That, Contrary to Einstein, There Is An Absolute Frame of Reference

by

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Abstract

The only way that a universe can come into existence from the only natural beginning, absolute nothing, *ex nihilo,* without an infinite rate of change and while maintaining conservation, is as a pair of oscillations of the form $\pm[1 - Cos(2\pi ft)]$ which were so unstable that they promptly exploded into the mass of particles of our universe which propagate a related oscillatory outward flow.

It is proven, contrary to Einstein, that this means that there is a prime, absolute, "at rest" frame of reference of the Universe, the frame of the "Big Bang". That frame does not have special different laws of physics; however its existence affects correct interpretation of some scientific data and the resulting hypotheses.

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PROOF THAT THERE IS AN ABSOLUTE, "AT REST", FRAME OF REFERENCE

Only absolute nothing [emptiness containing nothing, the zero of existence] requires no explanation of how it came to be. It is to be expected, as the natural initial condition. The only way something else, a universe, can come into existence from prior absolute nothing without an infinite rate of change at its beginning is to begin as an oscillation of the form $[1 - Cos(2\pi ft)]$ [1]. That oscillation was three-dimensional because three dimensions is the minimum number that can involve space part of which is not its own boundary. Therefore the oscillation was spherical.

The only way that can happen without violating the principle of conservation [no something from nothing and vice versa] is for there simultaneously to come into existence the negative or opposite of that oscillation $-[1 - Cos(2\pi ft)]$ so that the two together are still equivalent to absolute nothing [1].

Because we are here thinking about this we can observe that apparently the two oscillations did not promptly mutually annihilate, which means that they were so unstable that they even more promptly exploded into the mass of particles of our universe. That mass of particles can themselves only be like their parents, spherical oscillations of the forms $+[1 - Cos(2\pi ft)]$ and $-[1 - Cos(2\pi ft)]$ [2]. The correspondence between those two and our universe's positive and negative electric charges, and its matter and antimatter, is apparent.

The speed of light, c, is finite and is the upper limit on possible speed in the Universe [3,5]. If one of two separate particles having electric charge [e.g. electrons or protons] moves, the change affects the other charge only after the elapse of time of the distance between them divided by the speed of light. That time delay is because something flows from one charge to the other at light speed, c. The electric effect being radially outward from each charge, every charge propagates such flow radially outward. It is the "electric field".

If one of two separate particles having mass [e.g. electrons or protons] moves, the change affects the other mass only after the elapse of time of the distance between them divided by the speed of light. That time delay is because something flows from one particle of mass to the other at light speed, c. The gravitational effect of mass being radially outward from each mass, every mass particle propagates such flow radially outward and it is the "gravitational field".

Therefore the fundamental particles of atoms, of matter, which have both electric charge and gravitational mass have something flowing outward continuously from them. Either the particles have two simultaneous, separate, different outward flows, one for the effects of electric charge and another for gravitation, or they have one common universal outward flow that produces both effects. There can only be one flow. It would be absurd for there to be two separate, different, simultaneous, independent outward flows from the same source.

That one flow produces both the electric field and its effect and the gravitational field and its effect, the electric via its oscillation amplitude[8] and the gravitational via its oscillation frequency [9]. The magnetic and electro-magnetic effects are produced by the effect of motion on the flow from particles.

If we consider a pair of two such particles, one of which is moving at constant velocity relative to the other. Then, at least one of the two is moving at some velocity, $v > 0$.

Examining the propagation of flow from that particle moving at velocity v the following are found:

1. We designate the direction of that velocity as "forward" and the opposite direction as "rearward".

2. There can only be one single frequency of the particle's oscillation, not one for forward and a different one for rearward.

3. Were the particle velocity absolutely zero, $v = 0$, then each cycle of its propagated flow would be in all directions of length λ, its wave length.

4. But the particle velocity is greater than zero so that, examining its forward direction of flow propagation, the particle moves in that direction, forward, some distance, Δ, during a cycle of its oscillation, a distance in the same direction as its own propagation. At the end of that cycle the length in space of that propagated cycle of flow is reduced from λ to $[\lambda - \Delta]$. That is, forward the wave length of the propagated flow is shortened.

5. Examining its rearward direction of flow propagation the particle moves in the opposite direction, forward, some distance, Δ, during a cycle of its oscillation, a distance in the opposite direction from its own propagation. At the end of that cycle the length in space of that propagated cycle of flow is increased from λ to $[\lambda + \Delta]$. That is, rearward the wave length of the propagated flow is lengthened.

