

Why some Particle Mass Ratios nearly equal Geometric Pattern Ratios

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Some volume ratios, in simple geometric patterns, are nearly equal to some important particle mass ratio in physics -- such as the proton to electron mass ratio. Those correlations were detailed by me in a widely read journal in 1995. (See next page) However, I did not then suggest why such correlations arise? Unless the correlations are merely coincidental, an explanation is desirable; and I now attempt it! It involves these notions: Low density aether vortices or spheres in space having a Planck's quantum of angular momentum; maximum nuclear densities (as in Bohr's liquid-drop model); some aether-related speed-of-light limitations imposed on nuclear densities; and those small and large aether balls in space containing small and large energies, respectively. Those ethereal spheres are determined by what fits into neat, close-packed sphere patterns in space, and they share some energies and angular momentum with gross particles.

1...Preface:

Before reading further, the reader should **see the table and pictures on the next page!** Scroll down to the next page, click blanks, and allow 30 seconds for pictures to appear. The table shows volume ratios that exist in patterns, and corresponding particle mass ratios that very nearly equal those pattern ratios. My paper aims to rationalize those correlations!

That first table (see next page) is almost identical to the original one published in 1995. [1] But it is magnified and highlighted to perhaps help some viewers. (If pictures etc., come out poorly; use the 'link' below the table to go to my own webpage that provides similar information.) Again, allow thirty seconds for any pictures to develop.

2...Introduction:

2A...Optional: How did the ratios and correlations first come to my attention?

Originally, I inquired as to why 'tritium', an isotope with **three nucleons** (one proton and two neutrons) was remarkably stable? (It has a long half-life.) I noted that when tritium decays into an isotope of helium; tritium emits a 'Beta' particle, i.e., an electron. The question naturally arose, "Where did that small electron snugly fit, before being expelled from the presumed three-nucleon array?" Or if the tritium nucleus could momentarily be regarded as having three neutrons – but with two positrons and one electron fitted in there also; how might those fit? Perhaps, as three large spheres (nucleon masses) surrounding three smaller, compressed, charged (electron-sized) spheres?

2B...Important: Many NPA'ers have likely concocted more realistic nuclear models than those that I first visualized. **See my visualized diagrams below.** [2] Those started my interest in ratios. See pictures on next two pages; allow 30 seconds to develop:



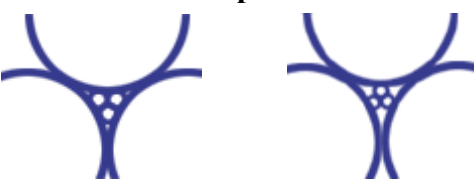
TABLE: Particle Mass Ratios, and Similar Geometric Volume Ratios

by Carl R. Littmann, **Click blanks below and allow 30 SECONDS for pictures to form!**

This table presents, less formally, and with expanded viewing, matters in an earlier article I wrote, published in the Journal of Chemical Information and Computer Sciences, 1995, 35 (pp. 579-580)

In some simple geometric patterns, (such as when three large touching spheres surround one or three small touching spheres); certain volumetric ratios arise, (See Table above, left side). When comparing the masses of certain important particles (Pions, Kaons, and Protons, to Electrons); certain particle mass ratios also arise. (See Table above, right side) The pattern volume ratios and the particle mass ratios are nearly equal.

DESCRIPTION: (All spheres intended perfectly round, coplanar, and touching.)

Geometric Pattern (Centers of all spheres coplanar)	(See Pattern to left) Volumetric Ratio	("Important" Particles) Ratio of Masses	"ave" Mass Ratio
 <p>case "A" R/r = 6.4641/1</p>	<p>1 large sphere to 1 small sphere (centered in the pattern): 270.10/1</p>	<p>pion⁺ or pion⁻ to electron: <u>273.13/1</u>; pion⁰ to electron: <u>264.14/1</u></p>	<p>270.13/1</p>
 <p>case "B" R/r = 9.89898/1</p>	<p>3 large spheres to 3 small spheres (all 3 smaller spheres also same size): 970.00/1</p>	<p>Kaon_s⁰ or Kaon_L⁰ to electron: <u>973.92/1</u> Kaon⁺ or Kaon⁻ to electron: <u>966.04/1</u></p>	<p>969.98/1</p>
<p>Close Up Views</p>  <p>case "B" and case "C"</p> <p>R₁/r = 9.89898/1 R₂/r = 13.9282/1</p>	<p>$3R_1^3/6r^3 + 3R_2^3/6r^3 = 1836.00/1$, i.e. 6 equal small spheres with radius r, 3 intermediate size spheres with radius R₁ as in case B, and 3 large spheres with radius R₂ (case C)</p>	<p>Proton (or antiproton) to electron: <u>1836.15/1</u></p> <p>Neutron (or antineutron) to electron: <u>1838.68/1</u></p>	<p>1837.42/1</p>

