Discontinuous Ether Model

Author: Bernard Feldman ftc@cruzio.com

Abstract: An ether model for a potentially unifying theory of gravitation and electromagnetic energy transfer is presented herein with essentially qualitative terms. The ether model proposed is discontinuous and consists of sub-atomic particles (ethertrons) that originate from a star's core and behave similar to an ideal gas in the region surrounding the star to an outward boundary. Features of this model include: gravitation according to the LeSage's 18th Century model, no gravitational field within the star's core, no gravitational or electromagnetic fields between stars, and the velocity of light and the gravitational constant varying from one star to the next. The Big Bang and Black Holes are shown to be as implausible extrapolations. Predictions include there being asymmetric higher redshifts in the plane of our galaxy, and the drift of Pluto's orbit toward the plane of the ecliptic.

Keywords: aether, gravity, singularity, general relativity, mass, ethertron, Planck's constant, big bang, black hole.

However useful the concept of a singularity, initially thought of by Newton and Leibnitz to be later formalized by Schwarzschild, may be for precisely formulating mathematical expressions that describe reality, there are no known examples of such in the real world. It is therefore not plausible to postulate the aforementioned popular concepts which have become dogma in many academic circles. Nothing starts from nothing and goes on indefinitely. Everything starts from something and encounters something that results in some sort of boundary. Of course many of the triumphs of modern physics came about by defying what was formerly thought to be plausible so the principle or notion of plausibility for all intents and purposes has been discarded by the scientific community along with the proverbial bath water. In the long run this will most likely be a mistake.

Arp[1] presents experimental evidence that certain redshifts do not correlate to distance. The Penzias-Wilson discovery of the 2.73º Kelvin (K) predicted by theory is a subsidiary piece of evidence and one can ask what is so special about expecting 0ºK background. The practice of extrapolating backwards to the boundary of initiation is not realistically encountered in the real world and may appropriately be dubbed "juvenile extrapolation". Einstein once said [2] "Common sense is the collection of prejudice laid down in the mind before the age of eighteen." It is my view that the opposite is true, and that an explanation that cannot be formulated to persuade the eighteen-year old mind needs further work.

I would like to propose an ether model in qualitative terms which is capable of accounting for all the known properties of gravitation and electromagnetic transmission. The details of the latter will remain largely unaddressed because I haven't a clue as to how to rationalize the relation between the two transverse components of the field into their respective electric and magnetic characteristics. I will depend mainly on gravitational evidence for any potential verification of the model. All my speculations will center on the environment of the Sun. It is my view that extrapolating general properties from local experimentation (i.e. the sun) must be done with great care. It is my view that the two alleged universal constants, the Gravitational Constant and the speed of light, are based on experimentation that was done

within our solar system and although they can be expected to be qualitatively similar elsewhere, they may have a quantitatively different value in the vicinity of other stars. Of course events at the micro-level have been shown to be governed by the same laws as is apparent by the spectral evidence that Planck's constant is a true universal constant.

The ether model developed in the latter half of the nineteenth century that served Maxwell so well in the formulation of his laws of electromagnetism was supposedly “shot down” by the famous Michelson-Morley experiment. The proposed solid-like, elastically-coupled, all-pervasive medium was never very plausible but a medium was required to explain the very plausible wave transmission of light and the persistent efforts of physicists to "explain" phenomena via this medium did in fact impede the development of relativity and quantum theory. As a consequence of the spectacular successes of modern physics in accounting for previously unknown phenomena, the principle of plausibility has been effectively discarded. It became fashionable to frown upon any test of plausibility or correlation to known properties of the real world when a phenomenon was found to be in conflict with previously established quantitative relationships.

I begin the formulation of this heretically resuscitated ether model by challenging the notion that the velocity of light is a universal constant. I claim that the experimental evidence of this constancy, as found in the environment of our star, should not be extrapolated beyond its boundary. My problem is that I cannot conceive of a mechanism for such a property on a universal basis whereas I can on a local basis. To me a limiting velocity conjures up the concept of a terminal velocity in a gaseous medium. Therefore I propose an ideal gas-like medium surrounding our Sun, which has a boundary out beyond Pluto and is capable of accounting for gravitation, electromagnetic wave transmission, the sustained motion of the planets, stellar aberration, the EPR paradox, the red-shift/distance relationship, and any other yet unknown phenomena.

Let us postulate a subatomic particle (call it ethertron) which is emitted or absorbed into an electron and/or nucleus on a periodic basis and is the vehicle for an energy transfer between the atom and its ethertron environment. This environment emanates from star’s core and behaves very much like an ideal gas with random particle motion and a density that diminishes as the inverse square of the distance from the star core to the outer boundary of the star environment. The outer boundary can be defined as the surface of a sphere beyond which the transverse components of the periodic emission are not manifest and the radial component of the emission remains to possibly travel to some other star environment where it encounters another randomly distributed ether and re-establishes the transverse (electromagnetic) properties of the radiation that it carried.