6. But, that means that the direction and speed of motion can be determined by looking at the propagation pattern of the flow as propagated by the particle. And, if the pattern were the same in all directions then the particle would be truly "at rest", which means that there is an absolute, "at rest", frame of reference.

RESULTING IMPLICATIONS AND EFFECTS

Fine Structure, Spin, and Elliptical Orbits

When the line spectrum of Hydrogen is obtained with a spectrometer of high resolving power it is found that the lines that appear as simple single lines at low resolving power are in fact pairs of lines. This phenomenon is referred to as the "fine structure". The splitting of the (low resolution) single line into (high resolution) two lines is on the order of about 1 part in 104. Sommerfeld addressed this problem showing that if the orbital electrons had elliptical orbits, in which the electron velocity would be relatively slow far from the nucleus and faster than for the circular orbit case near the nucleus, the relativistic mass increase at the higher velocity provided a minute energy increase that was on the order of the correct amount to account for the line splitting. That is, the elliptical orbit's energy would be slightly greater than a circular orbit's energy.

Sommerfeld's model for how the fine structure arises, a model based upon the conceived direct motion and action of the electrons, was soon superseded by Quantum Mechanics, a model that seeks not to directly represent electron motion but rather to express the electron behavior and its effects. However, in spite of the wide spread acceptance of Quantum Mechanics, the concept of elliptical electron orbits has been retained.

Quantum Mechanics overthrew the Bohr-Sommerfeld theory shortly after its development. In Quantum Mechanics the fine structure is attributed to the interaction of the magnetic field due to the electron's spin on its own axis with the magnetic field due to the

electron's orbit around the nucleus. This is referred to as "spin-orbit coupling". The two cases that are contended to account for the two lines close together in the Hydrogen spectrum are for the electron's spin angular momentum vector in the same direction as the orbital motion angular momentum vector and in the opposite direction.

In multi-electron atoms the fine structure becomes various multiplet structures depending on the number of electrons, rather than the doublet structure of Hydrogen with only one electron. For multi-electron atoms the coupling possibilities are spin-orbit, orbit-orbit, and spin-spin.

In a sense the conception that traditional 20th Century physics has of the electron is that its electric charge is a distribution of negatively charged minute specks throughout the volume of the electron as a little ball. (One of the concerns of traditional 20th Century physics is that of what holds the electron together; with all of that charge packed so closely why does it not explode ?) In that sense, the electron is conceived of as spinning on its axis. It is conceived that the consequent circular motion of the specks of charge that are rotating about the electron's spin axis constitute a small current and generate a small magnetic field.

Actually, traditional 20th Century physics does not know, and has no way of knowing, whether the electron spins or not and if so then how rapidly, how (in traditional 20th Century physic's terms) the charge is distributed throughout the electron and what the electron diameter is, and so forth, all data necessary to calculation of its spin magnetic field. The contention of electron spin and its associated magnetic field depends entirely on that the concept is used to explain a fine characteristic in atomic line spectra. The amount of spin and the amount of consequent magnetic field is set in effect by 20th Century physics at the value that explains the spectral fine structure.

In the physics of particles being spherical oscillations of $[1 - Cos(2\pi ft)]$ form there can be no such concept, of course. Whether such a "center-of-oscillation" can or does spin or not might conceivably be open to question but would seem to be inconsequential and irrelevant because the electric effect of an electron "center-of-oscillation" is an effect external to the internal structure of the "center". There is no way that such an electron can have a magnetic field due to spin.

Hydrogen fine structure is the result of the orbital electron's having one or the other of two possible slightly different energy states in its orbit. In traditional 20th Century physics the two energy states result from the relative orientation of the electron spin angular momentum (and magnetic) vector and that of its orbit. But there being no spin and spin in fact not being the cause there must be some other cause that produces the same effect.

That cause is absolute motion, the motion of the particles relative to the prime, absolute, "at rest" frame of reference.

There exists throughout the Universe a background radiation which is the residual radiation from the immense energy of the "big bang", the start of the Universe. That radiation is itself from the Universe's beginning at, in, the Universe's absolute frame of reference. Measurements of Doppler frequency shift of this radiation due to the motion of the Earth relative to it give an absolute velocity for the Earth relative to the absolute frame of reference of about $370\ km/sec$. The direction of this motion of the Earth as indicated by those measurements is off in the direction from Earth of the constellation Leo [6].