NOTE: **IF** the above pictures **don't** show up; try clicking this online reference:

<http://www.causeeffect.org/articles/particle.html>

2C... Important: I think it is unlikely that one or three well-defined spherical electrons actually physically dwells within any nucleus or meson; nor that the nucleus consists of larger, well-defined, spherical nucleons neatly surrounding such electrons. But somewhat similar patterns of spherical **balls of ethereal energy in space may well exist** at any moment, and they interact with finite size nuclear globs of material. That (and equipartition of energy) are crucial thoughts; and the implications will be developed later in this paper! (The angular momentum of large aether vortices is also crucial.)

2D... Optional Historical Note: Historically, some eminent scientists have modeled space as occupied, or mostly occupied, by real material spheres. Huygens, the pioneer of a useful wave-theory of light, used such spheres for his modeling. [3] Further along in his thesis; Huygens hedged his confidence, somewhat, that the shapes must be spherical; and was more confident that all the shapes were the same size. But he still vigorously advocated spheres of the same size as a great conceptual tool, anyway. Maxwell, at least, ‘toyed’ with the idea of spherical balls in space, as a possibility, too. [4] Peter Tait also did, according to some specialists. [5] The eminent mathematician, Richard Courant, chose the equilateral triangle as exemplifying ‘the simplest structure in two dimensions -- from a combinatorics viewpoint’. [6] Those triangles are like my sphere patterns.

2E... Description of my Ratios, i.e., Volume ratios in patterns vs. particle Mass ratios: (Experts may skip below, if Table details are clear without further elaboration.)

The first geometric volume ratio (See Table previously displayed) arises when considering three large equal spheres surrounding and touching one small sphere. All spheres that are shown in all diagrams of this paper -- are coplanar. And all diagrams are very simple, just as shown. That first geometric volume ratio is compared to the following particle ratio: the average mass of three related types of ‘Pions’ (i.e., meson particles) to the mass of an electron. Historically, those Pions have been known as ‘semi-stable’ mesons -- because they generally have a longer half-life than most other mesons. Similarly for the case of ‘Kaons’, the next semi-stable mesons to be discussed.

A second geometric volume ratio arises when three large spheres efficiently surround and touch three smaller spheres. That resulting geometric volume ratio is compared to the following particle ratio: the average mass of four related types of ‘Kaons’ to the mass of an electron.

Lastly, an average of spherical volumes in two related patterns will be addressed: One pattern represents the most efficient way which three large spheres can surround three small spheres; and the pattern shown next to it represents the most inefficient way. The volume of those very large and modestly large spheres (all six) is compared to the small six surrounded spheres. That resulting geometric ratio is compared with particle mass ratio averages as follows: The particle mass ratio resulting when four major (basic) nucleons are compared to the mass of four electrons.

(Optional: The following may be noted. In the case where a large mass particle seems to depart further from the averages than most others; the one furthest from average or the pattern ratio -- has a shorter half-life. Also, in the cases where some particles

masses are just a little under the near equivalent geometric average, and some particles just a little over that average; we also note this: In at least the neutral pion case; the magnitude of comparative offset, itself, seems to be ‘quantized’, i.e., as to the number of bundled increments.)

3...Theory Proposed: (Why particle mass ratios nearly equal volume ratios in patterns)

((Note, the reader can temporarily **skip my Assumptions** listed **below**, and first scroll down and read, ‘**B**’...“Theory Development (based on elementary assumptions).”))

