Re: the basis of relativity

Source: http://sci.tech−archive.net/Archive/sci.physics.relativity/2005−06/msg00194.html

- *From*: "Ken S. Tucker" <dynamics@xxxxxxxxxxxx>
- *Date*: 1 Jun 2005 23:12:59 −0700

Tom Roberts wrote:
> Ken S. Tucker wrote:
> > Tom Roberts wrote:
> >>The actual value of the Action does not matter −− one can add an
> >>arbitrary constant to it without changing any physics.
> >
> > I find no evidence to support your statement,
>
> Then you haven't looked. This is an elementary theorem in variational
> calculus.
>
>
> > check
> > Weinberg pg 360−1, it's not there, provide a ref please.
>
> In many ways Weinberg's book is merely a superficial treatment of the
> mathematics of GR. You need more, better textbooks. <shrug>

So you don't have a ref, and so you piss on Weinberg,
as being shallow...this discussion is failing Tom,
not by my fault.

> >> Indeed, there is a much larger group of functions one
> >> can add without changing any physics....
> >
> > Yes, but action is not *usually* considered in that
> > group.
>
> OF COURSE NOT! Please look up there and note that this is a group of
> functions that are ADDED TO the action. So of course the action itself
> is not a member of the group. Sheesh!

So why conflate a straw man?

> > Just examine adding an arbituary constant to
> > Plancks "h", such as −h, the physics will change :−).
>
> This is utterly and completely unrelated to this discussion, which is of

> a _classical_ theory (GR).

Ok,

> >>And, as the previous posts pointed out repeatedly: R^a_bcd can be
> >>nonzero but R is zero (because the terms in the contractions sum to
> >>zero), and this _ALWAYS_ happens in a vacuum region.
> >
> > The problem is: If R=0 then constant g_uv's may be
> > used to describe that field over a finite region.
>
> Aparently you have not been paying attention.
> As I have said before: If R^a_bcd is nonzero in a region, then there are
> no coordianates for which the {g_uv} are constant. And yet if this is a
> vacuum region then necessarily both R_uv and R are zero.

Please provide a ref where R^a_bcd >0 but R=0 to
support you point.

> > Hence R=0 means R^a_bcd=0, that's a fact.
>
> No, it's wrong. Once again you got the implication backwards:
>
> R^a_bcd = 0 implies R=0
> But R can be 0 even when some of the {R^a_bcd} are nonzero,
> such as in a vacuum region.

Tom, either prove that or provide a ref, so far
it's been rather easy to reveal the definite
deficiencies in your ability to argue GR right
to the matt, nothing personal.

> > Study metrics where R=0, i.e. No Curvature, in that
> > case we can surely use constant g_uv's right?
>
> No.
>
> Consider the Schwarzschild metric in the region r>2M. R=0 but yet
> Riemann is nonzero, and there is no set of coordinates for which the
> {g_uv} are constant.

EXACTLY, the Schwarz metric is DERIVED from R_uv=0,
which is a *non−physical* approximation of G_uv=T_uv,
that's agreed to.

> You _REALLY_ need to pay attention! This has been mentioned at least twice.

I'm slow, give a guy a chance.

> In differential geometry, "no curvature" means the RIEMANN CURVATURE
> TENSOR is zero (not, as you claim, that the Ricci scalar is zero).

We'll need a ref to support your statement,
because mathematicians need to know more.

> > Tell us what volume we
> > should use to calculate the density and hence vacuum
> > using mass/volume=density and why.

Hear, Tom's definition of density...

> Select a point in spacetime at which you wish to know the density.
> Select any small 3−volume surrounding that point (contained in the
> 3−surface of constant time for the time you are interested in), total
> the mass/energy in that volume and divide by the volume. Now take the
> limit as that volume goes to zero, always containing the point in
> question. The result is the density at that point.

Tom, that's among the most ridiculous definitions I've
ever heard, and I'm trying to be patient. Why not ask
a REAL experiment physicist to do that procedure, I
think you'll get thrown out.

First, you gave no reasoning as to why you would do
such a ridiculous procedure and secondly how can
anyone reduce a volume to zero.

> As I keep telling you, you _REALLY_ need to learn the basics.

Perhaps, but so far I know you still over−simplify GR
and don't understand it, that's clear to me.

> > Please define
> > vacuum (aka density) or ref as we should use it in GR.
>
> I have done so at least twice before in this thread:
>
> In GR, a vacuum region has T^uv = 0 throughout.
>
> BTW "vacuum" is not at all "aka density".

Oh, so now density=0 is not a vacuum???

> > [... more gobbledygook too tiresome to respond to]
> Don't expect me to respond until you learn to pay attention....

Thomas, once again your ignorance of GR has been
revealed, but over−all you're making good progress,
as I've noted over the past 2 years. I won't hide
the fact that you'll never qualify as a theoretician,
but you might become interesting.
Regards

Ken S. Tucker

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- ***Follow−Ups***:
  - ***Re: the basis of relativity***
    - *From:* carlip−nospam
- ***References***:
  - ***Re: the basis of relativity***
    - *From:* Tom Roberts
  - ***Re: the basis of relativity***
    - *From:* Ken S. Tucker
  - ***Re: the basis of relativity***
    - *From:* Tom Roberts

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