Thus, in accordance with this model, the medium exists around and about each star and is essentially absent as a medium in interstellar space. A hypothetical observer in interstellar space would not be able to see the light that would be observed by an observer located within the spherical ether environment of another star.

On the basis of this hypothesis light passing through a star environment would be refracted and retarded, resulting in a redshift which would be a function of the number of star environments encountered on the journey and the radiation encountered. Herein is an interpretation to a distance/red-shift relationship which differs from the conventional Doppler interpretation. If this interpretation were correct, one would expect to find higher red-shift quasars when looking out in the plane of the Milky Way than when looking at right angles to it. This points to a relatively uncomplicated experimental test that would either

refute or validate my central hypothesis.

According to this model there is no explanation for distinguishing the relationships between the components of the transverse vibration, the magnetic, and electric fields. For purposes of elucidating gravitational effects we assume the ethertron to be of a neutral charge. The planets and all massive bodies interact with the generalized ethertrons which interpenetrate the large masses in depth. George-Louis Le Sage[3] demonstrated in the late eighteenth century that such a model explains gravitational attraction as a depletion of ethertrons impinging upon the two bodies in the region and that the force of attraction follows the inverse square law. It is presumed that the two bodies can range in size from two atoms to two planets or any other mass. All bodies are large in size relative to an individual ethertron such that the velocity of wave transmission within the medium is a limiting, or terminal, velocity; to wit: the speed of light. In other words even the smallest of particles will have a terminal velocity in the ethertron environment, just a small pebble will fall through the air only to reach a terminal velocity where its acceleration is in equilibration with the resistance of the air.

It therefore follows that the gravitational constant is not a universal constant but is rather a property of a particular star environment and could vary from star to star. It also follows that since the transfer of ethertrons between the ether environment and particles is a function of temperature (increased temperature leading to increased rate of transfer), the gravitational constant is also a function of temperature. These suppositions are crucial to the survival of the proposed hypothesis and should lend themselves to experimental verification or refutation even without a quantitative formulation of the model.

In accordance with this model the orbits and motions of the planets and their satellites are not the result of original motions unimpaired over time by any resistance but rather the dynamic consequences of the impact and interchange of ethertrons with the heavenly bodies. Thus the orbits of the planets are a consequence of the rotation of the Sun and only out at the periphery near Pluto is there substantial deviation for this pattern.

However I offer the following crude attempt to calculate the mass of the ethertron based upon an analogy similar to an ideal-gas-type particle situation such as the propagation of sound:

Calculating the Mass of the Ethertron

From analogy with the propagation of sound:

$$C = (1.4\ P/D)^{1/2} \qquad (1)$$

where: P= Pressure

D = Density

C = Wave Velocity.

From kinetic theory of gases :

$$P = 1/3\ D\ V^2$$

or:

$$P/D = 1/3\ V^2 \qquad (2)$$

where: V = Average velocity of an ethertron.

Substituting (2) in (1): $C^2 \sim \frac{1}{2} V^2$

or: $V^2 \sim 2C^2$ (3)

the energy associated with the release of one ethertron:

$e = \frac{1}{2} M V^2$

where: M = mass of one ethertron,

and whence: $e \sim MC^2$ (4).

Relating the mass energy interchange in terms of the number of ethertrons emitted at a frequency "f" and applying the Planck relationship:

$hF \sim MC^2$

or : $M \sim hf / C^2$

let : f_o = that frequency associated with a minimum energy release.

then: $M \sim h f_o / C^2$ (5).

In CGS units: $h = 6.6 \times 10^{-27}$ ergs / Hz

$C = 3 \times 10^{10}$ cm / sec.

Substituting in (5): **$M \sim 10^{-47} f_o$ gms.**

What is the value of f_o? It is my supposition that it is the frequency of the radiation associated with the energy change of an electron in the free state and one in the highest energy level of a Hydrogen atom. If this is of the order of ten megahertz (10^7 Hz) and since the mass of the electron is 10^{-27}gms, there would therefore be 10^{13} ethertrons in one electron and/or nucleus.

Consider the following comments about this crude hypothesis. The assumption is that there are two types of ethertron emission. The emission corresponding to the energy exchanges that result from nuclear transformations, involve massive releases and correspond by analogy to boiling. The other type of emission is that associated with radiation and/or absorption resulting from the changing energy states between electrons and nuclei.

