Da: ees.pla.0.317778.b4d047ef@eesmail.elsevier.com per conto di Physics Letters A [pla@elsevier.com]
Inviato: domenica 24 maggio 2015 21:34
A: michele.marrocco@enea.it
Cc: PLA@excitons.eu
Oggetto: Your Submission PLA-D-15-00904

Ms. Ref. No.: PLA-D-15-00904
Title: Quantum states from Maxwell's theory of the free radiation field Physics Letters A

Dear Dr. Marrocco,

Reviewers' comments on your work have now been received. You will see that they are advising against publication of your work.
I agree with their judgment and therefore reject the manuscript.

For your guidance, I append the reviewers' comments below.

Thank you for giving us the opportunity to consider your work.

Yours sincerely,

Alexander Eisfeld
Editor
Physics Letters A

Reviewers' comments:

Reviewer #1: The author takes a fresh look on the possibility to derive an easy quantization of the radiation field from classical electrodynamics. Unfortunately, the suggested solution is far from being satisfactory.
--In the introduction the author interprets the zero-point energy of the electromagnetic field in terms of half photons. It has a different origin. The author should read Glauber's 1963 paper on coherent and incoherent states of the radiation field .
-- on page 6 the author writes:
"A detector cannot follow the fast time oscillation of the electromagnetic field"
This general statement is wrong. There are the so-called Schumann waves with less than 100Hz.
--on page 7 the author writes:
-- "...the electric field rather than the vector potential that is never measured."
Again wrong. The gauge-invariant part of A can be measured in a Bohm-Aharonov setup.
-- worst of all, the author writes down an arbitrary component of the electric field, calculates the corresponding electric energy and finds a factor $2n + 1 = 2 (n + 1/2)$ from the contribution of the spherical harmonics. This is not physics, this is only a normalization property of the harmonics. Equation (16) is meaningless. One could also divide it by $\mathrm{sqrt}[(2n + 1)]$ and there would be no $(n+1/2)$ in the final result.
--Coming up with monopoles out of the blue sky will make the paper even worse.

The present manuscript is not acceptable in any journal.

Reviewer #2: This paper purports to obtain the quantization of the electromagnetic field from an expansion of the classical field in spherical harmonics. A close inspection of the proof shows that it is nothing more than a mathematical analogy between the (n +1/2) factor appearing in the harmonic oscillator quantized energy levels and the fact that there are 2n +1 = 2(n + 1/2) values of the m value in the n'th spherical harmonic. This is shown by the key equation (18) which involves the orthogonality of the spherical harmonics followed by a sum over the number of m values for fixed n.

That the n values in the spherical harmonics are integers has nothing to do with quantization. The partial wave expansion of a plane wave is as meaningful in classical physics as in quantum mechanics. If the author believes the proof then it should be shown that the constant <beta> is numerically equal to the known value of Planck's constant.

In summary, I do not believe that the conclusions of this paper are correct and do not recommend publication.