The speed of the Earth in its orbit around the Sun is only about $31\ km/sec$ so most of Earth's absolute speed is due to its motion relative to its galaxy, the Milky Way, and the absolute motion of that galaxy through space. This absolute velocity of our Earth and our entire planetary

solar system of about $3.7 \cdot 10^5$ m/sec = $0.0012 \cdot c$ must be taken into account in considering the behavior of the orbital electrons. That motion means that each electron and the atomic nucleus constitute minute electric currents with their associated magnetic effects because of their charges' motion relative to the "at rest" frame of reference.

The most important factor in the stability of an atomic orbital electron is that to maintain its orbit it must not radiate energy. That requires that it experience no changes in the shape of its oscillatory propagation pattern forward and rearward. And, that requires that its absolute speed remain constant. But, the speed of an orbital electron has two components: its orbital speed relative to the nucleus and its absolute linear speed because the nucleus (and the electron) is in motion as part of our overall Solar System's absolute motion.

In order for the electron to avoid radiating, it is its net speed, the resultant of those two components, which must remain constant. The way in which those two components combine to produce a net electron speed at any moment depends upon the orientation of the electron's orbital plane relative to the absolute velocity component of the electron, its atom and its solar system. The effect is illustrated in Figure 1, below.
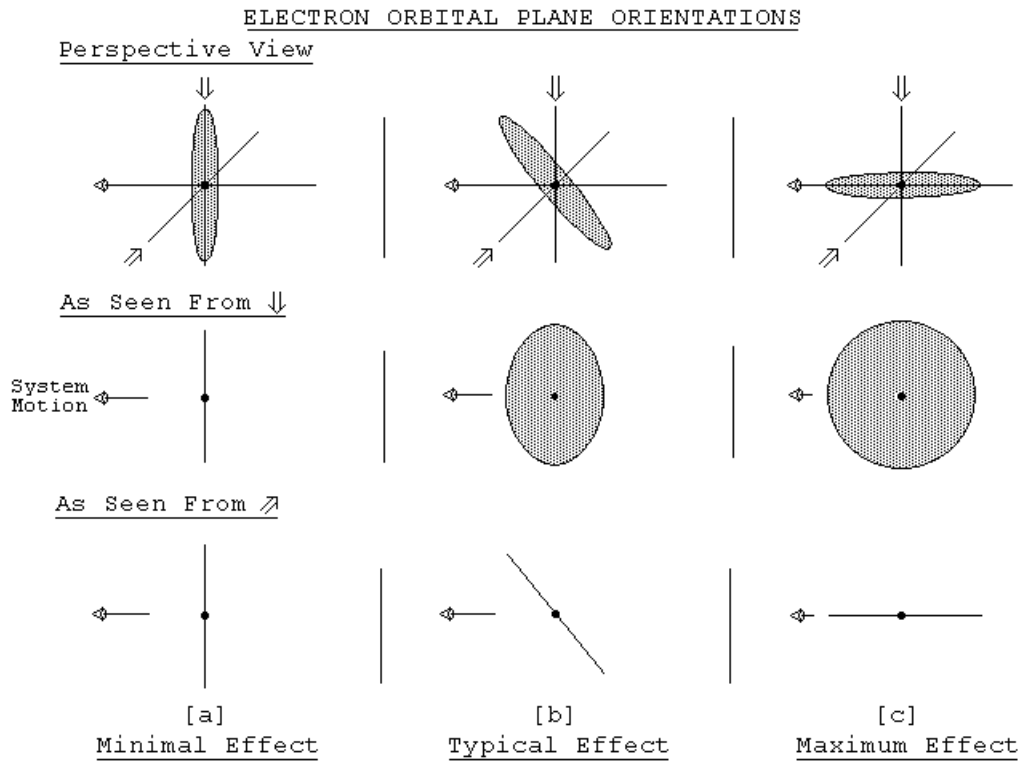
Figure 1
Relative Effect of Absolute Motion on Various Orbital Electrons

The figure illustrates different ways that the plane of an orbital electron's orbit can be oriented relative to the absolute motion of the atom's nucleus. If the orbital plane is oriented at right angles to the direction of absolute motion, as in the [a] Minimal Effect column of the figure, then the absolute motion produces the same change in the overall electron resultant speed everywhere in the orbit. The electron's total speed is that resultant. Its orbital speed relative to the nucleus is the circular orbit speed for that orbital shell.

