Re: Electromagnetic wave and photon spin

Source: http://sci.tech−archive.net/Archive/sci.physics/2006−09/msg01940.html

- *From*: "Sue..." <suzysewnshow@xxxxxxxxxxx>
- *Date*: 19 Sep 2006 14:38:58 −0700

FrediFizzx 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 tranverse 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

The long range components are electirc as the OP wrote.
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 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 quality it. The configuration that integrates
the Coulomb forces seem rather inflexible given the finite
speed of light.

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

> Photons are a mathmatical 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. The 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
> them comes from the quantum "vacuum".

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

<<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,hv .

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=hv−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.
http://www.eso.org/projects/vlti/ ;−)

Sue...

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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