3A...My Assumptions: Below each of my listed assumptions; I make some miscellaneous remarks, and I put those remarks in ((‘double parentheses’)). That is because it is not necessary that the reader agree with those miscellaneous remarks, to find my theory still constructive. Similarly, even **if** readers disagree with my assumptions; they might still find my theory interesting. That is, the reader might deem my assumptions as merely indirect approximate outcomes from more fundamental, but hidden, realities.

3A-i...There is a real dynamic aether, of sorts. Most of it consists of vortices or spinning spheres occupying countless small volumes in space. These manifest an average angular momentum in small regions of space. The average magnitude of each of those ‘spins’ relates to Planck’s constant, (i.e., is roughly $h / 6.28$). Each spherical volume of space, having a radius of roughly 0.5×10^{-10} meter, typically manifests that average angular momentum. (There are likely spinning spheres or vortices inside of those spheres, and still smaller ones inside of those.).

((That radius is roughly half the spacing between atoms in crystals, and is roughly the radius of the Bohr hydrogen atom in its ground state We may regard the thin density of the aether in space as roughly equal to 10^{-20} kg/cu. m; and that is what the ethereal spheres are comprised of. The aether vortices or spheres spin and/or vibrate, at an average velocity of roughly 5×10^{26} meters/ second. The pressure of that aether in space is roughly 10^{33} N/sq. m. Ultimately, that helps prevent spinning protons from flying apart, since there are no so-called ‘forces-of-attraction’ in nature. My remarks, in double parenthesis, are based on my estimates in previous papers. [7]))

3A-ii...Those roughly 0.5×10^{-10} meter radius spheres (the main aether vortices in my “Assumption – **3A-i**”) do not fill all of space because there are crevices between those spheres, which are mostly filled with smaller spherical aether vortices. And the crevices between those spheres are also mostly filled with still smaller vortices; and so on. The velocity and density associated with even those smaller spheres, is roughly equal to those of the larger vortices. And the pressure developed by those smaller realms is also roughly equal to the pressure developed in the larger realms of the larger spheres. But the energy and angular momentum of the smaller spheres in space (i.e., small vortices) is considerably less than the energy and angular momentums of the larger spheres in space (i.e., the large vortices).

3A-iii... The highest density, which real mass can be compressed to, is roughly that of nuclear matter. (That is also a concept that Bohr used in his 'liquid drop model of the nucleus', and he achieved considerable success with that). The **low** density, high pressure, and high velocities of the aether interacts with the **high** density of material 'globs' and particles, (i.e., the 'ponderable' or 'gross' mass as we sense it). The interaction, however, is limited; and that high density globs or particles can not develop a spinning speed of more than about 1 to 2 times the speed of light, 'C'. A glob (of that high-density matter) will also tend to help form a low density ethereal sphere next to it, of similar size and containing equal amounts of energy as the glob. (That relates to stability)

((The high density of the nuclear material is, roughly, 2.3×10^{17} kg/cu. m. That is roughly the proton's density – as described and used in many textbooks of the 20 th Century. Of course, **if** a style of 'Black-hole' really exists, where great mass and energy shrinks down to Zero-volume; that likely would demolish this paper and nearly everything else I have ever written.))

3B... Important, Theory Development (Based on above elementary assumptions):

3B-i... At first, any volume amount of amorphous high-density material (glob) can begin to vibrate and/or spin at roughly velocity 'C' – because of its interaction with the typical high pressure and modest energy of the nearby small aether spheres. Or interaction, sometimes, with bigger aether spheres. So various whirling aether spheres also 'bump' against the high-density glob. Because of the nature of the aether vortices or spheres; various super-quick results ensue. And many inappropriately sized globs of mass will disintegrate and not become important physics particles.

3B-ii... Most of those 'quickly failed upstarts' (described above); lacked the necessary minimum (critical) mass to meet the necessary conditions to be described shortly, i.e., conditions that only allow a few exceptions under very special conditions. That will also be discussed, but later. Generally, a good glob candidate for stability must be able to 'form-up' an extended radius, so that the resulting volume (whether a ball or fat doughnut) can spin with a sufficiently high angular momentum -- comparable to Planck's constant in magnitude. (It must spin at velocity 'C'). Preferably, the good candidate should do that, while maintaining a high material density in space, and without spreading out very much. Thus, that density should be about the maximum density possible in the universe. That helps insure a sturdy, unique 'anchoring effect'!

