description as for the intended applications, only a middle laboratory-scale and macroscopic planetary-scale is adequate and advantageous for humanity at the present situation. *There is also the "Pareto rule" which says that at least 80% of the result is obtained with less than 20% of the effort. Less than the 20% of the rest of the result, requires more than the rest of 80% of the effort.* Not to mention that a Quantum Formulation or resorting to physical micro scale would reverse the situation and would make such a research a disadvantage to the civilisation. We do not suggest and we do not support any deep particle structure theory of the gravitational field ,electromagnetic field etc. Only a statistical macroscopic classical field image of it. Neither the present physical heuristics should be used to change for the time being, any of the standard formulations in Quantum Mechanic. This seems to us better for many reasons: It is more practical, easier, safer, and relevant to the effects that are macroscopic. In fact the present suggested quantitative formulation does not and should not hold at the microscopic particle scale. Already at the middle-laboratory scale level is all the benefit that we miss and should first discover. It is an important gap of civilisation's scientific intelligence and it is at the middle-laboratory scale not at the microscopic. Nuclear physics can be also considered an area with many accusations, and negative critique for the effects of science in society and planet's life. Lets leave the new developments as innocent as possible and away from the direction of nuclear physics. Lets leave nuclear power to military people and only for a global defence of the planet to exterior threats. We must not forget that my decision to proceed with the present research and publish it, was motivated as a defence to real external to the planet threats to our civilisation and humanity which explains why it is a partial restoration of rationality in physics leaving outside the quantum mechanics.

4) Why it is restored the concepts of material field (aether) and is rejected the usual conception of vacuum?

I think the answer is obvious after the answer in questions 1,2. It is not possible to reinstall rationalism in physical theories before a quality in the overall civilization is also installed. Because I think it is from these external directions that we lost rationality in physics. Thus I am not in a position or probably entitled to really reinstall, and probably it might be that I should not do so, for the time being, and in its full sense, the aether. I shall mention nevertheless that Dirac as late as in 1956 in his paper [Dirac] with title "Is there an aether?" Concluded that "...we are forced therefore to accept the existence of aether ...". It is I think not a matter of aether or anything else you may call it. It is rather a matter of integrated thinking, integrated rationalism, and the need for new faster transportation technologies inside and outside the planet and forms of energy that are safer than nuclear energy, plus to save our rational mind when encountering this that maybe beyond in physical advancement. If the societies on the other hand decide that we should not discover aether yet, then we might remain for one more century with the dogma of "vacuum space-time" and "quantum vacuum" trying to solve meanwhile administrative and social problems. **In that case the present research could be formulated and conceived, only as new mathematical field equations for gravitation and electromagnetism, with new potentials, closer to known experiments and in an "empty space"**. It is a scenario that I am not sure that developments won't go like that. The decision to proceed with the hydrogen energy model in the long run contains the decision to deal in the present right terms with the classical fields (aether) otherwise the effort would be much and the resulting benefits much less. Nevertheless for my personal world of thoughts I would adopt the freedom to think in a free and true way, which would not accept concepts like "vacuum space-time" or "quantum vacuum". This attitude goes together I think with the right and positive orientation of the social moral and spirit. I am not sure that in the short term this mental attitude and choice would not bring bad luck because at least of widespread misconceptions in a hostile society. Probably it might in many cases. But we must not forget that my decision to proceed with the present research and publish it, was motivated as a defence to real external to the planet threats to our civilisation and humanity.

5) Is there a non-deterministic formulation of the theory?

Of course there is but as usually we start with the deterministic formulation. The deterministic formulation is the appropriate for the macroscopic scale. So for the intended control of the interactions is superior to other formulations. Of course for macroscopic control there is stochastic formulation but this is not of the nature of quantum mechanics (because the cause of the fluctuations is not a substratum realm) but as is the formulations in random fluids mechanics, in other words due to random effects of the boundary conditions related to macroscopic material objects. A believe that a quantum theory of such phenomena is

not a socially serious approach and sooner or later shall lead to a deadlock.

6) Why the suggested experimental devices are not mentioned in the standard academic publications of Physics?

I cannot really answer it as I do not have the necessary information. But I could speculate. First it was the time of cold war, so there was a lot of a tendency to hide the discoveries. Probably the authorities were encouraging, hiding the results. Second the inventors rushed in to business applications, without waiting the scientific community to explain and account for their discoveries, which created for them additional troubles.

It is true nevertheless that in their life-time, it was highly improbable that they would get theoretical covering from the Universities. And this type of problem in the asynchronous developments in sciences I discuss in a separate paragraph. In short I believe that it is not a non-common phenomenon in the history of science. Not all discoveries and innovations in the sciences come in a smooth and convenient way.

7) Why the author is not a by carrier physicist?

Well it is the course of life that makes it so to happen. I started with my interest and research in physics and maths, but I realized soon, that the major issues in physics had already reached a sad dead end, for the present time mainly due to the domination of war applications. So the social sciences seemed to me a more promising area. That is why I acquired the possibility to think free about the physical sciences too.

8) Are the “Free-Energy” devices mentioned in the text safe for practical applications?

I cannot know. Some of them are working for decades in a safe way. Nevertheless their inventors have taken care to function in a smooth non-greedy and mild way as is the case for example with testatika.. Without significant theoretical and mathematical work on them by many university groups and for many years, it cannot easily be decided. Maybe irresponsible functioning of them in inappropriate conditions might create explosions or unknown type of ecological pollution. I am in favor of academic research on them, and not in favor of rushing in to business or other demanding applications, with them.

