

Re: Expansion and balloon analogy

Source: <http://sci.tech--archive.net/Archive/sci.physics.relativity/2005-11/msg00952.html>

- *From:* "TomGee" <vlus@xxxxxxxxxxx>
 - *Date:* 16 Nov 2005 01:08:56 -0800
-

Tom Roberts wrote:

> TomGee wrote:

>> But then it was noted that while galaxies are all moving away from each
>> other, their coordinates remain the same. I.e., the distance between
>> them grows but they remain in the same spacial relationship as before.

>

> Hmm. "Coordinates remain the same" has no meaning at all independent of
> the definition of the coordinate system. "Spacial relationship"
> generally includes both direction and distance, so your claim here makes
> no sense.

>

>

Um, sorry. I just assumed everyone knew the issue involved well enough
to understand my plain english. The phrase "spacial relationship"
defines my coordinate system which refers to the direction from each
other of the galaxies observed. I could have worded my concluding
statement better by saying, "but _otherwise_ their spacial relationship
does not change.

>

>

>> Now that cannot be explained by balloons or raising breads.

>

> Those are _ANALOGIES_, not "explanations".

>

>

Yes, and I should have said instead, "rising raisin breads". Sorry.

>

>

>> It seems

>> the only explanation possible is that the galaxies are not moving apart
>> from each other due to their own motions, but due to the expansion of
>> space!

>

> "expansion of space" has no meaning.

>

>

Precisely my point. Thank you.

>

Re: Expansion and balloon analogy

>
>> So, to talk about the expansion of matter in regard to the expansion of
>> the universe is passe, to say the least. It is not matter that is
>> expanding, but the distance between it. We are not getting bigger at
>> all. It is only space that is growing inbetween all discrete matter!
>> At least, that is the latest guess from the physics community.

>
> Kinda-sorta.

>
> In the FRW manifolds used for cosmological models, spacetime is
> permeated with a dense filling of dust particles.

>
>
No, sorry. You cannot use "spacetime" in this discussion because s-t
is not a real place – it is a math construct used to calculate the
world lines of objects moving in space. It is an imaginary place that
does not exist in the real universe, only in our minds. Many have come
to believe It is a real place in our universe, but of course that's
nonsense.

>
>
> The elapsed proper
> time from the big bang for each dust particle defines 3-surfaces of
> simultaneity for the cosmologically-preferred time coordinate, and if
> one measures the distance between a given pair of dust particles on
> successive such surfaces, then this distance is increasing (for the
> portion of these manifolds corresponding to our current situation).

>
>
Ooooh, technobabble! Good thing I have my babel fish inserted. Do you
know any English for us poor technobabble-impaired laypersons? Do you
even have a clue as to what the hell you're talking about? You cannot
know the elapsed proper time of a single bit of dust unless you can
track its world line back to the BB, and then it is only a math
construct only remotely related to reality if at all. And why do you
use an undefined "cosmologically-preferred (sic) time coordinate"
system after berating me for not defining mine? And why use all that
nonsense to say that the distance is increasing between dust particles?
I mean, what does that mean, in your language, that is different than
my observation that the distance between matter is increasing?

>
>
>> For something to do something in our universe requires energy of some
>> sort, but if space is empty, and unless we overthrow the Principle of
>> the conservation of energy and $E=mc^2$, it is not possible for space to
>> expand.

>
> Not true in the FRW manifolds. No "energy" is needed for them to expand
> in the manner described above.

>
>

Re: Expansion and balloon analogy

No, sorry. There can be no free lunch here. Motion is not possible in our universe without the expenditure of some energy either from within or without an object.

>

>

> Attempting to do physics by sound bite is hopeless — you need to
> actually STUDY the relevant theories of physics.

>

>

Well, that didn't work in your case, so why study? To get dumber? How could I talk to you about physics if I studied like you and learned only nonsense and to make reference to someone's learning when you have no reasonable retort to their ideas?

>

>

>> there must be a better
>> explanation than the counter-intuitive idea that space itself is
>> expanding.

>

> There is. It's called GR and its application to cosmology via the FRW
> manifolds.

>

>

GR talks about the expansion of space? And it applies that to the study of the origin and structure of the universe using topological spaces or surfaces?

>

>

>> If space was expanding, why only between galaxies and not within them?

>

> See my previous posts in this thread.

>

>>[...]

>

>

> Tom Roberts tjroberts@xxxxxxxxxxx

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• *Follow-Ups:*

◆ ***Re: Expansion and balloon analogy***

◇ *From:* Tom Roberts

◆ ***Re: Expansion and balloon analogy***

◇ *From:* jem

• *References:*

◆ ***Re: Expansion and balloon analogy***

◇ *From:* Ben Rudiak-Gould

◆ ***Re: Expansion and balloon analogy***

Re: Expansion and balloon analogy

◇ *From:* Tom Roberts

- Prev by Date: ***Re: A little challenge for relativists.***
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