

Re: Simple question about relativity and space time

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- *From:* oriel36 <[kelleher.gerald@xxxxxxxxxx](mailto:kelleher.gerald@xxxxxxxxxx)>
  - *Date:* Mon, 11 Feb 2008 10:06:33 -0800 (PST)
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On Feb 11, 11:14 am, "Paul B. Andersen"  
<[paul.b.ander...@xxxxxxxxxxxxxxxxxxxx](mailto:paul.b.ander...@xxxxxxxxxxxxxxxxxxxx)> wrote:

oriel36wrote:

"Dirk Van de moortel" wrote:

Meanwhile, from the 20th century in which people had  
learned  
to count well beyond 24:  
<http://physics.nist.gov/cuu/Units/second.html>

Goodness me !!,look at all those digits,I am impressed,astonished and  
what have you –

"The second is the duration of 9 192 631 770 periods"

Are you sure the last digit is not 1 or a 9

Yes. This is a definition.  
When calibrating the best atomic clocks,  
the last zero in 9 192 631 770.000 00 is significant.

--Paul

[http://home.c2i.net/pb\\_andersen/](http://home.c2i.net/pb_andersen/)

I am making one exception in this posting,something I have not done in  
the past and unlikely to do again,I am capitalising two words .I  
dislike seeing it in other posts when the context is to shout at an

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individual but this is not the case here. It is merely an expression of a human devised principle transferred to a natural occurring motion as a matter of convenience. Again, I apologise in advance.

I am genuinely delighted to see physicists move away from the astronomical arena and approach terrestrial concerns like climate, no doubt there will be a sense of betrayal as the leading lights in these forums start to withdraw from relativity and QM notions applied to the cosmos but dynamicists were never really suited to be in the driving seat in matters of structural and timekeeping astronomy. I marvel how meteorological models are created and have no doubt that they can extend this to climate, geology or many other disciplines that can be framed by a step by step approach.

The argument that the Earth's rotation does not make a good clock, hence the 'atomic' definition, is probably the major reason why physicists are back discussing nothing between celestial objects, they may call it dark energy or dark matter but ultimately it is what it always has been – space. Very few pick up on the irony but then again, it never seemed to be a problem for participants here in the first place, however, your peers seem to be too intelligent and have decided that the matter was a bunch of old cobblers and now detrimental to avenues closer to home.

Anyway, back to clocks and the 24 hour day. Our ancestors created the 24 hour day or in more technical terms the 24 hour cycle. Each 24 hour cycle elapses into the next cycle by way of equalising variations in the natural noon cycle throughout an orbital cycle of 365 days 5 hours 49 minutes. Huygens explains this and there should be no dispute –

"Here take notice, that the Sun or the Earth passeth the 12. Signes, or makes an entire revolution in the Ecliptick in 365 days, 5 hours 49 min. or there about, and that those days, reckon'd from noon to noon, are of different lengths; as is known to all that are vers'd in Astronomy. Now between the longest and the shortest of those days, a day may be taken of such a length, as 365 such days, 5. hours &c. (the same numbers as before) make up, or are equall to that revolution: And this is call'd the Equal or Mean day, according to which the Watches are to be set; and therefore the Hour or Minute shew'd by the Watches, though they be perfectly Iust and equal, must needs differ almost continually from those that are shew'd by the Sun, or are reckon'd according to its Motion. But this Difference is regular, and is otherwise call'd the Aequation, and here you have a Table" Huygens

<http://www.xs4all.nl/~adcs/Huygens/06/kort-E.html>

Being a human devised principle, the relationship between the 24 hour day and the second is inviolate, The problem only arose when Flamsteed decided that the return of a star to a meridian in 23 hours 56 minutes 04 seconds could be used to justify axial rotation. The problem is that

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is requires the natural noon cycle to be 24 hours exactly ,like so –

[http://upload.wikimedia.org/wikipedia/commons/1/1d/Tiempo\\_sid%C3%A9reo.en.png](http://upload.wikimedia.org/wikipedia/commons/1/1d/Tiempo_sid%C3%A9reo.en.png)

Now I could go on to explain how no external reference is required to correlate clocks,terrestrial longitudes and the daily cycle where 4 minutes represents 1 degree of geographical/longitudinal seperation making exactly 24 hours /360 degrees but the treatise of Huygens infers it.In simple terms when axial rotation was discovered to be the cause of the daily cycle (Copernicus) the timekeeping astronomers transfered the existing Equation of Time principles which generate the AVERAGE 24 hour day and transfered it to CONSTANT axial rotation,not an an observence but simply as a convenient principle.

There was an excellent article written by a participant here a few days ago where he accurately stated that sometimes men are in the habit of avoiding the original material and take things for granted without checking whether the 'fact' is true or not. In this respect,Flamsteed's false proof for axial rotation had unforeseen consequences insofar as the framework he created is calendrically based.You will know this in a few weeks when a star will return to a location 3 minutes 56 seconds earlier between Feb 29th and Mar 1st.Although Newton talked a system of 365.25 days,he based his agenda of Flamsteed's framework of 3 years of 365 days and 1 year of 366 days.

In short,the argument that the second is based on a more reliable cycle than axial rotation is a highly spurious one,considering that the second as a subdivision of the 24 hour day was never linked directly to axial rotation ,again,the highlighted words of 'average' and 'constant' are meant to convey this.Also,axial rotation through 360 degrees is nowhere near that 23 hour 56 minute 04 second value,atomic clocks or no atomic clocks.