On the other hand, if the orbital plane is oriented parallel to the direction of absolute motion, as in the [c] Maximum Effect column of the figure, then the overall resultant speed of the electron varies between the sum of its circular orbital speed and the absolute motion speed and the difference of the two speeds (see Figure 2, below). In general, orbital planes are frequently oriented between those two extremes as illustrated in the [b] Typical Effect column of the figure. For such cases the absolute motion can itself be resolved into two components: one at right angles to the particular orbital plan (Case [a]) and one parallel to it (Case [c]) and the resulting overall effect analyzed in terms of a combination of those two extreme cases.

Figure 2, below illustrates the analysis of the Case [c] Maximum Effect circumstances.
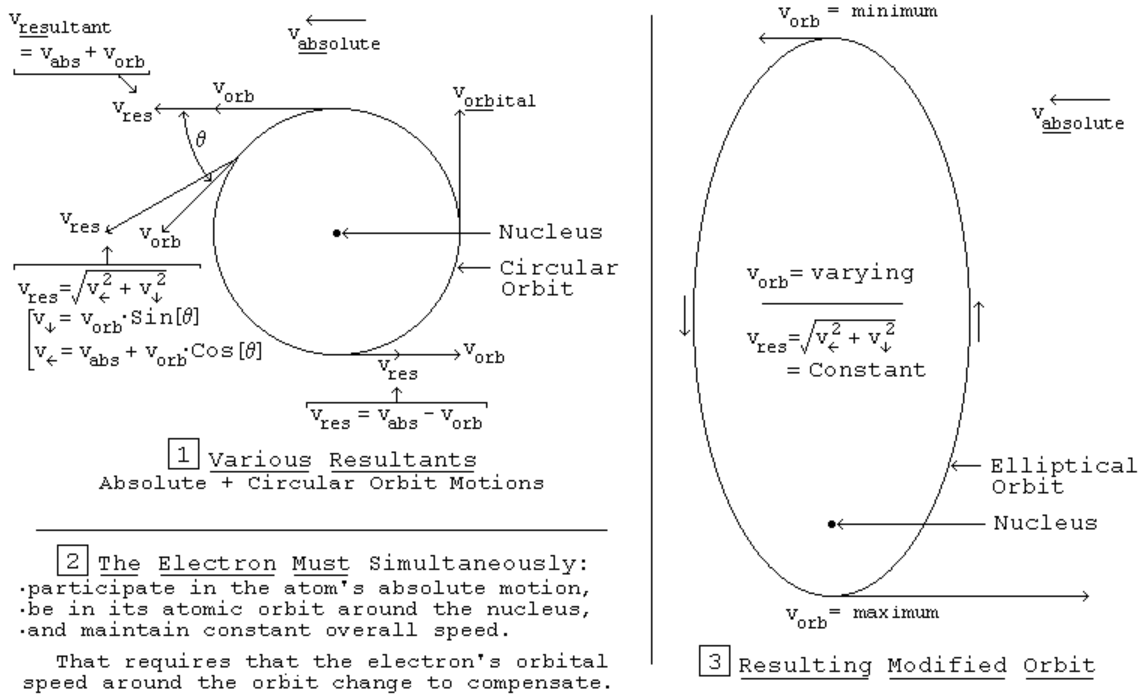

Figure 2
Elliptical Orbit Resulting from Absolute Motion Combined with Orbital Motion

The figure is largely self-explanatory. If the electron is in a circular orbit relative to the nucleus (with consequent constant relative orbital speed) then the effect of the atom's absolute motion is to vary the electron's absolute speed, which is not acceptable. The only solution, the only *modus operandi*, is for the electron orbital speed to vary so as to compensate for the absolute motion and maintain constant absolute electron speed as shown in box 3 of Figure 2. The result is elliptical orbits for those orbits in which the orbital plane is not perpendicular to the direction of absolute system motion, that is for those orbits of Cases [b] or [c] of Figure 1.

