

MUSINGS ON SUBWAVES (Part 1)

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<http://www.rialian.com/rnboyd/musings-on-subwaves1.htm>

[R. N. Boyd]:

"Sub waves" are still waves.

With waves in the ocean it is clear. You need more physical degrees of freedom but when you have those you can have multiple different kinds of waves. Surface gravity waves are one kind, but when you realize that the internal ocean has complex continuum dynamics and degrees of freedom known as temperature and salinity, there are all sorts of other waves possible. The oceanographers know about many of them.

But this is no different from the notion that classical electromagnetism is on vector fields and thus polarization---the particular relationship between the electrical and magnetic fields---matters. Polarization increases the classes of waves that can propagate beyond, e.g., a longitudinal scalar theory like linear acoustics. Think about the various TE/TM/TEM modes of wave guides.

And yes, in quantum mechanics, there certainly **are** internal degrees of freedom beyond classical physics: it's called 'spin'.

With new degrees of freedom and new physics you can have new effects, and sure enough there are spin waves.

The point is though that if there are new kinds of waves, there has to be new degrees of freedom and that physics should be manifesting itself all over the place, just as spin was bamboozling early QM experimenters almost right from the start.

You may discover that gravitation incorporates a term for charge, in expressions other than those found in this particular quaternionic version. Also, contemplate the Biefeld-Brown effect...

I see no physical evidence that "...the origin of charge is (directly) related to micro-variances in the SOL [speed of light]." How can such a description apply to a proton at rest, for example? Where are such variances in the speed of light, for the proton at rest, living? Yet, as we know, the proton at rest still has a positive charge. Perhaps some situation exists in the internal structure of the proton, of which we are not yet cognizant? (**Another** job for my subquantum microscope!)

Have you ever contemplated that in any wave system that there can exist sub-waves? In other words, waves can exist which travel internal to the media underlying the "surface" waves. In other words, waves beneath the waves. Such subwaves can be sources of nonlinearities in when measurements are performed on the "surface" waves. (aka, "noise".)

However, there may be sequences of periodicity in these subwaves, much as certain chaotic systems which exhibit apparent randomness when viewed from one angle and periodicity when viewed from a different angle.

One analogy is to a body of water. There can be waves on the surface of the water, and waves which travel beneath the surface of the water. Can there be subwaves of the waves beneath the surface? I think so. Let us contemplate, what are harmonics and overtones? Consider that the square wave is the composite of all harmonically related frequencies and overtones.

A similar statement can be made regarding the sine wave, if I'm not mistaken. Was it the all the even-numbered harmonics, in the case of the sine wave? As I understand it, the sine wave and the square wave can be decomposed into constituent harmonics. What is the relevance of such harmonics as related to light of a given wavelength?

Such subwaves could exist in both gravitational and E/M varieties (assuming that gravitational waves exist). This, then could imply a "subspace" or a "pre-space". If such subwaves exist, it is possible that there may be successively finer layers of such subwaves.

This may be completely wrong, but it's been an entertaining conjecture.

[S. Burns]:

In Eq 0.10, coulombs constant $8.99E9$ is just $1/(4*\pi*e0)$. This term is just the standard charge attraction force kqQ/r^2 . Waser's interpretation of the first term being gravitational is incorrect. He derived electrostatic plus gravitational force equals total attraction force. This is correct but sheds no light on anything new. For like charges, the force is repulsive hence the negative sign.

BBE is a good point. My guess is a complete gravitational expression could be derived from Quaternionic derivations but I wish mathematicians would revisit the "setting to zero the second quaternion part" as in Definition 1 of Waser's paper. Anyway, he clearly shows the origin of charge is (directly) related to micro- variances in the SOL. This in itself is significant and may be the origin of charge itself. Anyway you slice it, they are very interesting papers.

MUSINGS ON SUBWAVES (Part 2)

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[R. N. Boyd]:

Classically, the magnetic moment is related to the spin of the electron. Parallel electron spins then compose an additive magnetic vector, resulting in the magnetic field, as we know it, on our macroscopic scale. There are other views which hold that the magnetic field is a flux of subquantum aether particles. This view gets along quite well with the view that the electron itself is a vortex-like flow of aether particles. Then, aligned aether flows comprise a larger [additive] flux which looks like a magnetic field.

Some elements and alloys *do* exhibit gravitational anomalies. For instance, aluminum silicate falls more slowly under the influence of gravity, than do other materials.

It goes against my instincts that heat is a significant factor in the efficient production of gravity.

I don't quite see the direct connection at equation 38, to gravitation (reference from S. Burns -- see below). I can see a possible connection by extrapolating the temporal field into the electrogravitic and magnetogravitic descriptions. But such has never been formalized.

I am extremely interested in the statement:

"...with the inclusion of the missing *temporal field* the description of the action of a charged material particle is complete; we infer such a particle must have an extended structure with a variable intrinsic pulse in addition to its quantum mechanically determined fixed intrinsic spin."

I am also interested in the statement in the abstract:

"...an initial hypothesis, named "The Quaternion Axiom," that postulates physical space is a quaternion structure."

I agree. This is further support for what I have been suggesting for years! See:

<http://xxx.lanl.gov/abs/hep-th/9908205>

[D. Segalla]:

A sin wave has no harmonics at all and is considered unique in that regard. However the point I want to make is that all the things you describe are true but can also apply to magnetic waves. This should also be considered. Normally we look at electron polarization as the source of magnetic lines of force.

