

Re: do photons interact with gravitons?

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From: zigoteau (zigoteau_at_ausi.com)

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Uncle Al <UncleAl0@hate.spam.net> wrote in message news:<41015795.7BAD57EF@hate.spam.net>...

Hi, Uncle Al,

- > *Gravitation is geometry. Gravitons are a mathematical*
- > *construction with no empirical support. They would be unique for*
- > *being tensor bosons (spin-2) rather than vector bosons (spin-1).*
- >
- >
- > <http://arXiv.org/abs/gr-qc/9909014>
- > *Phys. Rev. Lett. 92 (2004) 121101*
- > *falling light*
- >
- > *Gravitation is geometry.*

It's a good thing I was sitting down when I read that. There is a contributor to Usenet, whose name escapes me, who claims that current geometrical theories of gravitation have inadequate experimental support, and that it is possible for chiral bodies to fall at different rates, thus disproving Einstein's equivalence principle. Is there empirical support for the idea that one can have one's cake and eat it too?

But apart from that, to get back to Jefferson's original question, gravitation has a certain amount of experimental support, as does gravitational radiation (e.g. loss of energy from systems involving black holes). If everything else is quantum, and exchanges energy in packets of $E=hf$, then the gravitational field is obliged to, as well.

I'm putting my money on the universe turning out to be objectively real, after all. Current quantum theories have certain difficulties, particularly where gravitation is concerned. However we obviously can't go back to 19-th century realistic theories of physics, either. Let's hope that the eventual synthesis allows us to reclaim the English language for common sense. It has been pointed out by many people better than myself that there is nothing in modern quantum theory with the individuality which is implied by words photon,

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phonon, gluon, graviton and hence by extension also electron, muon, etc. I remember a media storm a couple of years ago about the report that an electron can be split up between two microbubbles in liquid helium. In fact it had previously been established in connection with the Coulomb blockade that a metal nanoparticle can have a fractional charge, and in chemistry the concept of fractional charge on an atom has been around even longer. You just can't imagine one of those early-20th-century-type gedankenexperiments to demonstrate the particulate character of the electron, which would not simultaneously bugger up the whole experiment.

So the word 'graviton' is just a quantum circumlocution for the gravitational field, and 'photon' is a way of talking about the electromagnetic field.

If this meaning of Jefferson's words is assumed, then Eddington's confirmation that starlight is deflected by the gravitational field of the sun was just the first of many confirmations that photons and gravitons interact.

Cheers,

Zigoteau.