Thesis

A definition for 1 second

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Abstract

The definition in time in the present-day physics is insufficient. Several problems which are to reconsider a definition in time and concern in time can be settled.

1. Introduction

A definition is ambiguous only over 7 base unit system in the physics and time. "The length" "the mass" "electric current" "the temperature" "the mass" the smallest amount of its unit exists, and "the luminosity" can express by the number of the smallest amount. The unit of "time" "1 second" is 9192631770 times of the radio wave radiation space of the excited cesium atom. But a radio wave radiation interval doesn't say the smallest unit of time. After all what time is, only an ambiguous definition is giving physics about a point. It's defined again from the angle of "the number" about a definition in time by the main subject. A result of the general relativity is explained again more clearly using the definition. A countermeasure is described about a physics problem of existence.

2. Definition in time

It's the cause of the ambiguousness that the minimum value or the smallest change value isn't included in a definition of the unit. Therefore the minimum value is introduced to a definition in time. Some physical changes are necessary to a definition in time. A definition in present time uses only an electromagnetic interaction unnaturally. But the basic interaction, 4 or 5, I have that. The fundamental particle called a boson carries the basic interaction. So the interaction defines time as the number of the possible boson particle. When I paraphrase,「"Time = action number of possible bosons". When doing the different way of speaking, it's "minimum waiting of time = basic reciprocity, interval". This will be called "boson time" temporarily. When it's this definition, time, minimum waiting, it's possible to express it in the number of the interval. It's possible to express time in the number of the boson which acted. In other words, calculating time as the number is meant.

The smallest time interval, Elementary-time ・・・ T_{min} .

Time defined by the number of the boson, boson time ・・・ T_B .

The number of bosons by which an action is possible per Elementary-time T_{min} ・・・ B_n

It's defined.

At this time, the next numerical formula stands up.

$$T_B = \frac{B_n}{T_{min}} \quad \cdots\cdots ①$$

The numerical value in detail of Tmin and Bn is unclear in the present. It's calculated by the next parameter as an example. The parameter is temporary.

Elementary-time $T_{min} = 0.1\,[sec]$

The number of action per Elementary-time $B_n = 10$ [個]

$$T_B = \frac{10}{0.1} = 100$$

In case of this parameter, a boson is the time interval by which 100 actions are possible with 1 second. Of course, T_{min} is predicted that there is also quite much B_n shorter than Planck time or that actually. Thus when using a definition of(1), time can be defined by the number of the boson. This is called "boson time system" temporarily.

3. Result from this definition

1) Relation with a definition in former time

First ① is the definition which gathered 5 kinds of basic interaction. Therefore it's also necessary to think about the interaction of each fundamental particle. An important one is that an electromagnetic interaction isn't esteemed too much here. Without intending, a definition in present time is dependent on only an electromagnetic interaction. This is because an electromagnetic interaction is easy to handle simply and it's difficult to handle whether they're too weak and a remaining reciprocal action is difficult to change. But 5 basic interactions are handled equally by a definition of(1).

It's as it is well-known that time is delayed by gravity. But this is the talk when defining time by an electromagnetic interaction as mentioning. When defining time by gravitational interaction, it can be said that gravitational interaction time is advancing the object which is pulled by gravity and falls. When interpreting this obediently mathematically, it's possible to paraphrase into the phenomenon with late time as follows. In other words, the one by which "gravitational interaction time obstructs electromagnetic interaction time". Since putting it in the boson time system, this is expressed as follows.

$$T_B = T_e + T_g + T_s + T_w + T_h$$

T_B = Boson Time

T_e = Electromagnetic interaction Time

T_g = Gravitational interaction Time

T_s = Strong interaction Time

T_w = Weak interaction Time

T_h = Higgs interaction Time

To this is more natural and the conclusion isn't also inconsistent with general relativity. A definition in time in the former physical system was just expanded in a boson time system. Since keeping time in a usual physical system in a boson time system, it's Te.

$$T_e = T_B - (T_g + T_s + T_w + T_h)$$

When gravitational interaction time T_g becomes big, the price will be small, and T_e is late as time. It may usually be regarded as the fixed number because a

strong reciprocal action and a weak reciprocal action are done only by the minimal distance in the atom. In other words, T_s and T_w are usually the fixed number mostly. T_h is increased according to the acceleration of the object and T_e is delayed. In other words, it's paraphrased into equivalence of gravity in general relativity and the acceleration as follows. In other words, "both of gravitational interaction and the Higgs interaction obstruct electromagnetic interaction time equally.

2) The life expectancy of the neutron

The life expectancy of the neutron is fixed mostly about the case in the atomic nucleus and very long. This is learned about as a half-life of the radioactive materials which do "β-decay". But when only a neutron is observed independently, I come to have the short life extremely compared with time in the atomic nucleus. The life expectancy isn't fixed by method for measurement. A collapse of a neutron is called a β-decay, and the weak interaction is made the cause.

This is expressed in a boson time system as follows.

$$T_w = T_B - (T_e + T_g + T_s + T_h)$$

The neutron in the atomic nucleus is seized with the strong power. For the strong interaction to act on it strong, when a neutron is in the atomic nucleus, this can understand time to the beta decay the weak interaction is obstructed, and to extend. And when an independent neutron is freed from a chain as the strong interaction, you can understand the mutual reaction time with the to work big and to be weak weak interaction to become speedy. It's regarded as purpose different in an action of T_e and T_h to be different in the life expectancy every method for measurement.

3) Denial of retrogression in time

There is a lot of something by which retrogression of on the form and time is permitted in an equation by present-day physics. The confusion as if time retrogression is possible by this, is caused. A definition in time is expressed in the action number of possible bosons by a boson time system. It's said that this defines time by the interaction by the boson in other words. Therefore a definition in time includes a law of entropy enhancement in itself. After meaning by this at least, "arrow in time" is included in a definition, and retrogression in time is denied. Though it's comprehensive, it can be said that it's the system on which I impose the restrictions by the good meaning about behavior in time.