Construction of real speedometer, end for theory of relative speeds or relative movements

As we know, the light speed or electromagnetic waves in vacuum is always fixed and independent from the speed of its production or propagation and even reflection source which is shown by c.

In the past, the speed was known as a universal and absolute quantity and it was possible to add or deduce the speeds of a number of dynamics easily. Then, Michelson, a physician, attempted to measure the speed of absolute rotation of the earth in comparison with the ether, of course with high accuracy and by using the light speed. But he found that the measured light speed was fixed in all directions and the earth appeared to be fixed and without any movement, while its movement and rotation was obvious. It is important to say that no error was observed in the tests.

At 1893, Fits Gerald, presented a strange theory. According this theory, all solids in their movement direction, are condensed against the ether and the condensation factor is equal to:

$$\sqrt{1-\frac{v^2}{c^2}}$$

The same condition was predicted for the time too and it was proved to be true. That is, by increase of speed, time slows down too. After wards, for the first time Puankare stated: does really our ether exist? I do not believe that we can reveal something more than the relative movements by our observations."

When Einstein presented the relativity theory, the speed was known as a full relative phenomenon. It means that there is no full fixed coordinate system in the world which all speeds can be measured with regard to it as a reference or center. Meanwhile another scientist named Hubble, found that the world is expanding and all celestial bodies are moving and gets far away from each other. According to him, the speeds of celestial bodies are measured in comparison with each other. His theory and equation was proved and now is a valid theory for each point or any place in cosmos.

Now, the question is this: do not there any method to measure the fixed and absolute speed of observer or his coordinate system in cosmos, even in comparison with light speed?

Regarding the existing definitions, it is understood that by increase of speed, the meter is shortened and the time gets slow too. That is, the space - time compound can be defined as the following ratio:

$$\frac{x}{t}=\frac{\dfrac{x'}{\sqrt{1-\dfrac{v^2}{c^2}}}}{\dfrac{t'}{\sqrt{1-\dfrac{v^2}{c^2}}}}=\frac{x'}{t'}=Cons\tan t$$

In which x is length, x’ is shortened length, v is speed, c is light fixed speed, t is time and t’ is slowed time.

The reality is that the light speed is measured and calculated similarly in all coordinate systems without acceleration. Since the time changes regarding the change of speed and in proportion with the meter change, we always achieve the previous measures. Because the speed is calculated by the ratio of distance to time and this shows the relation between the space and time. In fact the light or its speed is a tool for matching the length unit on time unite. Then every where and every time we can arrange the length and time measuring tools with high accuracy. Then regarding the definitions of relativity, the observer in move and without acceleration can not measure self absolute speed and he can only measure self speed in comparison with the other observers. Of course the observer can measure self acceleration by using a load cell and a sinker with specified mass.

Because as we know, the quantity of force is calculated by mass× acceleration as follows:

$$F = ma$$

Then if a sinker with the mass of 1 Kg applies a force of 1 Newton on a load cell, the acceleration of coordinate system or observer will be $1 m/s^2$.

In this section, we are going to design a tool for measuring the real and absolute speed in the space of cosmos.

For construction of this speedometer we need two very accurate atomic clock. Their inaccuracy factor is 1 second/20 million years. In other word, their error is:

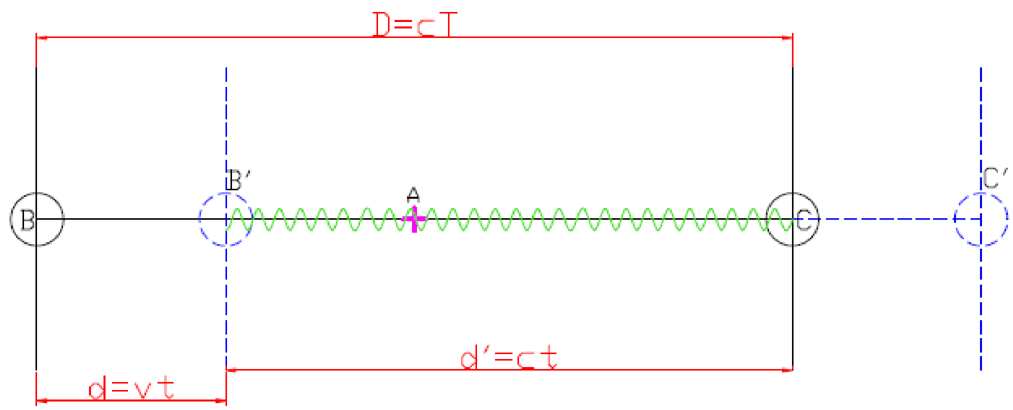
$$\frac{1}{20\times10^{6}\times365\times24\times60\times60}=1.58\times10^{-15}s$$

According to which these 2 clocks in a point e.g. (A) are next to each other and are fully arranged and concurrent. Then they are transferred to the points B and C with low speed. Now the clocks are completely concurrent and clock C can produce and send light or radio signals by using a sender or a laser in specified time intervals (T). These signals can be received and recognized by the receiver or sensor of clock B.

