

Re: New version of a relativity FAQ

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- *From:* Tom Roberts <tjroberts137@xxxxxxxxxxxxxx>
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Juan R. González-Álvarez wrote:

No classic experiment has proved that gravity is really geometric

Of course not! This is physics, not math or logic, and it simply is not possible to "prove" any theory or hypothesis.

(\blockquote
mass grips space by telling it how to curve area, space grips mass by telling it how to move.
)

This is (loosely) Wheeler's description of GR, not "gravity" --- you need to learn to distinguish the two, as they are VERY different. "Gravity" is a physical phenomenon, while GR is a THEORY of how gravity behaves. NOBODY knows what gravity is, but GR is well known and understood by many.

Indeed the more recent research on fundamental gravity is towards abandoning geometry because seriously flawed. See for instance [Trump & Schieve, 1999]
In my own work on dual gravity, the geometric formulation also arises as approximation.
With the bonus many problems of GR are automatically corrected and the final theory quantized.

That's all well and good. But it remains your (and others') hopes and dreams until some experiment can distinguish these different theories. A geometrical approach to gravitational theory is not "deeply flawed", as our current best theory of gravity, GR, is geometrically based; it has had considerable success over the past century or so.

If you can indeed present a theory that is better than GR, that solves issues with GR, and is not refuted experimentally, then you MIGHT have something interesting. But it is unlikely to supplant GR as the mainstream theory of gravitation until you have an experiment that refutes GR and not your theory. You have said repeatedly that at present you do not.

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In those latter theories spacetime is not curved and gravity is not geometrical but a force.

Fine. But that cannot possibly "disprove" GR, or "refute" the geometrical interpretation of GR, which you claimed earlier.

You misunderstand this.

This is very basic science. It is YOU who does not understand, or who does not trouble himself to make important distinctions between different subjects.

This is very basic: just because you happen to have and believe in a non-geometrical theory, that has NO EFFECT WHATSOEVER on the validity or the geometrical nature of GR. NOTE I SAID "GR", NOT "gravity". I am discussing THEORIES, not phenomena.

Indeed i am working in a paper that invalidates by the first time the geometrical formulation of gravity.

Your statements above imply you cannot actually do this. Merely formulating an alternate theory cannot possibly do this, only a real experiment can do so, and above you state there are none.

You misunderstand also this.

Then the fault is in your lack of precision. What I said is basic and a clear conclusion from YOUR writings.

In some limit the geometrical and the non-geometrical formulation are empirically indistinguishable.

This explains why Mercury perihelion anomaly, light bending, radar delay, and other observations do not prove that gravity is geometric.

You keep repeating the same mistake. It simply is not possible to "prove" theories. I have said that GENERAL RELATIVITY is geometrical, I have NEVER said that "gravity" is geometrical. I understand the difference, but YOU keep confusing the two VERY DIFFERENT concepts.

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All those tests can be perfectly explained, and with the same precision, using non-geometrical theories of gravity.

Sure. So what? This has no effect whatsoever on either the geometrical nature of GR or on its success and validity.

Light bending, for instance, is not a proof that spacetime is curved and gravity geometrical because light bending can be explained with the same precision using a non-geometrical theory of gravity.

Of course that is no "proof" — this is physics, not math or logic.

The common claim that light bending showed that spacetime is curved is unfounded because the same test implies flat spacetime when you use a non-geometrical theory.

When you use an essential element of GR (spacetime), then the statement is about the THEORY, not the underlying physical phenomenon. Yes indeed, in GR the spacetime manifold is curved. You MUST be more precise in distinguishing theories from phenomena, and one theory from another — your usage of "spacetime" twice in this sentence uses the same word to refer to two VERY DIFFERENT entities (the manifold of GR, and the different manifold of a non-geometrical theory). Such PUNS make your writing and thinking confused and unclear.

Certainly in weak-field tests like this, non-geometrical theories can describe the measurements as well as GR can. Indeed, one can use the linearized approximation to GR, in which background Minkowski coordinates are used, and the curvature of the manifold is APPROXIMATED by fields on a flat manifold.

The true test comes when your non-geometrical theory confronts and describes strong-field phenomena as well as GR does. I mean such measurements as the binary pulsars and the observations of black holes at the center of galaxies.

General public has been misinformed.

No, YOU are insufficiently precise. And YOU keep repeating a very basic mistake: not distinguishing between phenomena and theory, or between different entities in different theories.

In another post of this thread:

- > Establishing a new theory of physics requires experiments. Ones that are
- > consistent with the new theory and are inconsistent with the old theory.

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- > That is how science progresses. Until you get such experiments for "FTG
- > or a DPI theory", they will remain curiosities and out of the
- > mainstream.

Again this is far from true.

No it isn't. This is indeed how science progresses. Read Kuhn.

But you already said that you never had time to research this.

I have not researched "FTG or DPI". I HAVE researched basic science. YOU need to do the latter — your mistakes here are very basic, and show a clear lack of understanding of how science actually works. I repeat: read Kuhn, The_Structure_of_Scientific_Revolutions.

Tom Roberts

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