On the large scale, a typical large aether swirling sphere and its Planck's constant dominate. Its large vortex-like action imposes a crucial angular momentum (side condition) on the much smaller sized (but high density) 'glob'. But, on a smaller scale than the large aether balls; small vortices or balls develop with small energy. By an 'equal partition of energy action, they impose a very important side condition, on some gross particles, also. ((Thus, we will discuss the consequences of both angular momentum and equal partition of energy (side conditions) shortly.))

3B-iii...The tentatively successful particle candidate, which we will visualize as likely a forming proton, interacts with surrounding aether spheres. And an ‘equal partition’ of energy condition between it and the surrounding (bumping) aether spheres – tends to develop. (This alone, however, would not insure much stability.) But some nearby ethereal energetic spheres have greater energy than the proton-candidate, and some other ethereal spheres have less energy than that proton-candidate. Some such pairs of ideally ‘too large’ and ‘too small’ ethereal-spheres form such geometric meritorious (combinatorics) **patterns in space**, as to reinforce each others’ stability, i.e., by forming close-fitting patterns. That relates to the patterns (drawings) shown earlier in the paper! (I.e., the various large spheres surrounding smaller spheres)

Almost all space ‘forms up’ along the patterns shown. Interaction occurs between stable major particles in physics and the ethereal spheres in the patterns that contain equivalent amounts of energy. And thus, the ethereal patterns are reinforced! This and feedback increases the stability of the most ideal-sized glob-candidates, more than otherwise. Similarly for the semi-stable particles (i.e., important mesons). In those cases, there is some interplay between pattern-enhanced ethereal spheres and the semi-stable particles, but just not as much, nor as dependable as for elementary particles.

3B-iv...Spinning electrons arise, despite their having to withstand the following difficult conditions (The ‘how’ will be discussed later): Electrons must have an angular momentum roughly comparable to that of Planck’s constant. They must achieve that with their mass whirling at roughly speed ‘C’. Electrons must achieve that, with a mass much less than the proton’s, and with an overall mass density concentration that is much less than the proton’s. Thus, as if to increase the difficulty; the successful (electron) candidate must severely lack the maximum material densities achievable in the universe; i.e., they lack that advantageous ‘anchor’! (I.e., the electron has less concentrated ‘locality’ compared to a highly concentrated proton!)

So we ask and will answer this challenging question: If the electron forms a spinning ring; how does it, indeed, maintain its great stability? The solution to the electron’s stability is likely this: There is an **especially high number of nearby little ethereal spheres due to patterns formed throughout space!** These little ethereal spheres very often interact with the electron’s total energy. During such events, a comparable energy is communicated, i.e., a very active, on-going ‘equal partition of energy’ interaction. That aids in maintaining that electron’s stability. And likely there is also the pro-stabilizing assist of ‘the gyro’ effect! That is due to the electron’s, Planck-supported, high spin; i.e., a high angular momentum also enhanced by the electron’s mass being spread-out; not very localized!

(Incidentally, a free electron’s shape is probably like a ‘doughnut shape’, and also as if made out of twisted dough. It likely also rolls along the twisted dough-lines, with a clockwise or counter-clockwise twist, depending on whether it is an ‘electron’ or ‘positron’. That model, by Kanarev, is a likely a better model than a ‘puff-ball’. As Kanarev infers; the abstract algorism that we call ‘charges’ – are really fancy ‘spins’. And I try to show (after the ‘Summary’ below) -- that the spin of gross particles arises

because a spinning aether spheres in space; and these spheres of aether are also involved in the arising of forces between so-call ‘charged particles’.)

4...Summary and Conclusions:

As noted in my 1995 paper; there exists volume ratios when considering basic patterns in geometry. And there also exists particle mass ratios: such as proton mass to electron mass, or a semi-stable meson mass to an electron mass. Some of those important particle mass ratios nearly equal some key ratios occurring in elementary geometry when calculating volumes in patterns. (See illustrations above.) This paper attempted to present reasons for those nearly equal ratios!

