IS THERE AN "ETHER" ?? CAN WE "SEE" THE ELEMENTS WHICH COMPOSE IT ??

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SUMMARY [i.e., "abstract"]

Based on theoretical work by Ernest Sternglass (1923-2015) and Menahem Simhony (1921-2015), one can argue that there is an ether-like substance ["epola" --- short for "electron-positron lattice"] throughout our universe, which physicists have already "seen" --- by using particle accelerators ("atom smashers") in high-energy experiments. Particle physicists believe that they have "discovered" many different kinds of "particles" during the past 80 years, such as "unstable baryons" known to science as the *bottom lambda,* the *bottom sigma,* the *bottom xi,* which exist for only less than a millionth of a second before "decaying." Because they decay so quickly, one might more accurately consider these unstable objects to be [not particles, but] tiny blips of energy. Note that the word "discovered" is inside quotation marks --- because these objects might have been "created" by the experimenters themselves, by causing some of the elements which compose the epo-lattice to vibrate, resonate, and/or oscillate energetically, giving the appearance of a "particle."

Starting in the 1970s, Simhony has developed an "electron-positron lattice model of space" to explain both radiation and gravitation. If "epola" really exists, then Simhony's model is a great leap forward in our understanding of physics. In this essay the writer suggests that high-energy experiments using particle accelerators have already provided evidence that this stuff really does exist, but that, (because the standard model consistently denies the existence of any kind of ether or ether-like substance in our universe), this interpretation of these experiments has been consistently overlooked.

This writer presents evidence that the observations of the above-mentioned unstable so-called "particles" might be in fact due to interactions between high-speed electrons used in the particle-accelerator experiments and some of the elements which compose an ether-like substance which permeates our universe. Thus, the "discovery" of "particles" such as the above-mentioned unstable baryons might in fact be evidence for the existence of unseen elements which compose an ether-like substance which Simhony calls "epola" --- rather than evidence for the actual existence of three different kinds of "particles."

Key words: aether, de Broglie wavelength, electron-positron pair, epola, ether, Simhony, Sternglass;

DEFINITION: "Epola" is the ether-like electron-positron lattice in the model of Dr. Menahem Simhony. "The epola is not an aether as originally defined, and far from being aethereal ... but a

dense aggregation ... of leptons [i.e., of electrons and positrons]" [Ref. #3a, in section 5 of the FAQ (frequently asked questions) link, titled "Is the epola model an aether theory?"].
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Part 1. "ETHER" MIGHT ACTUALLY EXIST

Firstly, the writer wishes to quote two Nobel-prize winners regarding the possibility that there might be an ether-like substance which permeates our universe and inter-penetrates all the ordinary matter in it.

Nobel-prize winner Frank Wilczek says that **"There is a myth, repeated in many popular presentations and textbooks, that Einstein swept [the concept of ether] into the dustbin of history"**. However, Wilczek says that, on the contrary, **"the truth is more nearly the opposite"** --- and that today, **"renamed and thinly disguised, [the ether concept] dominates the accepted laws of physics"** [Ref.#1]. {HINT: the **"renamed and thinly disguised"** ether to which Wilczek refers is today known as a "field" ----- or as a combination of several "fields"}.

Nobel-prize winner Robert B. Laughlin of Stanford University had this to say about “ether” in contemporary theoretical physics: “It is ironic that Einstein’s most creative work, the general theory of relativity, should boil down to conceptualizing space as a medium when his original premise [in special relativity] was that no such medium existed … The word ‘ether’ ha sextremely negative connotations in theoretical physics because of its past association with opposition to relativity. This is unfortunate because, stripped of these connotations, it rather nicely captures the way most physicists actually think about the vacuum … Relativity actually says nothing about the existence or nonexistence of matter pervading the universe, only that any such matter must be relativistic symmetry … It turns out that such matter exists. About the time relativity was becomming accepted, studies of radioactivity began showing that the empty vacuum of space had spectroscopic structure similar to that of ordinary quantum solids and fluids. Subsequent studies with large particle accelerators have now led us to understand that space is more like a piece of window glass than ideal Newtonian emptiness. It is filled with ‘stuff’ that is normally transparent but can be made visible by hitting it sufficiently hard to knock out a part. **THE MODERN CONCEPT OF THE VACUUM OF SPACE, CONFIRMED EVERY DAY BY EXPERIMENT, IS A RELATIVISTIC ETHER. BUT WE DO NOT CALL IT THIS BECAUSE IT IS TABOO”** [writer’s emphasis] [Ref.#2].

