

# Re: Evidences showing that time dilation does not exist: Universal definition of the second of atomic time

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- *From:* Albertito <[albertito1992@xxxxxxxx](mailto:albertito1992@xxxxxxxx)>
  - *Date:* Mon, 12 Jan 2009 05:08:18 -0800 (PST)
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On Jan 11, 11:13 pm, PD <[TheDraperFam...@xxxxxxxx](mailto:TheDraperFam...@xxxxxxxx)> wrote:

On Jan 10, 2:39 pm, Albertito <[albertito1...@xxxxxxxx](mailto:albertito1...@xxxxxxxx)> wrote:

1. Quantum zeno effect.

Apply quantum Zeno effect corrections to cosmic-ray muons moving through Earth's atmosphere, and once done there is no room for any time dilation whatsoever.

2. Hyperfine structure splittings are gravitational potential-dependent and CMB-dependent. Both phenomena produce additional hyperfine transitions. Consequences of these phenomena are:

2.1. Atomic clocks at high gravitational potentials

tick faster than those at low gravitational potentials.

2.2 The faster an atomic clock moves through CMB frame, the

slower it ticks. An atomic clock at rest in the CMB frame

would tick at the fastest rate.

3. Universal definition of the second of atomic time:

"The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine

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levels of the ground state of the caesium-133 atom, which is at rest in the CMB frame and far away from any meaningful gravitational field."

Sorry, very basic thing here or two:

\* An alternate explanation does not show that the prevailing theory is wrong.

An alternate explanation shows that the prevailing theory will be progressively abandoned, if that alternative explanation is telling us about the real cause that produces the phenomenon.

In the case of time dilation, it is very amusing to see how time dilation has no physical mechanism, and it just a mere interpretation.

\* The definition of the second is a \*local\* definition, applicable to a clock that is stationary relative to the observer. The absence of that qualification does not imply that the definition is to be taken as frame-independent.

The definition of the second as

"The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium-133 atom."

is a stupid definition if it results that those hyperfine levels can be split or even be reduced for locations in different gravitational potentials. Why? Obviously, if the transition frequency are affected by additional hyperfine splittings or by a reduction of those splittings, then that yields a larger or shorter second at the end.

\* The quantum Zeno effect requires decoherence interactions, which is not something that is obviously present with cosmic ray muons. You are attempting to defeat unitary time evolution wherever you see fit.

A muon travelling through the Earth's atmosphere is being measured by the dispersive medium. The higher the muon speed wrt the medium the higher the rate of measurements per second. That, translated to a quantum Zeno effect, yields a larger muon lifetime.

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