Originally, I inferred from the mass ratios associated with tritium nucleus decay -- that a specific nuclear geometric volume pattern might exist, and it was found to exist. That major pattern ratio inferred that another important mass ratio likely occurred, and it was also found to occur. And still another related basic pattern ratio implied that yet another important mass ratio among particles likely existed, and it was discovered to occur, also. (See above illustrations.) That was gratifying! (But for less important particles, generally short-lived; my above simple approach doesn’t work. I.e., Some minor particles exists, but are not predicted by the simplistic approach, by itself; and some others do not exist, but might have been hinted to exist, going by my simplistic approach, alone.)

We postulated that there are many different-sized spinning ethereal spheres in space, and we proposed that some spheres become ‘combinatorially’ preferred and very numerous -- because they fit into snug simple spherical patterns, (i.e., when sized appropriately). Due to the fundamental, Planck-related, aspects of that ethereal space; a typical or average ethereal sphere is roughly the size of the ‘Bohr atom’. That ethereal spinning sphere imposes the following important **condition**: Any good particle candidate must exhibit roughly ($h / 6.28$) worth of (Planck-like) angular momentum to be compatible with ethereal action in space. There are also many small ethereal spheres in space, because there are crevices between large close-packed spheres for small spheres to fit into, and crevices between those small spheres, also, for still smaller spheres. (Relatively large spinning spheres have smaller spheres inside them.)

The best gross particle candidate uses the ‘anchor’ of having, roughly, the maximum possible concentrated material density in the world. Its body should extend roughly no further than is necessary to still achieve that ($h / 6.28$) of angular momentum without becoming very ‘non-localized’. The particle’s spinning velocity must be limited to roughly ‘C’, in endeavoring to exhibit ($h / 6.28$) worth of angular momentum.

The energy associated with that good particle candidate (typically a proton) communicates its energy with energized aether spheres in space, nearby. Those ethereal spheres are roughly equal to the proton’s small volume – more or less. That, and similar particles, soon cause much of ethereal space to forms similar-sized ethereal spheres. Crucial, also, is the very small ethereal spheres that form and fit between the ‘not-as-

small' ethereal spheres. That greatly aids in the formation of simple patterns. That enhances stability! (See drawing in article) That is like close-packed spheres, utilizing large and small spheres. 'Quantized space' forms, perhaps somewhat like Heisenberg speculated! [8]

Particles candidates of less mass and with less compaction arise, namely the electrons. They are likely shaped like fat doughnuts, and that helps them exhibit ($h / 6.28$) worth of angular momentum relatively efficiently. These would not seem to be good candidates; but they are stabilized by the equal partition of energy interplay between them and the numerous smaller ethereal spheres. Those fit so neatly among the larger spheres in ethereal patterns, as previously described and shown in my drawings. Other pro-stabilizing factors, that may also assist, were described in the paper.

We now briefly mention two alternate theoretical approaches below, somewhat like the above approach, but slightly different, and I think somewhat less viable:

Perhaps the energy of an 'average' ethereal sphere is nearly equal to the electron's energy, instead of the proton's. Then the electron becomes primary in the generation of the ethereal space pattern, and the proton becomes sort of an important 'secondary' result. Or perhaps, the energy of an 'average' ethereal sphere is a value in between that of the proton's and the electron's. Then the spherical patterns that form (because of the merit of their fit) may very often be of energy equal to the proton's and the electron's, but with the original causative spheres being very rare. (To borrow the *phrase* of another NPA member; the original causational spheres are then rare and mostly '*lost in space*'.)

That Ends the main part of my paper -- **the remainder is Optional.**

5...Optional Remarks (Other Miscellaneous Issues Raised by the Above):

5A...I think my above article musters good arguments and facts that are highly suggestive! But rigorous dynamics were not presented that would have been desirable for the above to be thorough. It still falls short of what Newton or Aristotle might have viewed as a thorough or absolute understanding of 'Cause'!

In the broad (Aristotelian) sense, it is interesting to ponder this: We live in a universe which seems not packed fully with high-density matter, but not devoid of all matter either, i.e., two extreme cases. Most things do not seem of ultra high speed and energy, nor zero speed and energy, either, i.e., two extreme cases. Average small angular momentum per small volume is neither zero nor seemingly awesome. Why are things the way they are? And not other, seemingly, satisfactory possibilities? Does our universe represent some rationale like averaging all possible paths or possibilities; maybe even giving more 'weight' or special *merit* (to borrow Kepler's *term*) -- toward one option rather than another, in the final determination? Perhaps that's the sort of thing that Newton classified as 'First Cause'.