And Einstein himself supported the idea that there is an “ether.” In 1920, when 40 years old and already super-famous, Einstein gave a speech at the University of Leiden, in the Netherlands, at the invitation of his friend Paul Ehrenfest. Here’s what he said in the LAST PARAGRAPH of that speech:

“Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to
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the general theory of relativity space without ether is unthinkable; for in such space there ... would be no propagation of light"
[http://www-history.mcs.st-andrews.ac.uk/Extras/Einstein_ether.html].

In a previous essay [Ref.#5] we used Sternglass's model to calculate the size of a tiny relativistic electron-positron pair whose mass is the rest mass of a single electron or positron. Note that Ref.#5 is from an online book, a series of essays, by this writer [Ref.#7].

In this essay we propose that this tiny object might be identical to one of the almost unimaginably large number of elements which compose the ether-like substance in our modification of Simhony's model.

Part 2. SIMHONY'S "EPOLA" MODEL AND STERNGLASS'S "TABLE 1"

Simhony has postulated the existence of an ether-like substance in our universe, which permeates all the space in our universe, inter-penetrating all the ordinary atoms and molecules in it. According to Simhony's model, this ether-like substance is composed of nothing but electrons and positrons, in a "face-centered cubic" structure, exactly like the crystalline structure of ordinary table salt, and the elements which compose it are so near to each other that there are more than 10,000 of them between the nucleus of a sodium atom and the nucleus of a chlorine atom in a salt crystal !! He calls it "epola" --- short for "electron-positron lattice."

Sternglass's "Table 1" [p.234, Ref.#4] lists "Masses, sizes, and rotational periods of cosmological systems predicted by the electron[-positron] pair model of matter." Each cosmological system [cosmo.syst] consists of a relativistic electron-positron pair, in which the e and p orbit around each other so that the outer edge of the system's electromagnetic field moves at the maximum speed possible, i.e., about 99.9999% of the speed of light. See Figure 1, below. Note that a cosmo.syst can be as large and massive as a galaxy or star, or as small as a sub-atomic "particle," and that for each cosmo.syst in the table, the radius is proportional to the square root of the mass, regardless of how large or small it is.

One can find an object whose mass is that of an electron and whose radius is approximately 4.11E-15 cm [4.11E-17 meter] in Table 1 in Sternglass's book [p.234, Ref.#4], but the object is a relativistic electron-positron PAIR, not an individual e or p. And the object is not actually in Table 1 as it appears in Sternglass's book, but one can extend the table, (down into the part which Sternglass would call "stage 28"), to find it there. Note that, if one actually does the calculation to extend the table, then he or she should remember to divide the radius by 137.036, the inverse of the fine-structure constant, to account for the relativistic shrinkage of the smaller objects in the table, as Sternglass details in the book. Note also that 4.11E-15 cm is a very tiny size: much smaller than a proton or neutron. In fact, it's so small that one would need a very powerful "electron microscope" to see the tiny objects.

If this object actually exists, then it is almost certainly the smallest (and also the densest) “cosmological system” possible, as it’s difficult to imagine an ep-pair with less mass and greater density.

The observation that one can find this tiny object in Sternglass’s “Table 1” was the main inspiration for this writer to look at the possibility that it might actually exist in nature. Note that the radius of such an ep-pair is defined as the distance between the center of the e and that of the p. Assuming that it does exist and is of a toroidal shape, like a fat bagel, (see Figure 1, below), simple geometry gives its mass-density as approximately 5.3E15 grams/cc, where a “cc” is a cubic centimeter. This is about 20 times the mass-density of a proton or neutron. And the fact that it’s an ep-pair leads to an interesting idea: perhaps one can modify Simhony’s model to say that the epo-lattice might be composed of ep-pairs, rather than individual electrons and positrons as presented by Simhony in describing his model.

In other words: **We’re looking at the possibility that each of the tiny elements which compose the epo-lattice (assuming that it exists) might be identical to this tiny object, a relativistic electron-positron pair, whose possible existence one can postulate from Sternglass’s Table 1.** If this be true, then it would be a significant agreement between the two researchers, each of whom was probably not aware of the work of the other.

Part 3. ELECTRON MICROSCOPES ??

Some of the "particle accelerators" which physicists have used to discover the characteristics of the many unstable "particles" are, in effect, powerful "electron microscopes" --- in the sense that they use very speedy and very energetic electrons to "see" what these objects look like, and how they behave. Sternglass describes this in his book [Ref.#4] in the chapter where he describes collaborating with Robert Hofstadter at Stanford University during the 1950s. He says that the 150-feet-long particle accelerator ---("atom smasher")--- which they used was one of the first machines with enough power "to begin to disclose the size and structure of the proton" --- and that “Hofstadter’s accelerator was in effect a very powerful electron microscope” [p.113, Ref.#4]. Hofstadter later won a Nobel prize (1961) for this research.

