On ultra-high-speed interstellar travel

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December 5, 2020

Abstract

The possibility of ultra-high-speed interstellar travel is considered. The role of the Devil's advocate is played, purely for the sake of interest – it is considered that ultra-high-speed interstellar travel is impossible.

1 Introduction

This is the theory of processes, where external interaction results in internal time dilation, which in extreme cases can result in the practically irreversible *disruption* of said processes. This is to say that the relaying and reflection of the externally-generated exchange particles causes the process formed by internally-generated exchange particles to reduce in frequency. When we say frequency, we mean how often something happens over some macroscopic amount of time, not necessarily how fast something cycles.

The biggest difference between the view given in this paper and the contemporary view is that in this view, the process overcome by externally-generated exchange particles is *forgotten*.

2 On the fate of the Devil's clocks

If you put an atomic clock in a deep gravity well, and then remove it to some large distance away from the event horizon, the clock will no longer be functioning properly. Also, if you accelerate a clock to ultra-high-speeds, and then reduce its speed considerably, the clock will no longer be functioning properly. The internal process is all but forgotten, as the internal process is *assimilated* by the external process.

3 Random integers, quantum chance

Imagine the process only occurs at random intervals, some longer than others, not necessarily cyclically – the cycle rate is an upper bound on how often it happens. The time rate t in a gravitational well, where $r > R_S$, is:

$$\text{real } t = \sqrt{1 - R_S/r}. \tag{1}$$

Similarly, for an accelerated body, where $c > v$:

$$\text{real } t = \sqrt{1 - v^2/c^2}. \tag{2}$$

Note that t is also the chance (probability) that internal process occurs:

$$\text{integer } x = \lfloor 1/t \rfloor. \tag{3}$$

Where α is a random integer with an upper limit much greater than x:

$$\text{integer } y = \alpha \bmod x, \tag{4}$$

the value of $y \in [0, x)$. If $y = 0$, then the internal process occurs by chance, else an external process occurs.

4 Conclusion

Where $t \approx 0$, the chances are extremely slim that internal process occurs. In the case of our cosmic explorers, it would be by pure luck that an accelerated, ultra-high-speed body would ever go back to the state it was in before it was accelerated. In effect, ultra-high-speed interstellar travel is not possible. The higher the speed, the lesser the chance. The process is permanently *interrupted*.

If Nature is quantized and random and potentially highly irregular as such, then the timing of the internal process would go out of whack, and so the internal process would be forgotten without all of the redundancy and error-correction that otherwise occurs in the classical limit where $t \approx 1$.

This is the theory of disrupted, forgotten, assimilated, interrupted processes, as considered from the Devil's point of view.

References

[1] Misner, Thorne, Wheeler. (1973) "Gravitation"

[2] Adams. (2001) "Tour of Accounting" – `https://dilbert.com/strip/2001-10-25`