Incidentally, I praise Descartes' compulsive involvement with vortices. Despite occasional great criticism from many, including Newton; I think that constituted a premonition of the future development of Planck's Constant and its great importance! We might also note that in 'Sanskrit, there is very important term and concept 'Chakra'; and it denotes a 'wheel', a spinning wheel, disk, and center of energy – a life force energy. That 'Asian' term and concept evolved many years before the Planck's constant – a constant with 'dimensions' of angular momentum (spin). That super-ubiquitous 'h' seems to dominate all space and material – far beyond even what Planck likely ever envisioned.

Also, although I used the concept of 'close packed spheres' to model the structure of ethereal space; other fancier forms have radii, too! So I might have tried to use them, instead. Perhaps those other forms exist in fancy dynamic combinations, and somehow trace a sphere. I feel that the sphere-form is likely the major form that commonly exists in space, and it helps determine many characteristics of important 'gross' particles!

((Very speculatively, we might note that two touching, in-line (large and larger) ethereal spheres, spinning 'right-handedly' is not the same as the pair spinning 'left-handedly'. It may be that the many electrons and neutrons in the universe constitute the 'realm' of, say, 'left-handed' actions. And that is counter-balanced by a realm of the 'right handed' spinning pairs of ethereal spheres, described above, including those that dwell near protons and coerce them into behaving as 'right-handed' partners, also.))

The idea of a proton or any particle being determined by an average of energy (the average energy of two different sized ethereal balls bumping it) may seem hard to swallow. Yet, in the field of chemistry; Pauling and others visualize the energy of each carbon-to-carbon bond in the benzene ring and the geometric length of bond resulting, as follows: **As if**, roughly, a sort of average of two possibilities. Instead of predicting a distorted ring; Pauling and others seem to have viewed the electron almost as if it were split in two, so equal presence or time could be manifested on both sides of each carbon atom, and thus rather symmetrically maintaining a valence of 'four' in the ring. The conception seems to match the results -- an average energy and bond length – roughly a compromise between that expected of a double bond and a single bond. Pauling also uses the term 'resonance' to describe the bonds.

((Suppose we can determine an average energy among complex stuff in space. Then, perhaps, a unique sufficient gross mass, with a sufficient corresponding energy, will also form, that is potentially stable – i.e., that will appropriately interact with that complex stuff in space. Perhaps a balance will develop, and thus more stability than otherwise. Perhaps that is one possible inference from $E = mc^2$.)

5B...Reminders about likely nature of Nuclear, Electrical, and Gravitational Forces:

Nuclear forces involve strong Bernoulli forces arising. They arise because of the roughly (more or less) 'speed-of-light' motions of some of the very high density nuclear

fluid within the nucleus. I.e., that fact combined with the nucleus being surrounded by very high pressure aether (although the aether, itself, has very low density).

Gravitational forces involve weak Bernoulli forces arising. They are due to the roughly 'speed-of-light' motions of very low density aether fluid flowing between and around two 'gross' particles due to vibrations of those gross particles. (Sometimes that motion is somewhat more than the speed of light; some times somewhat less.) Of course aether's density is dozens of magnitudes less than the density of nuclear fluid flowing within a nucleus, and that is why nuclear forces are much greater than gravitational.

Electrical forces are very strong, but less strong than nuclear forces. That is due to an electron or positron being of much less mass than the proton or neutron. Here is an analogy: Nuclear forces are like Von Guericke's horses straining to pull apart his two equally '**large**' hollow 'Magdelburg' hemispheres. Compare that to the force of a compressed, compact electron on the surface of a large compact neutron! That would be like Von Guericke's horses having the easier task of pulling away just a '**small**' cork that plugged the evacuation hole in those large Magdelburg hemispheres. (Of course the 'free' electron behaves more fancily and subtly.)

