

Re: The Speed of Light

Source: <http://sci.tech--archive.net/Archive/sci.physics.relativity/2006-10/msg01671.html>

- *From:* The Ghost In The Machine <ewill@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Thu, 19 Oct 2006 12:17:18 -0700
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In sci.physics.relativity, PD
<TheDraperFamily@xxxxxxxx>
wrote
on 19 Oct 2006 10:49:07 -0700
<1161280147.373428.44910@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>:

Gary Edstrom wrote:

Ok, I have a limited physics background. I have just enough knowledge of relativity to be dangerous! A couple of questions from a simpleton concerning the speed of light:

1. Why is the speed of light 300E6 m/s? Why isn't it a tenth that speed? Why isn't it ten times that speed?

The speed of light is 1. We just have goofy units that make it seem like it's an oddball number. I'll give you an analogy.

Suppose we wanted to measure the slope grade of roads and we chose to say that a 45 degree angle corresponded to a slope of 1, because that means 1 ft of vertical rise for every 1 ft of horizontal run. So the slope is $1/1 = 1$. But why is it 45 degrees? Why 45? Why not 1 degree?

Blame the ancient Babylonians, if I'm not mistaken. Therefore, we have 60 minutes in an hour, 60 seconds in a minute, and of course 360 degrees in a circle.

<http://mathforum.org/library/drmath/view/59075.html>

however makes a case that it might have been Claudius Ptolemy, since he divided the circle into 360 parts for his sine table.

(I suspect that he divided the quarter circle into 90. However, I'd frankly have to look.)

Why not 62.3 degrees? Or, more appropriately, road grade is often

Re: The Speed of Light

measured in ft per mile, so that a slope of 1 corresponds to a quoted value of 5280 ft/mile. Why 5280? Why not 4200? Why not 6300?

1 mile = 8 furlongs
1 furlong = 40 rods
1 rod = 5 1/2 feet
1 foot = 12 inches
etc.

<http://en.wikipedia.org/wiki/Furlong>

And people wonder why the scientists prefer the metric system. :-)

And you might say, well that just comes from applying a conversion factor. You have to convert ft to miles to get a slope of 1. The odd number comes only from using a different unit for the numerator than what you use for the denominator.

Aha! And that's exactly the same answer for the speed of light. You have to apply a conversion factor to get from meters to seconds. The odd number comes only from using a different unit for the numerator than what you use for the denominator. And the conversion factor to get from meters to seconds is precisely that: 300E6 m/s.

2. Since the speed of light is finite, what is there in a vacuum that limits its speed? If a vacuum is truly empty as we classically think of 'empty', shouldn't the speed of light in a vacuum be infinite? What holds it back?

Well, contrary to what you might think, things don't go at infinite speed unless there is something holding it back. A satellite on its way to Mars doesn't just go at 17,500 mph because there is something limiting its speed. There isn't.

PD

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#191, ewill3@xxxxxxxxxxxxxx
Useless C++ Programming Idea #12995733:
bool f(bool g, bool h) { if(g) h = true; else h = false; return h; }

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Posted via a free Usenet account from <http://www.teranews.com>

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