

Re: QM support for a preferred frame

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- *From:* Bilge <dubious@xxxxxxxxxxxxxxxx>
 - *Date:* 04 Jul 2007 22:41:12 GMT
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On 2007-07-02, Surfer <surfer@xxxxxxxx> wrote:

On Sun, 01 Jul 2007 17:04:08 -0700, Dono <sa_ge@xxxxxxxx> wrote:

Hey, wake up, we are still discussing the fringe MOVEMENT in MMX, this has nothing to do with any quantum theory.

The interference of individual photons with themselves is however a quantum phenomenon.

Yep, and it's due to the fact that in quantum mechanics, no physical quantity can be associated with some absolute phase. The existence of an absolute frame means interference depends on the absolute phases of the interfering photons, not on the interference of a photon with itself.

[...]

So it seems to me something subtle may be happening. For example consider semiconductors. Pure samples obey Ohm's law (which is a classical law), but if they are doped with impurities this is no longer the case, which is why semiconductors can be used to build amplifiers.

Now, if you want to analyse what happens in a doped semiconductor you have to use quantum mechanics, because the impurities have quantum effects.

Uh, the quantum effects to which you refer hinge on the exclusion principle, which in turn comes from relativistic quantum field theory. Since the lorentz covariance of the Dirac equation hinges on the relation,

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$$[\gamma^u, \gamma^v] = 2g^{uv}$$

where the γ^k are Dirac matrices and the g^{uv} is the metric,
I would say you are basically undermining your own argument.

Perhaps a gas should be regarded as doped vacuum, in which case a full analysis of a gas-mode MM experiment might require quantum mechanics.

But I am just using my imagination here.

Why waste imagination on something that is well known, when you could use your imagination to wonder about the mysteries that remain? All you are doing is trying to prop up a philosophical point of view that is inconsistent with all of the data obtained from experiments and wasting your effort by trying to find a way to get around nature. Ask yourself whether you are interested in discovering how nature fits your personal view of how nature ought to be or whether you are interested in discovering how nature is. Physicists want to know how nature is, which is why they stop trying to prove that nature must be a certain way and move on after the experimental evidence piles up against them. Personally, I'd rather use my imagination on something that has a chance of being correct.