Obviously, if the signals, in defined time intervals (T), are received by clock B, the speedometer tool will be motionless. But if there is a time difference in receiving the signals, it is clear that the tool (speedometer) is moving.

Now, the observer with tool, is able to measure its absolute and universal speed (that is, measuring his speed in comparison with the light speed which already was impossible), by using the following formula and independent from any other observer.

This issue had already been experienced unsuccessfully by Michelson. The observer will also be able to measure the absolute and universal speed of the other celestial bodies.



$$\frac{D}{T} = c \Rightarrow D = cT$$
$$\frac{d}{t} = v \Rightarrow d = vt$$
$$\frac{d'}{t} = c \Rightarrow d' = ct$$
$$d + d' = D \Rightarrow d = D - d' = cT - ct = c(T - t)$$
$$v = \frac{d}{t} = \frac{c(T - t)}{t}$$

D is the distance between atomic clocks B and C from each other, that is the length of real speedometer tool or the distance of points B and C, T is the time which should be spend for the radio signals or laser rays to reach from C to B and c is the fixed and world speed of light. d is the distance which is traveled by the tool in t time, and t is the time which lasts for movement of the tool and compliance of B over B' and C over C' or the time which lasts for clock B to receive the laser ray or waves sent from atomic clock C in B' point and v is tool speed. d' is the distance between C (the place in where the signal is produced and propagated by first atomic clock) and B' (the place in where the signal is received and recognized by second atomic clock) or the distance which is surveyed by the signal with light speed in t time and t is the time interval which is signal received, that is :

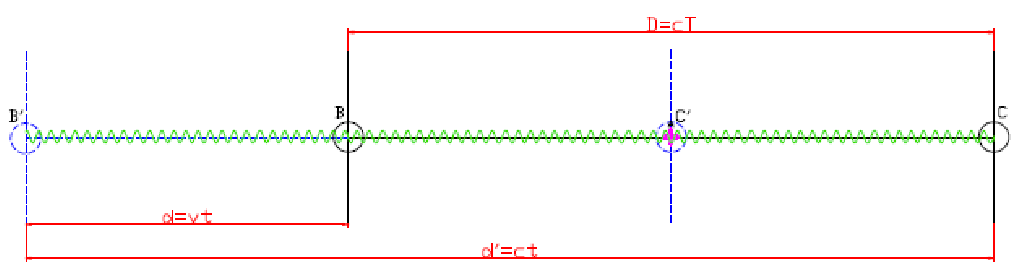
$$t = t_B - t_C$$

t_B is the time shown by clock B when receiving the signal and t_C is the time indicated by the clock C when sending the signal in which t is smaller than the time interval (T) and if it is bigger , the speed will obviously be in opposite of expected direction. It means that:

If the time interval (T) is bigger than t, the speed will be in opposite direction of electromagnetic waves radiation by clock C.

If the time interval (t) is bigger than T, the speed will be in direction of electromagnetic waves radiation by clock C.

Now we look at the second case:



$$\frac{D}{T} = c \Rightarrow D = cT$$

$$\frac{d}{t} = v \Rightarrow d = vt$$

$$\frac{d'}{t} = c \Rightarrow d' = ct$$

$$d = D - d' = cT - ct$$

$$v = \frac{d}{t} = \frac{cT - ct}{t} = \frac{c(T - t)}{t}$$

As it shows, the previous formula is achieved but as the time interval (t) is bigger than (T), the quantity of v will obviously be negative and this indicates the change of speed direction along the supposed coordinate system.

If the tool moves with a high speed, even with a speed near to the light velocity, obviously the meter will be shortened and the time will slow down.