But let us consider the physical interaction between them and the proton. The proton could then have all the wave possibilities you have mentioned however weak. There is yet another possibility in that proton interaction is causing yet a third interaction of nucleus particles. Which can cause waves from other particles....?

Since we are not sure of what atoms and in what condition these produce the most gravity or even if there is a difference between different kinds of atoms, we have much research to do. Also, heat may be a significant factor in the efficient production of gravity as well. But I am sure that tests will reveal things about all this we have yet to understand. But I like the direction you are looking in.

[Bill Hamilton]:

A sine wave DOES have harmonics so I am wondering why this statement was made??

Sine-wave generators have filters to remove harmonics. Here is a quote regarding one such generator: "Three switched-capacitor, six-pole Butterworth low-pass filters (U10, U11, and U12) remove the harmonics but pass the fundamental sine-wave component."

[S. Burns]:

Consider the Thomson Heat Effect equation described in the first link below:

<http://www.hypercomplex.com/research/emgrav/hypcx-p20001015.html>

<http://www.hypercomplex.com/research/emgrav/mxwleq.htm>

Equation (38) has four terms; the third term is neglected since it is small. This term contains both current density and magnetic field components. Can this be related to gravity? If so then you have your correlation between heat and gravity.

Since we are talking about sine waves and harmonics, consider Waser's Eq 1.21 (below link) that shows the radiated field attenuates with $1/r^2$ for constant velocity moving charges:

<http://www.aw-verlag.ch/Documents/Force%20of%20Hertz-Dipole%20on%20Stationary%20Charge.PDF>

Is this related to Newton's second law? In addition, the $1/r^2$ wave has a longitudinal component. Whittaker's now famous 1903 paper "On the Partial Differential Equations of Mathematical Physics" derives gravity as a infinite bandwidth (impulse response) Fourier series of longitudinal waves. This implies if sub waves are related to gravity, they are not integer multiples of the fundamental but Gaussian "white random" in nature.

I wish I had discovered Waser's web page sooner.

MUSINGS ON SUBWAVES (Part 3)

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[R. N. Boyd]:

What do you suppose the source of quantum jitter (zitterbewegung) is?

As usual, QM does not address such underlying issues, but simply states that jitter exists, and goes on as if nothing had happened. No explanation of the origination of this jitter is ever forthcoming in QM. QM makes many such statements, to its detriment, IMO, because this has led to its incompleteness. Although many people think that QM is the end-all be-all of physics, this is far from being the case.

It is possible that something like "subwaves" are related to quantum jitter...

Regarding new kinds of waves, there ARE some new kinds of waves, involving for example, 4 physical dimensions. In other words, waves with various topological bases, involved with topological energy, topological forces, and topological events. Alexander Shpilman has described waves in hyper-time, as another example.

In these cases, the degrees of freedom are vastly larger than what we are accustomed to, particularly in the case of an N-dimensional topology. From this, it is very reasonable to contemplate an N-dimensional wave....

By the way, symplectic E/M waves, which have a basis in 4 dimensions + time, already exist in the form of transmission facilities and antennas.

[Bill Hamilton]:

According to those who write about the ZPE, the jitter is the effect of ZPE. Here is a statement on that;

"The gravitational interaction is shown to begin with the fact that a particle situated in the sea of electromagnetic zero-point fluctuations develops a "jitter" motion, or ZITTERBEWEGUNG as it is called. When there are two or more particles they are each influenced not only by the fluctuating background field, but also by the fields generated by the other particles, all similarly undergoing ZITTERBEWEGUNG motion, and the inter-particle coupling due to these fields results in the attractive gravitational force." [R. N. Boyd]:

I know all this. But where does the ZPE come from?

Now, we have Misner, Thorne, and Wheeler stating in "Gravitation", that the scale of the ZPE flux is on the order of 10^{-66} cm. What manner of creature can curve space to such an enormous extent? Second, what is the frequency of an E/M wave with this wavelength? That would be what, about 10^{65} cycles per second? What manner of E/M lives there? Gamma ray wavelengths are very short at 10^{-11} m to 10^{-13} m, but this is nothing compared to a wavelength of 10^{-66} cm!

Because such phenomena may have tangible effects that could be documented, but such frequencies are not defined in the present understandings of the electromagnetic (E/M) field of matter/energy, these high frequency phenomena may require that we hypothesize a new type of force field.

Some believe that the region of the electromagnetic spectrum beyond gamma rays, may constitute some force that has not yet been discovered, due to the lack of sufficiently refined instrumentation. Harnessing of radio waves and X-rays had to wait for the development of new technologies. So too, perhaps development of more advanced E/M technologies will enable the use of such high frequency E/M fields.

A force/field such as this could possibly exist in parallel to the normal E/M spectrum. As I alluded to earlier, such high frequencies may not have the constraints of the normal E/M spectrum, such as the speed of light. Because such high frequency domains are well beyond the Plank length, perhaps such frequencies are non-local.

According to standard QM, the frequency limit of E/M should be on the order of 10^{32} cycles per second. Sure, and I've got a transmitter for this frequency right in my pocket! [Not!] (At this rate, a gamma ray laser would be child's play!)