An "electron microscope" works by accelerating electrons to a speed almost equal to the speed of light, to increase their energy ["kinetic energy"], which causes their so called "de Broglie wavelength" {a phrase which one can google} to shrink down to a tiny size equal to that of the object which one wants to "see." In fact, an "electron microscope" cannot "see" objects which are smaller than the de Broglie wavelength of the speedy and energetic electrons which it uses. One can calculate the amount of energy which each of these electrons would need, to be able to "see" something as small as 4.11E-15 cm, by using de Broglie's famous formula for the wavelength of "matter waves." Please google "de Broglie matter waves" if you want or need to.

The calculation is easy: $m = h / (WL.c)$, where *"m"* is the mass of the object, *"h"* is Planck's constant, *"WL"* is the object's de Broglie wavelength, and *"c"* is the speed of light. Using numeric values h = 6.63E-27 gram.(cm/sec).cm, WL = (4.11E-15 cm).2.(pi) = 2.58E-14 cm, and c = 3E10 cm/sec, one calculates a mass of 8.55E-24 gram, approximately the mass of five [5] protons. Please note that one multiplies the radius 4.11E-15 cm by 2.(pi) to get the appropriate "wavelength" to use in the calculation. Note also that the mass calculated in this way is the "relativistic mass" of the electrons which the "electron microscope" would use.

Using Einstein's famous $E = mc2$, i.e., $E = m.c^2$, one can translate this mass to energy: E = [8.55E-24 gram] x [9E20 cm.cm/sec.sec)] = 7.69E-3 erg, which is equivalent to 4.8 gigavolts [4.8 GeV]. This is the minimum energy-content which the electrons in an "electron microscope" would need, to be able to "see" one of the elements which compose the epo-lattice.

One doubts that any experiments of this kind to look for the elements which compose the epola have ever INTENTIONALLY been done, for the simple reason that most PhD-holders are totally unaware of Simhony's theoretical model. However, there have been many experiments in which electrons were accelerated to that energy, and to greater energy, while looking for other objects and/or for other reasons. These experiments have resulted in the "discovery" of many kinds of "particles" during the past 70 years, although the word “discovery” is misleading, because the experimenters themselves might have created these “particles” --- by causing the elements which compose the epola to vibrate energetically, giving the appearance of “particles.” Likewise, the word "particles" is misleading, because these so called "particles" "decay" after less than a millionth of a second. Now you see it ... **!!!POOF!!!** ... now you don't. In other words, one might more accurately characterize the unstable baryons as [not particles, but] tiny blips of energy --- because they decay so quickly.

Among the many objects “discovered” by using particle accelerators during the past 70 years are objects called *unstable baryons.*

Part 4. UNSTABLE BARYONS ??

These objects have names like “lambda” & “sigma” & “xi” & “dogma” ---(just kidding about that last one), and there are so many names for the many different kinds of these objects that Enrico Fermi is supposed to have said that --- if he could remember the names of all the different "particles" --- then he would have been a botanist !!

Thanks to the internet, one can easily find lists of these objects, and their masses, i.e., their energy contents. There are three [3] different "particles" of this kind whose masses are close to the relativistic electron-mass calculated above: the "bottom lambda", the "bottom sigma", and the "bottom xi" (also called "Cascade B"). These weigh in at, respectively, 10.01E-24 gram,

10.35E-24 gram, and 10.31E-24 gram, equivalent to 5.62 gigavolts, 5.81 gigavolts, and 5.79 gigavolts respectively. **[https://en.wikipedia.org/wiki/List_of_baryons].**

Please note that, according to this list, there is no known "particle" of this kind [an unstable "baryon"] whose mass (i.e., whose energy content) is greater than this, except for the "bottom omega" --- which is slightly heavier. Theoretically, and also logically, it would make sense if the tiniest and densest objects in our universe, (epola-elements), would manifest themselves as observations of the some of the heaviest unstable baryons known to science.

Please also note that, if one looks at a list of unstable mesons. there are, likewise, several kinds of "B mesons" whose masses are in this range, and that these, too, are the most massive objects in the list, except for the "bottom eta meson" --- which is approximately twice as heavy.

Compare the energy-contents of the above-mentioned unstable baryons to each other: they are almost exactly the same. Compare them also to the minimum energy-content of the electrons in the "electron microscope" --- calculated in part 3, above: they are all slightly larger.

Compare these energy-values also to the energy-content which physicists have assigned to the so called "bottom quark": 4.18 gigavolts. Note that this is slightly less than the amount of energy which the electrons in an "electron microscope" would need, in order to be able to "see" an epola-element, according to the above calculation.