The circular orbit speed in the $n = 1$ orbit of Hydrogen is about $2.2 \cdot 10^6$ m/sec. Our absolute speed is about $3.7 \cdot 10^5$ m/sec or about 16.8% of the $n = 1$ orbital speed. The successive orbit speeds for $n = 2, 3$ … are $1/n$ times the $n = 1$ value. Thus the effect of absolute speed and the variations in orbital speeds are quite significant.

It is interesting to recall that the system of orbital quantum numbers developed by 20th Century physics and particularly elaborated by Dirac uses the convention of the projection of an orbital angular momentum vector on a reference axis to define the various orbital tilts. It has now here been found that the "reference axis", an imaginary and missing element in traditional 20th

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Century physics terms, is actually the orbital plane orientation relative to the atom's absolute motion in space. For the orbital quantum number l ["el"] the $l = 0$ value corresponds to the electron orbital plane being at right angles to the absolute motion, Case [a] of Figure 1. The orbital quantum number $l = 1$ value produces a Case [b] situation.

Leaving the subject of absolute motion causing elliptical orbits and returning to the problem of the cause of the fine structure in atomic spectra, there is a second consequence of the orbital electrons' absolute motion. Each electron has a component of magnetic field due to its straight line motion in space [at about $370\ km/sec$] in addition to the magnetic field of its orbital motion. The electron's orbital magnetic field vector, which is perpendicular to the plane of the orbit, tends to align with the linear motion magnetic field that is due to the absolute motion, which field is circumferential to the electron's direction of absolute motion. There are two possible alignment orientations, that is two orientations when there is no force acting that tends to change the orientation. One is the orbital motion vector in the same direction as the absolute motion magnetic field and the other is the opposite. The two differ slightly in energy. It is not "spin-orbit" coupling but "absolute motion - orbit" coupling that operates to produce the fine structure.

The electron's absolute motion magnetic field may seem to be rather weak for the purpose (just as would the magnetic field of a spinning electron, if it were to exist, so seem), but just as in the hypothesized spin-orbit coupling, the actions actually are acting at the same location, that of the electron, at negligible separation distance.

Hyperfine Structure

High resolution spectral techniques, including the use of tunable lasers, disclose an even more closely spaced splitting of spectral lines which is called "hyperfine structure". Analogous to the quantum mechanical explanation of fine structure in terms of hypothesized orbital electron spin, the hyperfine structure is attributed in 20th Century physics to nuclear spin, its consequent magnetic field, and its interaction with the electrons. But, in the physics of particles being spherical oscillations of $[1 - Cos(2\pi ft)]$ form the nucleus can no more have a spin magnetic field than can an orbital electron. That is clear for the case of Hydrogen where the nucleus is a proton, a simple "center-of-oscillation" like the electron, but it is also true of all atomic nuclei [7].

The hyperfine structure stems from electron orbital magnetic field interaction with the magnetic field due to the nucleus' absolute motion in space. Of course, overall the nuclear and orbital electron absolute motion magnetic fields cancel out since the direction of absolute motion is the same but the polarity of the moving equal magnitude charges is opposite. However locally, within the atom there is not general cancellation so that the effect is able to minutely affect orbital electron energy.

Finally, it is interesting to note that the Earth's orbital motion around the Sun at $31\ km/sec$ causes an annual variation of the absolute motion magnitude as observed or experienced at Earth from greater than to lesser than and back to greater than the average value, taken in this paper to be about $370\ km/sec$. Such an annual variation in the exact fine structure should be measurable.

References

[1] in R. Ellman, *The Origin and Its Meaning*, The-Origin Foundation, Inc., http://www.The-Origin.org, 1997. http://www.The-Origin.org/download.htm. [May be freely downloaded in .pdf files.]

- Section 10 "The Probable Beginning" and Detail Notes 2 "Analysis: All Derivatives Finite, Selecting U(t)".

[2]   - Section 20 "The Cosmic Egg".

[3]   - Section 13 "Motion and Relativity".

[4]   - Section 21 "The Probable End".

[5]   - Section 16a "The Neutron, Newton's Laws", Sub Section "ε, μ, and The Speed of Propagation".

[6]   - A program titled "A Whisper From Space", broadcast in 1979 by NOVA, WGBH Boston, MA 02134, delivered by Philip Morrison, physicist and astronomer at MIT.

[7]   - Section 17 "The Atomic Nucleus - The Nuclear Species".

[8]   - Section 12 "Mass and Matter".

[9]   - Section 19 "Gravitation".