Now it is the question that: will be there any change or error during the speed measurement? Surely these changes in the space - time should be applied in the above mentioned formula:

$$T' = T\sqrt{1-\frac{v^2}{c^2}}$$

$$t' = t\sqrt{1-\frac{v^2}{c^2}}$$

$$v = \frac{cT' - ct'}{t'} = \frac{cT\sqrt{1-\frac{v^2}{c^2}} - ct\sqrt{1-\frac{v^2}{c^2}}}{t\sqrt{1-\frac{v^2}{c^2}}} = \frac{c\sqrt{1-\frac{v^2}{c^2}}(T-t)}{t\sqrt{1-\frac{v^2}{c^2}}} = \frac{c(T-t)}{t}$$

T' and t' are the slowed down times in the moving tool with the speed v. According to which the previous equation is achieved and the measured absolute and real speed, with any speed lower than the light speed, will be true. Then this tool can work with excellent accuracy. In this section a simple example of this tool is introduced:

First, suppose that the light speed is $3\text{x}10^8$ m/s. Now we suppose 30m as the tool length (distance between 2 concurrent atomic clocks) and we'll arrange this length by a laser distance meter with high accuracy.

Note: The distance meter can be constructed by compounding the atomic clocks with the receivers and senders of electromagnetic waves or laser rays.

$$\frac{30}{3\times10^8} = \frac{T}{1}$$

$$T = 1\times10^{-7}$$

It means that it lasts 10^{-7} seconds for a laser ray to reach the clock (B) from the clock C. then the atomic clock (C), regarding the time and distance already determined for T and D, is arranged as it can send the laser ray toward clock B at times $10^{-7}, 2\times10^{-7}, 3\times10^{-7}, ...$ These arrangements are done at point A in the middle of tool and then the clocks are transferred to their accurate place. If the clock (B) received these rays at the times with the quantities of $n\times10^{-7}$ seconds, obviously the tool is fixed and motionless. But these rays are received at the times of $(n+0.75)x10^{-7}$ seconds by the clock B. then we have:

$$t = t_B - t_c = (n+0.75)\times10^{-7} - (n)\times10^{-7} = 0.75\times10^{-7} = 7.5\times10^{-8}$$

Now, knowing these tow times, we can acquire the speed of tool.

$$v = \frac{c(T-t)}{t}$$
$$v = \frac{3\times10^{8}(10^{-7} - 7.5\times10^{-8})}{7.5\times10^{-8}} = 10^{8}\, m/s$$

The real speed, calculated for the tool, will be 1/3 of light speed. Now suppose that the accuracy of these clocks is 1nano (1/1billion) seconds which are used in the handy laser meters and speedometers of police. In this condition, the tool accuracy with the length of 30m is calculated as follows"

$$T = 10^{-7}$$
$$t = T - \frac{1}{10^{9}} = 10^{-7} - 10^{-9} = 9.9\times10^{-8}$$
$$v = \frac{c(T-t)}{t} = \frac{3\times10^{8}(10^{-7} - 9.9\times10^{-8})}{9.9\times10^{-8}} = 3\times10^{6} = \frac{1}{100}c$$

In this condition the tool accuracy is equal to 1/100 of light speed or 3000km/second.

$$\frac{c^2\times C_A}{L} = I_A$$

By using the above formula, we can calculate the accuracy of the real speedometer tool. c is the light speed, C_A is the accuracy of atomic clocks, L is the tool length (distance between 2 clocks) and I_A is accuracy of real speedometer. If the accuracy increases to 1 Pico seconds and the tool length will be 30 m:

$$\frac{(3\times10^{8})^{2}\times10^{-12}}{30}=3000m/s$$

Which is considered as a good accuracy in high speeds at universal scale and the most important issue in design and construction of this tool is rejection of relativity theory for speeds. Then we can measure the absolute and real speed in the space, compared to the world and fixed speed of light.

Nowadays, this speedometer is not so applicable for us and it is a scientific tool, just used for measuring the absolute speed. In the future, this tool will be used for measuring the speed of space crafts and by using it the speed will be measured with high accuracy near the light velocity. Construction of this tool and its good working will be an end for the relativity theory of speeds in Einstein and the previous theories such as Puankare's theory. The construction of this tool also will be a confirmation on this issue that the speed of observers or coordinate systems in the universe are absolute and universal.

The interesting point is that if the passengers of a space craft can measure their accurate speed, measuring the speed of all celestial bodies will be possible too. Then they will be able to determine their exact position in the universe and draw a map for cosmos. This tool will be one of the primary and vital requirements of the space crafts in the future to draw the geometrical shape of universe. By construction and combination of 3 speedometers of this kind and calculating the resultant of 3 speed vectors on X,Y,Z axis, we can calculate the accurate speed and movement direction in the universe. In fact this tool will be one of the most important tools constructed by the human to know where we are, where we go and by what speed.