

Re: On the uncertainty principle for photons. An experimental counter

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On Dec 4, 3:08 pm, kvblake <kvblake2...@xxxxxxxxxx> wrote:

Do you mean that when a photon is created there emerges a EM field at once in the whole universe or the existing EM field changes at a constant value immediately everywhere?

I read about localized photons in Mandel's quantum optics.

Regards: Kevin

No, I mean exactly what relativity implies – things that go at C cannot be localized in any way. The electromagnetic field already exists everywhere in the universe, and can absorb and release energy–momentum anywhere and any–when. The photon as a thing, a localized object, does not exist, and can't possibly exist.

In fact the entire idea of propagation is what is at issue here. In relativity, the world is 4–d, and propagation is a primitive fact, like distance in Euclidean geometry, and can't be reduced. So the EM field absorbs energy here, and releases it there, with the difference of here and there being an interval lying on the light cone. Photons are the units of absorption and release. The 4–d–ness of the world really has to be taken at a face value.

The conflict between relativity and QM is stark enough without making it worse. Neither ceases to be true because of the other.

–drl

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