

## Re: The GPS Myth, Mythbusted ?

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*Source:* <http://sci.tech-archive.net/Archive/sci.physics.relativity/2009-06/msg01538.html>

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- *From:* Quatro <[eury3jf4@xxxxxxxxxx](mailto:eury3jf4@xxxxxxxxxx)>
  - *Date:* Thu, 18 Jun 2009 14:47:25 -0700 (PDT)
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On Jun 15, 7:42 am, Tom Roberts <[tjroberts...@xxxxxxxxxxxxxxxx](mailto:tjroberts...@xxxxxxxxxxxxxxxx)> wrote:

Quatro wrote:

On Jun 13, 10:51 pm, Tom Roberts <[tjroberts...@xxxxxxxxxxxxxxxx](mailto:tjroberts...@xxxxxxxxxxxxxxxx)> wrote:  
relativity accumulates, because gravity is monopole,  
then motion also accumulate, must be also monopole

Hmmm. The time difference obtained in comparing identical clocks in a satellite and on the ground accumulates because they are located at different heights in a gravitational potential, and are moving at different speeds relative to a locally-inertial frame (here the ECI).

bullshit Sir, any children knows that in kindergarten

its about monopoles, they always accumulate

you dont understand Maxwell equations, and also tensors  
and partial differential equations

This has nothing to do with any multi-pole expansion of "gravity" (or of

wrong, you cannot expand gravity, it is a monopole, end of story

"motion" which AFAICT cannot possibly be expanded as multi-poles).

while i can see now, that magnetism is not a monopole,  
so the satellites in motion does not accumulate,  
the only other theory i know which accumulate is entropy  
which must also be a monopole

## Re: The GPS Myth, Mythbusted ?

You are rather confused about what a multi-pole expansion is, and how the various terms in such an expansion are related to physics.

you dont understand

and also magnetism also accumulate at GPS level, because your car will always be in the same region, while the satellites also same region, therefore the GPS will have a persistent bias because the Earth magnetic field on electronics

including the "atomic" clock

a modern GPS receiver does not use its own clock in determining its position, it uses 4 (or more) satellite signals. In effect it is using the vastly more accurate satellite clocks instead of its own, rather poor clock. Indeed, there is no need for a clock in the receiver at all.

but Sir, the calculations requires local time in order to do the position properly

No, a direct measurement of local time is not needed. With 4 or more satellites in view, a given event at the receiver is specified with 4 unknowns: latitude, longitude, altitude, and local time. These 4 unknowns can be determined by fitting to the signals received from 4 or more satellites. No local value of local time is needed (the receiver must be able to accurately measure time differences of a few seconds; an ordinary crystal oscillator is sufficiently accurate for this). The more satellites that contribute data to the fit, the more accurate the result is likely to be.

exactly what is been told, you dont even need an atomic clock to driven the satellites, more important is that the satellites remains somehow synchronized

the alleged frequency reduction from a 10.23 MHz to 10.22999999543 MHz is bullshit, not necessary

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you cannot trust on a local time you get from  
far away in the wilderness !!!

No. But GPS receivers do trust the fit I described above — it  
DETERMINES the local time. To much better accuracy than any local clock  
could do (unless it is a set of atomic clocks).

right, as said

the alleged frequency reduction from a 10.23 MHz to 10.22999999543  
MHz  
is bullshit, not necessary

Typical errors for a single fit as described above are  
on the order of 10 ns, FAR better than any crystal or  
mechanical oscillator can do. A GPS receiver at rest  
on the surface and with the right software can to a  
lot better (averaging over many hours)....

Tom Roberts

learn this

there are no correction because the relativity done in software  
anywhere

there are no correction because the relativity done in hardware  
anywhere

thank you very much

The CRT myth – mythbusted, booong!  
The GPS myth – mythbusted, boooong!

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