

[OT] Re: whats with this love of kaffiene?

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On Thursday 26 April 2007, Tim wrote:

I could never get any lecturer to give a sane explanation of AM. They'd tell us that the carrier was a fixed amplitude. I'd argue that AM was modulating the carrier, therefore it has a varying one. I'd even demonstrate by cranking the pot up and down to give a 1 Hertz AM. None of them could give a reasonable explanation. Yes, they could give strange ones, but none that fitted the situation demonstrated.

On Thu, 2007-04-26 at 11:07 -0400, Gene Heskett wrote:

I suspect they got lost someplace in the vector math, or the fourier transforms.

I don't quite understand the problem here. Amplitude and frequency modulation are two extreme (and somewhat idealized) cases of superposition of two sine waves. I remember it was clear and obvious to me in highschool physics course, and never had any second thoughts about the subject. Am I missing something there, or were you just reviewing the teachers typical lack of ability to explain something? :-)

On Friday 27 April 2007 05:55, Gene Heskett wrote:

The one question that never got answered well was "what is gravity", and 60 years later we still don't have it fully defined. We don't even know how fast it propagates. All we can do is infer that its at least 1000x C speed or the orbital mechanics as we calculate them today,

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would be so broken the earth would have spiraled into the sun 4.5 billion years ago. It may be the only superluminal force in the universe.

Gene, I would guess those books you read were quite old :-). AFAIK, so far there is *no* phenomenon found in nature (or Nature, if you prefer) that propagates superluminally, with the possible exception of 'bad news' (as geniously pointed out by Douglas Adams). Orbital mechanics is just fine with that. Also, there are conceptual problems with the possibility of detection of anything moving faster than light (noone says things cannot move that fast, but just that it is kind of impossible to measure any property of such a thing).

As for gravity, it is true that it is not "fully defined" in a sense (whatever that sense may be), but that has nothing to do with the (im)possibility of superluminal propagation.

Btw, "what is gravity" is one of the first serious questions I asked my grandfather when I was 4 or 5 years old. He gave me this answer: "Throw a rock up in the air. It flies up, up, up, and at some point it stands still and starts thinking ---- should I fly further up, or should I go back down? After some thought, it decides to come back down and falls to the ground. The process of rock making such decisions is called gravity." Of course, I went on to ask why doesn't the Moon fall down, and got the answer "Well, the Moon just keeps reconsidering whether it should fly away or fall down, and cannot make up it's mind. That's why it always stands up there." Further, I wondered, why does the rock *always* decides to fall back down? "No, it doesn't always decide to do so. But, all rocks that decided to fly away are already gone way up in the sky, so you never met any of them."

Twenty five years later, after having learned most of differential geometry, general relativity, spin-2 field theory etc., the only thing I can do is to give more and more appretiation and admire the purity of grandfather's explanation. It may be naive, but it is by all means remarkably correct, in all it's aspects. Every child has an intuitive notion of the concept of "thinking", and enough imagination and mind-purity to attribute it to all things it sees (a rock, for example). Those are the only abstract notions required to give a viable description of gravity, and furhtermore, that description is faithful enough to give answers to other related questions in a logically consistent manner. And all that being brutally simple, for the small me to understand easily. I am both thankful to and envious of my grandfather for being able to give me such an answer. As I grow, I just strive to compete with that ability of giving simple answers to deep questions. Anyway, in the end, that's why I became a physicist :-).

Ah, memories, memories... Random accessed. ;-)

Best regards, :-)

Marko

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