Part 5: LAUGHLIN'S ARGUMENT

In his book [Ref. #2], Laughlin argues that physicists use the "ether" concept routinely, but call it something else: **"the vacuum of space, confirmed every day by experiment, is a relativistic ether. But we do not call it this, because it is taboo."** [p.121, Ref.#2]. Plus, he says that: **"studies with large particle accelerators have now led us to understand that space is … filled with 'stuff' that is normally transparent but can be made visible by hitting it sufficiently hard to knock out a part."**

In other words, if one hit a bit of the 'stuff' hard enough, then it might manifest its presence as a blip of energy of approximately 5.81 GeV, which lasts for approximately 1/10,000,000,000,000,000,000,000 of a second, i.e., almost no time at all. So it might be more appropriate to regard this brief energy-pulse as a manifestation of the presence of an all-pervasive space-medium ---(similar to what scientists in the past often called "ether")--- rather than as the "discovery" of a new "particle." Perhaps the fact that researchers have observed objects such as the "bottom lambda" & the "bottom sigma" & the "bottom xi" in particle-accelerator experiments is in fact evidence that they have "knocked out a part" of the lattice.

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CONCLUSION

Perhaps the real meaning of the experiments which are supposed to have discovered the above-mentioned unstable baryons ---(and the correct interpretation of their results)--- is this: perhaps each of the three little blips of energy referred to above as "particles" (*bottom lambda, bottom sigma, bottom xi*) is actually a manifestation of the presence of the epo-lattice, in the sense that the measured energy-content of the "particle" is close to the theoretical minimum energy-content of the electrons in an "electron microscope" powerful enough to "see" the elements which compose the lattice. Perhaps each of these three slightly-different results is simply a measure of the amount of kinetic energy associated with each of several slightly-different ways in which high-energy electrons, moving at almost the speed of light, cause the epola-elements in their immediate vicinity to vibrate, resonate, and/or oscillate.

In other words, and to summarize the previous paragraph: perhaps the fact that scientists have observed "particles" like the **"bottom lambda"** and the **"bottom sigma"** and the **"bottom xi"** is evidence that they have been able to "see" the elements which compose the ether-like substance in the model presented here.

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POSTSCRIPT

In a recent essay [Ref.#8], this writer suggests that the electrons in a particle accelerator might need even more than the 4.8-GeV kinetic energy calculated above to be able to "see" the elements which compose the epo-lattice, due to the possibility that the elements which compose the lattice might be even smaller than the 4.11E-15 cm radius given above. Quoting from that essay:

“If, instead, one uses the slightly smaller numeric value derived above [3.374 x 10^(-15) cm] in the same calculation, then one obtains a numeric value which agrees almost exactly with the known energy-content of the above mentioned unstable baryons, namely, 5.85 GeV.”

So it seems that researchers might have already “seen” some of the elements which compose the epo-lattice, but not realized it, because the standard model specifically *denies the existence of any kind of ether or ether-like substance in our universe*.

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With kind regards, MARK.CREEKWATER@gmail.com

=====>>> {[NOTE Figure 1, and REFERENCES, below]} <<<=====

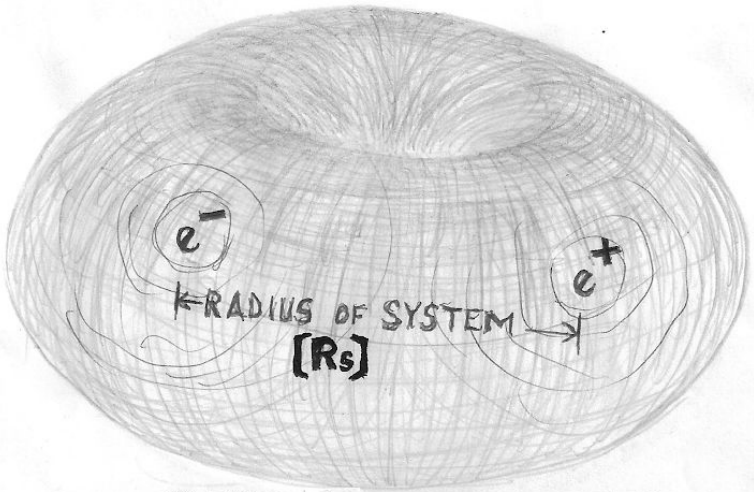

FIGURE 1

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THE ORBITING ELECTRON AND POSITRON IN A STERNGLASS COSMOLOGICAL SYSTEM CREATE A TORUS-[DONUT]-SHAPED OBJECT OR ENTITY

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