Re: How long is a photon?

Source: http://sci.tech−archive.net/Archive/sci.physics/2005−05/msg01987.html

- *From*: "FrediFizzx" <fredifizzx@xxxxxxxxxxx>
- *Date*: Sat, 14 May 2005 21:14:00 −0700

"Ken S. Tucker" <dynamics@xxxxxxxxxxxx> wrote in message
news:1116109859.271322.163890@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
| Hi Fredi and all...
|
| FrediFizzx wrote:
| > <dlham@xxxxxxxxxxx> wrote in message
| > news:1116016608.604183.269890@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
| > | If an atom emitted a photon (a burst of light energy) for
186,000th
| of
| > | a second − would the photon be one mile long? If it lasted for
just
| > 1/2
| > | a second the photon would be 93,000 miles long. Do you think the
| > length
| > | of the photon has some bearing on the slit experiments that says a
| > | photon can be in 2 places at the same time.
| >
| > No. It doesn't work like that. A photon is a quantum object from
| QED.
| > In our naive paper at the link below you can see what happens when
| you
| > try to take a photon and describe it in real space. It fits that a
| > photon's "energy density" could be a cylindrical object two
| wavelength
| > long relative to a detector. As an expectation value. And the
| radius
| > of the cylinder is lambda/2pi. Also as an expectation value. What
| this
| > probably means quantum mechanically is that we expect to find the
| photon
| > somewhere in that energy density volume. If you take spin into
| > consideration, then classically it looks like the energy of the
| energy
| > density is spread out towards the cylinder's surface. As that is
| where
| > the amplitude is greatest. A free space photon relative to a
| detector,
| > only has frequency or wavelength and helicity. Its amplitude could

| only
| > depend on its frequency and helicity relative to a detector. But we
| > highly suspect that a photon's energy density in free space would be
| two
| > wavelengths long. So... A photon's energy density that had a
| > wavelength of one mile would have to be huge also. And very low
| > frequency.
| >
| > FrediFizzx
| >
| > http://www.vacuum−physics.com/QVC/quantum_vacuum_charge.pdf
| > or postscript
| > http://www.vacuum−physics.com/QVC/quantum_vacuum_charge.ps
|
| Read Fredi's post and the papers, ther're sophisticated,
| and not questioning Fredi's analysis, but instead asking
| a question about photons.
|
| Probably easier if I put it into a form of a theory...
|
| Postulate:
| Let "h" be a quantum of Action, then h/t (t=time) be a
| Rate of Action, i.e quantums per seconds.
|
| Let frequency "f" be expressed as "1/t" then, the
|
| Rate of Action = h/t = h*f = Energy.
|
| Let me do a diagram, where "a"'s are units of
| action, and demo two distinct frequency's,
| (dot's represent wavelength),
|
| 1) a......a......a......a
|
| 2) a...a...a...a
|
| Where the energy of (2) = 2* energy of (1) where
| I postulated the photon energy = rate of action above.
|
| It follows a photon consists of at least two succesive
| actions in order to establish an action rate, which is
| equivalent to energy.
|
| Does that make sense?

Are you trying to link this to our two wavelengths long? If so, then we
need 1/2 actions for the "a's" so that the full two wavelengths = one h?
Hmm... Where have I seen this h/2 before? ;−)

| Check it out this way, I'll use Planck's h =
| 6.6..*10^−27 ergs*secs == Energy*Time.

|
| Take the partial diff of "h" wrt Time and find
|
| &h/&Time = Energy.
|
| In words, that equation means: A constant Energy
| of light is shining on you, and that constant has
| a constant change of action "h" over "Time", somewhat
| like getting a sun−tan.
|
| The partial derivative above often throws people but
| (IMHO) it's quite simple. Let me provide an example:
|
| Two drunk fishermen are sitting in a boat,(me and Fredi).
| One claims *everything else being equal* says fish bite
| in a rain. The other claims *everthing else being equal*
| they bite better when it's sunny.
|
| The point being, we vary only the weather variable, by
| stating *everything else being equal*, so all those
| potential variables are − for the sake of argument −
| held constant, that's what *partial differentiation*
| does, it defines how Freddi and Ken can argue about
| how the fish bite as the weather varies.
|
| Applying that to this equation,
|
| &h/&Time = Energy,
|
| assumes Energy is constant, but we still have
| a Rate of change of Action.
|
| >From what I ascertain by study of *Action* is an
| enigmatic unit. Planck, Weyl and Einstein studied
| it carefully, so I recommend the same. Seems it's
| a fundamental invariant.

Yes, of course. We look at it this way. If it were possible to see
this two wavelengths long photon's energy density coming at you head on,
you would see a 4pi rotation of the E vector. But each wavelength is
only a 2pi rotation.

FrediFizzx

http://www.vacuum−physics.com/QVC/quantum_vacuum_charge.pdf
or postscript
http://www.vacuum−physics.com/QVC/quantum_vacuum_charge.ps

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- ***Follow−Ups***:
    - ***Re: How long is a photon?***
        - *From:* Ken S. Tucker
- ***References***:
    - ***How long is a photon?***
        - *From:* dlham
    - ***Re: How long is a photon?***
        - *From:* FrediFizzx
    - ***Re: How long is a photon?***
        - *From:* Ken S. Tucker
- Prev by Date: ***Re: How does Light Flow?***
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