Re: QFT Questions

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From: Gregory L. Hansen (*glhansen_at_steel.ucs.indiana.edu*)
Date: 08/12/04

Date: Thu, 12 Aug 2004 20:02:48 +0000 (UTC)

In article <Pine.LNX.4.44.0408121359520.7455−100000@erodium.hep.wisc.edu>,
Creighton Hogg <wchogg@hep.wisc.edu> wrote:
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>On Thu, 12 Aug 2004, Gregory L. Hansen wrote:
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>> In article <Pine.LNX.4.44.0408121155450.7455−100000@erodium.hep.wisc.edu>,
>> Creighton Hogg <wchogg@hep.wisc.edu> wrote:
>> >
>> >Of course it's a little more complicated than that. The naive QFT that
>> >you'd base off of GR crashes and burns. There's basically three options
>> >after that
>> >a) We keep quantum mechanics as is and try to find a theory that can
>> >reduce to GR in some limit.
>> >b) We keep GR as is and expand our concepts of quantization.
>> >c) None of the above.
>> >
>> >a is the path string theory has taken and b the path Loop Quantum Gravity
>> >has taken.
>> >I switch votes between a,b, and c several times a week.
>> >It's a good thing nature doesn't care what I think.
><>
>> I admit that my ignorance of the subject is such that I might have
>> imagined QED with an interaction strength going as −G instead of +e (or
>> whatever alpha would work out to), and calling the job half done.
>
*>Well the problem is that the interaction strength *isn't* just G. The*
>coupling constant for a graviton vertex isn't a dimensionless constant,
>it's proportional to energy! That's very bad, from the standpoint of QFT.
>Unless you impose an energy cutoff everything goes all to hell. (I have
>this nagging feeling there are still problems even if you do impose an
>energy cutoff, but don't take my word for that.)

Well, maybe you could come up with a prediction in the Newtonian limit.

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