

Re: Electromagnetic wave and photon spin

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- *From:* "FredFizzx" <fredifizzx@xxxxxxxxxxxx>
 - *Date:* Tue, 19 Sep 2006 23:27:35 -0700
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"Sue..." <suzysewnshow@xxxxxxxxxxxx> wrote in message
<news:1158701938.537480.18070@xx>

FredFizzx wrote:

In units where $c = 1$, the E field and B field of a monochromatic EM radiation plane wave are identical except they are in phase and are transverse to the direction of motion. And 90 degrees rotated from

each

other. However, that is an ideal case and nature is not usually so perfect. ;-) But can be used as a good approximation in many cases.

Nature won't pay any attention to the units you establish

Well, maybe nature doesn't be we sure can "pay attention". ;-)

The long range components are electric as the OP wrote.

I don't know what that means. You mean **only** electric? Sorry, that is flat out wrong if so.

Jackson demonstrates with an E plane only antenna.

<http://arxiv.org/abs/physics/0506053>

Yes... You are spot on. The E component diminishes by $1/r^2$

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and is the farfield or radiative component. The magnetic component diminishes by $1/r^3$ and is effective in the nearfield only.

You need to qualify your $1/r^3$. That would only be true for certain types of source configuration and/or boundary conditions.

Having never seen a long range magnet, I don't know how I would further qualify it. The configuration that integrates the Coulomb forces seem rather inflexible given the finite speed of light.

Read Timo's reply to rds in this thread. He has it exactly right. Magnets are dipoles. The B field of EM radiation doesn't necessarily come from a magnet.

http://en.wikipedia.org/wiki/Multiple_integral

Photons are a mathematical abstraction not a propagation model. Your question is to the heart of why Feynman puts wrist watches on his photons to fix all the mirrors that QM broke. In QED, the phase information and magnetic components are transported on the tip of a mathematicians pencil. ;-)

Photons are definitely not a math abstraction. They are basically chunks of propagating EM energy that don't disperse due to the nature of the relativistic quantum "vacuum" medium. They have only helicity and some value of momentum as intrinsic properties. All the EM associated with

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them comes from the quantum "vacuum".

This may be some conjecture of something more fundamental than electrons and positrons but if there is any evidence then someone left the party without their prize.

Seems to be just plain common sense to me. The evidence is as plain as just opening your eyes. ;-)

<<Now, does not the prize to Einstein imply that the Academy recognised the particle nature of light? The Nobel Committee says that Einstein had found that the energy exchange between matter and ether occurs by atoms emitting or absorbing a quantum of energy, $h\nu$.

As a consequence of the new concept of light quanta (in modern terminology photons) Einstein proposed the law that an electron emitted from a substance by monochromatic light with the frequency has to have a maximum energy of $E=h\nu-p$, where p is the energy needed to remove the electron from the substance. Robert Andrews Millikan carried out a series of measurements over a period of 10 years, finally confirming the validity of this law in 1916 with great accuracy. Millikan had, however, found the idea of light quanta to be unfamiliar and strange.

The Nobel Committee avoids committing itself to the particle concept. Light-quanta or with modern terminology, photons, were explicitly mentioned in the reports on which the prize decision rested only in connection with emission and absorption processes. The Committee says that the most important application of Einstein's photoelectric law and also its most convincing confirmation has come from the use Bohr made of it in his theory of atoms, which explains a vast amount of spectroscopic data. >>

<http://nobelprize.org/physics/articles/ekspong/index.html>

... and your no-dispersing ~photons~ can't take any cell-phones into the mirror spaces to conspire about their phase.

This is supposed to mean something?

<http://www.eso.org/projects/vlti/> ;-)

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Wrong direction to the mirror spacetimes.

"Higgs-field Portal into Hidden Sectors"

<http://www.arxiv.org/abs/hep-ph/0605188>

FrediFizzx

Quantum Vacuum Charge papers;

http://www.vacuum-physics.com/QVC/quantum_vacuum_charge.pdf

or postscript

http://www.vacuum-physics.com/QVC/quantum_vacuum_charge.ps

<http://www.arxiv.org/abs/physics/0601110>

<http://www.vacuum-physics.com>

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