Most of my above main ideas about gravity and aether are much like Newton's [9]. But my emphasis is a little different. Whereas Newton emphasizes things forced from very low density aether toward still lower density aether; I emphasize things forced by very high pressure aether toward lesser high pressure aether. But I think 'my' lesser high pressure aether has a slightly lesser density than where the aether is at higher pressure. So, my approach is rather compatible with Newton's. At age 75, Newton made his last major attempt to speculate about the unknown (in his 1717 version of Opticks). And he also invited future scientists to explore his rudimentary ideas about aether because he felt that aether likely pertained to gravity, light, electricity, electromagnetism, and magnetism. And the agitation of special particles in gross matter to emit light corpuscles that he thought related to electromagnetism. All that was a sort of rudimentary Newtonian 'Grand Unification Theory'. That aspect of Newton has been generally missed or unappreciated since the death of Maxwell in 1879.

Newton realized that he had only uncovered a few of the great new things yet to be discovered or more thoroughly investigated in science in the many decades ahead. And Newton addressed things in a bold, less inhibited manner in the last decade of his life. Many scientists whom Newton had viewed as competitors and critics had died. Youngsters like Benjamin Franklin were maturing; the tragic 'Salem Witch Trials' were over; and a new historical age was emerging! (In my opinion, England unfortunately got temporarily 'sidetracked' after Newton; and the whole world got somewhat 'sidetracked' in the 20th Century. I have tried to partially rectify that in this paper.)

5C-i. . . Related Speculative and Optional Matters: We now comment on the difficult question of 'What is so-called electric Charge?' I think the following is **no** coincidence: The spin of a protons and electrons is equal in magnitude, and each is quantized with one minimum unit of spin (i.e., a Planck's minimum worth of **spin**), and similarly each with

one smallest unit of charge! Similarly, over a large enough volume in the universe, the net spin is likely about zero, and the net charge is about zero, also! So why does ‘charge’ arise? And why is it ‘quantized’? As said, the electron and proton each are deemed to have ‘one’ unit of charge, the smallest amount obviously detectible. Is my paper relevant to that? To his great credit, Coulomb providing science with a fine, concise, *effective* substitute for reality. But addressing reality *effectively* doesn’t always mean *correctly or causatively*; so here is my attempt:

A non-energized, cold, glob of matter in empty space would have no ‘attraction’, no repulsion, nor any other action, on a similar glob. Nor would one side of such mundane glob repel the other side of the glob, which would be a potential problem for stability anyway! That is where we start – Why does so-called ‘charge’ arise? (Put aside the notions of positive and negative charges being innately like different colored sugar surface coatings on M&M candy globules, causing magic fields and forces through empty space!)

Consider this: A non-spinning, non-charged (neutral) kaon particle tends to break up shortly into smaller particles that do spin! And those particles develop spin, and then so-called ‘charge’. And many of those, in turn, break up to form electrons, i.e., very stable elementary particles, with spin and so-called ‘charge’. It seems very unlikely that the little mundane (non-spinning) type of kaon has a hidden ‘standby’ miniature centrifuge inside it. Or hidden ‘dip-bath’ equipment to ‘sugar-coat’ the resultant particles with different types of ‘surface charge’.

Instead, in my above paper, I have hypothesized a non-empty space, with many low-density ethereal entities in it, each with a vortex-like action. Space contains many ethereal spinning spheres, and their Planck-related angular momentum action is almost everywhere. And those whirling entities would likely be there, even if no non-spinning, non-charged particles were ‘thrown into that spinning brew’. But suppose we do throw into such ethereal whirling sphere – those ‘mundane’ thick particles, or two glob candidates before they become elementary particles? They would greatly ‘perturbate’ a whirling ethereal sphere and the spheres near it; and they would be acted on by it, also.

So what would happen? If many of those new particles did not fly away from the scene as photons; they might develop several different spin modes, within that spinning brew. And some of those ‘key’ fancy spinning types would tend to repel or attract other similar or dissimilar types (in the spinning brew or between such ‘spinners’). And I assert that those forces should arise, and do arise. In fact, that action is what most scientists have been regarding as some mysterious weird thing that they name, ‘charges’ and charge behavior! But the cause of all that are the Planck-related spinning ethereal spheres in space!