The latter process is assumed by analogy to resemble a sort of sublimation, where we try to follow the ethertron as it leaves the atomic neighborhood and commingles with its neighbors in what is assumed to be an ideal-gas-type medium. The expression (4) shows there is some rationale for assuming an ideal-gas-type medium.

Invoking Planck's constant (which I consider a true universal constant) says in effect that these ethertrons are being emitted in a periodic fashion and that this is the mechanism whereby the wave character of the photon is derived. The selection of the base emission (or absorption) frequency f_o corresponds to the minimum energy change allowed. My estimate of this value is in contradiction to quantum theory which would allow a photon of energy approaching zero as the quantum number, N, approaches infinity. Physically this means that an electron can approach an arbitrarily low velocity as it orbits the nucleus on the verge of becoming free and that there is a finite very low probability for such a transition. Realistically, it is not feasible to confirm this experimentally for values of N much greater than 100 (which is a long way from infinity). It seems that there needs to be a modification to the theory that would account for the same kind of virtual boundary that I postulated for the ether atmosphere in a manner analogous to the way in which a boundary is prescribed for the earth's atmosphere. In any case the concept of a quantum frequency "f_o," would act as a fundamental frequency. This would imply that it should be evident in the fine spectra of the elements and its value could be ascertained experimentally and therefore leading to another possible test of the validity of these speculations. If my estimate for f_o is close, we are looking at the order of ten trillion ethertrons per electron.

The situation at the star core involves a massive boiling of ethertrons. If we assume that Newton's third law applies to these mechanistic particles, the reaction forces on the core, account for the high temperature and pressure and many of the other observed stellar properties that presently are attributed to the density related effect of gravitation, except of course the hypothesized "black hole". The star core envisioned here would have no gravitational field inside its periphery. The forces operating radially towards the center are presumed to be the reaction forces resulting from the massive ejection of ethertrons. This model avoids the absurdity of the "black hole" which comes about as a consequence of the "juvenile extrapolation" of gravitation down to a singularity, ascribing the gravitational force as a property of matter rather than as matter interacting with a gravitational field of ethertrons as proposed here.*

Concerning the concept of the photon, there is more energy associated with a higher frequency photon because there are more ethertrons emitted or absorbed per unit of time. The various dual slit paradoxes are resolved because there are field properties associated with the photon such that interactions with the apparatus can be understood in terms of polarization, interference, and other wave properties, especially the Doppler effect. A single photon may be considered as the number of ethertrons required to bring about an energy level change in a single atom. Properties like red-shifts, polarization, and the like, have their root common sense aspects restored to them. Wave-particle duality becomes comprehensible to the "eighteen year-old."

If one recognizes the relativity calculations as an artificial mathematical manifestation from the consequences of a terminal velocity in the ether, one is restored to the notion that clocks **appear** to slow down and masses **appear** to increase as they approach terminal velocity in the ether. The concept of space-time becomes a "virtual reality" that is useful for correlating phenomenological observations but has no meaning with respect to true reality.

If these speculations turn out to be correct the ever so neat theory of the birth of stars will need to drastic and fundamental revisions. In fact, if these speculations should become transformed into a theory by others who possess the skills I lack, more questions will be raised than will be answered by the institutionalization of these heresies. This may be the most compelling reason for paying attention to

such new concepts despite their flying in the face of relativity.

In summary, what has been presented here is in qualitative terms, a model of a discontinuous ether which is generated within each star and has a boundary at the surface of the core of the star. Within this star core there is no gravitational field but rather the massive emission (boiling) of ethertrons. Beyond the surface of the star's core and out to its outer boundary, there is an ether environment (atmosphere) which behaves like an ideal gas. The electromagnetic radiation and gravitational properties of this ether follow the Newtonian and wave propagation laws of classical physics. At the outer boundary of the star, ethertrons are transmitted into interstellar space radially without the transverse vibrations characteristic of a random motion medium. The ethertrons march into interstellar space until they encounter another ether environment whence they re-establish their transverse wave properties, albeit with modified yet reproducible qualities. One such quality is the phenomenon of stellar aberration, which was not consonant with the ether theory that preceded Michelson-Morley.

The immediate potential tests of these speculations which might be verified qualitatively and experimentally, might contribute to quantitative formulations that are the predictions of asymmetric red-shifts with respect to the plane of our local galaxy, the verification that G = f(T), and that the plane of the orbit of Pluto should be moving towards the plane of the ecliptic. Since there is a lengthy history on Pluto, maybe some enterprising astronomer will examine the data for some small shift, a shift that must be looked for in order to be found.

*I acknowledge here the application of my own pejorative term of "juvenile extrapolation" to myself for extrapolating Newton's third law as a prime law that applies to the subatomic realm (without any evidence of course).

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