Re: How can light travel without losing energy?

Source: http://sci.tech−archive.net/Archive/sci.physics.research/2005−09/msg00377.html

- *From*: nmm1@xxxxxxxxxxxx (Nick Maclaren)
- *Date*: Wed, 21 Sep 2005 20:33:17 +0000 (UTC)

In article <dgc05igtd1@xxxxxxxxxxxxx>,
Einar Andreas Rødland <e.a.rodland@xxxxxxxxxxxxx> wrote:
>
>I'm sorry if I missunderstood, so I would appreciate that you clearify
>what you meant by:
>
>> Then there is the situation of the energy of the vacuum, the
>> creation of particle/antiparticle pairs and all that. One would
>> expect such particles to behave normally, wouldn't one? And
>> many of them DO interact with light, so one can reasonably
>> speculate that this might cause absorption and retransmission
>> of multiple photons at lower energies.
>
>Do you also have an explanation of how this might explain the observed
>red shift and CMB?

Not one worth bothering with. What I am saying is that, IF that aspect
of quantum mechanics is correct, THEN there will almost certainly be
some interaction between light and "the active vacuum". I am then ALSO
saying that such an interaction has so far unknown properties, and so
MIGHT produce a similar reduction in energy to the reduction in velocity
when light enters a medium of higher refractive index.

I am NOT saying that is likely and NOT proposing a theory − what I am
saying is that it can't be said to be IMPOSSIBLE unless its opponents
can explain why it is.

>Well, it's a fundamental assumption of all of physics that there are
>universal laws, and that our ability to describe nature is derived
>from finding those laws or good approximations thereof. That's not
>specific to the Big Bang theory. This assumption is certainly not
>provable, though it may be argued to have been highly successful, and
>you may well call it a dogma if you please.

Not at all. What I am saying is the dogma is the claim that it is
known that the physical laws and constants were volatile during the
Big Bang and thereafter froze completely solidly, so that they were
thereafter invariant for all time (until the Big Bong, if any, when
the universe implodes).

My response is "And just exactly how is that known?"

>Another more scientific question, which I suspect is more in line with
>what you are getting at, is the question of under what circumstances
>our understanding of the laws of physics are adequate: to what extent
>we can reasonably generalise what we know to other times, places and
>situations.

Actually, no. What I am stating is that the proofs of Hubble's theory depend on those assumptions. Where physicists follow the rigorous standards of the better pure mathematicians and say:

Assuming hypotheses X, Y and Z, we show that ....

I am happy. There is nothing wrong with assuming that physical laws and constants are invariant, provided that you admit that you are doing so without conclusive proof and that your conclusions are void if it turns out not to be the case.

It is not admitting those qualifications, being prepared to accept circular proofs if they fit certain beliefs and not being prepared to consider hypotheses that break them that turns a scientific assumption into dogma.

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    - ◊ *From:* Einar Andreas Rødland

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  - ♦ ***Re: How can light travel without losing energy?***
    - ◊ *From:* Einar Andreas RÃ¸dland
  - ♦ ***Re: How can light travel without losing energy?***
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