A **crucial**, historical, point is this: I have asserted that Planck’s constant is crucial to the creation of so-called ‘charge’! And I think that is a ‘reverse engineering’ of Beckmann’s approach – i.e., his using primarily ‘charge’ to establishing Planck’s constant.[10] (Both of us used the helpful concept of a ‘Bohr-sized’ sphere.) Many other

brilliant scientists have also viewed Planck's constant as arising from 'charge', etc., instead of the reverse. But I think the reverse is the true operational reality, and I think that likely Kanarev does too!

5C-ii...Last Optional Speculation: Now we briefly consider two superconducting current loops of wire, with each loop parallel to the other, and each loop fairly close to each other. If the electron flow in both is in the same direction; the loops are expected to 'attract' each other. And presumably they do -- according to physics rules. Why?

I will limit my speculation on 'electrodynamics' to the following: A spinning ethereal sphere in space can cause an appropriate glob to start spinning, achieve stability, and thus become a so-called 'charged' elementary particle! ((All very stable particles have to develop that so-called 'charge'. We have argued (elsewhere) that a large spinning ethereal sphere also causes two different non-traveling elementary particles inside it -- to either repel or attract each other.)) It would seem that if a spinning ethereal sphere causes non-traveling elementary particles to behave as if they have 'charge'; we conclude this: If electrons start flowing in two loops, (across ethereal spheres boundaries) – that even more mimics the already perturbed spinning ethereal spheres by injecting another velocity consideration into them.

Therefore, additional charge should arise (charge-like behavior, at least), if electrons start to flow in either loop, even though each loop contains an equal number of protons and electrons. ((That seems to confirm the notion proposed in this paper -- that so-called 'charge behavior' relates to material flows in space and flows in elementary particles; not magic unique (sugar-like) coatings.)) If electron flow occurs in only one wire loop, it will behave like additional charge has developed only there. But the other neutral wire (without net moving electrons) will not be noticeably long affected, because its net charge remains zero, neutral. But if electrons begin flowing in that second loop, it also behaves as if it has added a net positive or negative charge, and then noticeable (lasting) forces develop on the two loops.

Another interesting question arises if, say, electrons flow in one loop at, say, 20 mph, and in the other loop at 10 mph in the same direction, Contrast that question/answer, say, for the case of 10 mph flow in one loop and 0 mph in the other? Contrast that, say, for the case of +5 mph in one loop and -5 mph in the other. (If the wires were parallel, very long, and very close, the question/answer would also seem 'relatively' similar.) Anyway, consider the 'no preferred frame' approach; and, indeed, the feeling and confusion arising if one is a passenger on either 'loop' train; i.e., consider the confused feelings, say, if one suddenly stared out the train window. Since the relative velocity difference, in each above case, is 10 mph; should we assume all actions would be similar? You'd better NOT for the case of moving charge!! I think there is a preferred frame!

References and Footnotes:

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- [3] Christiaan Huygens, "Treatise on Light", (1678), English rendering by S. P. Thompson, 1912, University of Chicago Press, { Project Gutenberg eBook, book # 14725, released 1-18-2005) <http://www.gutenberg.org/etext/14725>
Go to chapter 1, and about three-fourths the way to his next chapter. I.e., if Chapter 1 goes from his pg. 3 to 17; go to his pgs, 15,16,17.
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- [5] V. B. Ginzburg, "Unified Spiral Field and Matter", Helicola Press, Pittsburgh PA., Chapter 18, Dynosphere, pg. 385.
- [6] H. Robbins, R. Courant, "What is Mathematics?" Oxford University Press, London (1941) 14th Edit., Chapter IV, Appendix for it, topic 3, Geometrical or Combinatorial Approach, pp. 233, Fig. 118.
- [7] C. R. Littmann, website article, <http://www.causeeffect.org/articles/see.html>
- [8] The New Columbia Encyclopedia, Columbia University Press, New York and London (1975), p 1217, see article: 'Heisenberg, Werner'
- [9] Isaac Newton, "The Third Book of Opticks", Second Edition, London, (1717) See "Qu. 21" (I.e., Query # 21). That may be found on the Internet at: <http://www.newtonproject.sussex.ac.uk/texts/viewtext.php?id=NATP00051&mode=normalized> (I also encourage readers to read a few of Newton's 'Queries' that follow that.)
- [10] Petr Beckmann, "Einstein Plus Two", The Golem Press, (1987) Sec. 2.9 'Planck's Constant'.
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