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NEW PROBLEM ABOUT THE RELATIVE VELOCITY

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Abstract: **The study focused on my highlighted on one of the daily phenomenon uncommon regarding the relative velocity and that through provided an integrated stud about her and this what i worked on through these papers.**

Keywords: **classical physics; relative velocity; reference frames; observer.**

1. INTRODUCTION

Imagine me, you are a traveler waiting for a train next to the railway on the station platform, and while you while you are waiting a locomotive passed before you, heading towards the West, carrying two people, the first passenger person constant, sitting on a bench at the rear of the vehicle and the second moving passengers standing at the opposite side of the first passengers at the front of the locomotive heading towards the rear of the vehicle in the eastern direction and with the same speed of the locomotive.

When you see the second passenger in this case, you will notice that it travels toward the first passenger, but in reverse. Instead of moving toward him quickly in equal move presumably to the speed of the locomotive move, you'll see the opposite, a move of the first passenger toward him at the same of his speed while showing that he is constant.

2. CAUSES OF STUDY THE PHENOMENON

I, specifically want in this part of the paper to talk about the reasons that led me to look behind this phenomenon because when we go back again for the example, which already mentioned, you'll see that the passenger is constant relative to you as a fixed reference observer on the platform and says that he is constant and that if his position is limited to the a point its vectors are the same inside the coordinate system containing him. This is what, in fact, incompatible with the passenger animated look of attribution moving around him, and not only this, it is not reasonable also that the moving train containing the passenger on the railway rods However the passenger becomes a constant relative to it.

The question can be re-wording in another way .How come the passenger move inside the locomotive despite being constant for the railway! There are also many, many questions about the things that did not have an answer, and perhaps the main reason behind this is the emergence of such questions stems from the lack of our knowledge of the nature of the movement of the passenger in this case, making it binding to work to find answers to them.

3. CONCLUSION

Imagine that the trolley moves on rails rods in a fixed speed amounting to $\overrightarrow{\upsilon_{T/R}}$ and imagine that the passengers crossed the vehicle in length in the opposite direction of the train in a speed amounting to $\overrightarrow{\upsilon_{P/T}}$ of what speed this passenger moves in relation to railway rods if we assume that both the passenger and the train moving in the same velocity?

If the passenger moves inside the train for a second, taking into account the lack of movement (constancy) of the train, the speed of its movement in the train relative to a static reference be equal numerically to its speed relative to the rods point

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but in fact due to the movement of the train and the moving passenger inside also in the opposite direction of travel, the actual speed varies than its virtual speed, due to the movement of the movement axes of each of the objects in opposite directions and therefore we subtract the speed, one of the other and the difference shows between the two bodies movement speed in the form of a lack of speed of the passenger movement Accordingly, the equation of speed of passenger movement relative to the rods are calculated through the following relationship:

$$\because \quad \overrightarrow{\upsilon_{P/R}} = \overrightarrow{\upsilon_{P/T}} - \overrightarrow{\upsilon_{T/R}} = 0 \quad \rightarrow (1)$$

As we move the vector speed of the train with its negative sign by towards the right side of the equation, it is equal to the value of speed vector for each of the two objects, and this applies to the speed concept in physics, which is defined as the change in the distance rate relative to time (i.e. the rate of change in position) on the new formula of the equation, we conclude that the rate the passenger crossing a longitudinal distance from the ground of the locomotive at a given time equal to the rate ,the train cut a similar distance from the rails (train) in the same time. Based upon the formula of the equation in this way:

$$\therefore \quad \overrightarrow{\upsilon_{P/T}} = \overrightarrow{\upsilon_{T/R}} \Leftrightarrow \frac{d\overrightarrow{r_{P/T}}}{dt} = \frac{d\overrightarrow{r_{T/R}}}{dt} \quad \rightarrow (2)$$

Compensation with (2) to (1) we conclude from equation interpretation of the phenomenon that:

$$\therefore \quad \overrightarrow{\upsilon_{P/R}} = \frac{d}{dt}\left(\overrightarrow{r_{P/T}} - \overrightarrow{r_{T/R}}\right) = 0 \quad \rightarrow (3)$$

If we consider that the passenger remains constant in the cart for a second term, he cut in this particular second a distance an amount of the railway equal in number to the speed of the vehicle movement, but because of walking inside the vehicle in the opposite direction and is driven at the same speed, he goes in this second a distance longitudinal from the locomotive ground equal to the same distance traveled by the locomotive from the train rods in the opposite direction and thus the passenger remains constant relative to the rods of the railway bars while the train will continue in its movement. Figure 1.

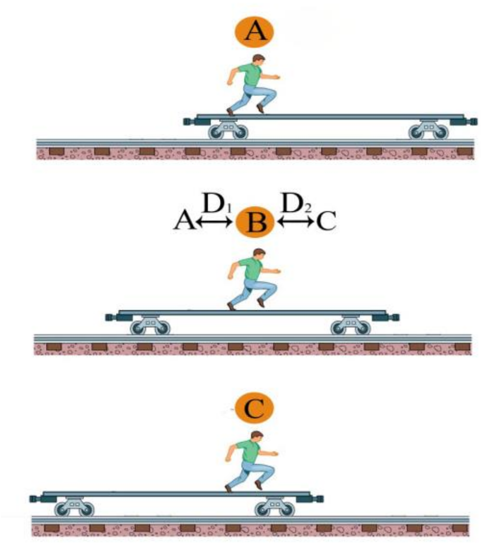

Figure 1

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Suppose we have divided the ground of the locomotive to three points (segments) on a regular basis so that the amount of distance between one and the other equally. When the passenger moves straight movement inside the locomotive, he depending on that assessment, the rate he cuts first distance (D_1) between the locomotive front (A) to the middle of it equals to the cutting of the distance rate (D_2) between the mid-locomotive (B) until the rear (C) at the same time.

According to the previous interpretation, the rate of change for the passenger position relative to the locomotive over time equal to the rate of movement of the train on the tracks and in this sense it the rate of the passenger away from its original position relative to the locomotive in this case could be calculated from the following relationship:

$$\because \quad \overrightarrow{\upsilon_{T/R}} = \frac{\overrightarrow{dr_{P/T}}}{dt} \Leftrightarrow \overrightarrow{dr_{P/T}} = \overrightarrow{\upsilon_{T/R}}\, dt \rightarrow (4)$$

If we specifically want to know how much displacement (movement) the passenger done at a certain moment, we conduct a integration vectors of the previous equation to get the equation which is describe to us how the passenger moves in this case.

$$\therefore \quad \overrightarrow{r_{P/T}} = \int \overrightarrow{\upsilon_{T/R}}\, dt + \overrightarrow{r_0} \rightarrow (5)$$

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