

# Reports on 110608A:

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## The First Report: Tue 11/18/08

I have spent some time examining the paper you sent me entitled "Light - in the light of Reality". Here is my assessment of the paper:

### A. THE PURPOSE OF THE PAPER AND WHAT IT ACHIEVES:

The author begins by noting that standard electromagnetic theory has two major drawbacks which he then proceeds to correct.

First, he points out that there is a discrepancy between the formula for the energy of a photon on the old electromagnetic theory approach and the energy actually measured. He points out that the measured energy agrees with the quantum concept that the photon energy  $E = hf$  where "h" is Planck's constant and "f" is frequency. To correct this discrepancy, he considers, classically, an electromagnetic wave radiated by an electric dipole, and obtains a formula for the energy of one complete oscillation. He then equates this classically derived formula for photon energy with the quantum formula 'hf'. When this is done, a collection of classical terms is then shown to equate to Planck's constant 'h'. In so doing, a new classical constant emerges, equal to  $9.8 \times 10^{-10}$  Coulomb-meters per second. When this collection of classical terms is substituted for 'h', then the correct result emerges for photon energies on a purely classical theory without the necessity for quantum theory.

The second drawback he notes is that the predicted speed of light in a material medium on the usual classical approach does not agree with experiment or the known refractive indices. He uses water as an example. In order to overcome this difficulty he begins his analysis by postulating the existence of a magnetic charge or an isolated magnetic pole. He then modifies Maxwell's equations and derives an expression for the speed of light in a medium. This expression contains the usual Maxwellian terms, but also includes another expression which includes the magnetic conductivity of the medium. When the magnetic conductivity of water is inserted in the resulting equation, the correct speed for light in water emerges as well as the correct refractive index.

The third part of this paper derives the relative speed of an electromagnetic wave, and its relationship to the Theory of Relativity. The author begins by examining fields due to moving charges and discusses the velocity of the charge distribution and light travel time. He shows that this derivation does not result in length contraction or time dilation. As a consequence he suggests that these effects from Einsteinian Relativity are due to defective measurements. The

author claims these defects occur because the finite speed of light imposes limitations on synchronization of clocks.

In his conclusion, the author points out that he has obtained a satisfactory classical electromagnetic theory for light in which (1) the energy of a photon is correctly obtained without the use of quantum theory. (2) He also points out that his approach correctly predicts the speed of light in a material medium. Finally (3) he has derived the relative speed of an electromagnetic wave and draws some conclusions about Einsteinian Relativity as a result.

#### B. REVIEWER'S COMMENTS

The first two parts of this paper are excellent. They achieve their aim very well. I would make two comments, both on the second part. The author begins by accepting the existence of magnetic charge or an isolated magnetic pole. This approach certainly gives the correct result. However in his concluding comment in this section he states that "This confirms the existence of magnetic charge...". Unfortunately that is not so. The existence will only be proven when an experiment detects it. What this approach does do is give an additional reason why a magnetic monopole should exist. The second comment concerns the terms K1 and K2 near the close of this section. It would be desirable for the author to show that, in a vacuum, K1 approaches the value of one, while K2 must approach zero. It would strengthen his case if he did that.

As far as the third part is concerned, the one relating to Relativity, it would be desirable to discuss in more detail the claim that observed time dilation and length contraction are due to defective measurements. He makes the statement that the defective measurements occur because of the finite speed of light. Some additional analysis would be helpful in substantiating this claim. In addition, it would be nice if an experiment could be devised to prove his point. This would be a major development for this theory.

Finally, I am of the opinion that this paper has very definite merit. It may be that improving part 3 would take time to accomplish. If that is so, and if time is critical, the first two sections could well be published on their own, with, perhaps, some additional comment on K1 and K2. With these provisos, I recommend publication of this paper.

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#### **The Second Report:** Wed 19/20/08

About the paper:

1) As far as I know,  $E_e = \hbar\omega$  is full energy, for example of a photon from atom, when electron lose his moment of momentum  $\hbar$  and  $\omega$  is close to angular frequency rotation of electron near of nuclei of atom.

So  $E_e = \hbar\omega$  is not equivalent to energy of one wave train.

2) Speed of light in medium is  $V_1 = \frac{c}{n}$ . Other formula  $V_2 = \frac{1}{\sqrt{\mu_m \varepsilon_m}}$ . If we take  $V_1 = V_2$ ,

then  $\varepsilon_m$  is a function of wave frequency. But author take  $\varepsilon_m$  for static case of electric polarization, not for real electromagnetic wave in water.

3) From here, is it necessary for modified Maxwell's equations?

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**The Third Report:**