EXPERIMENT D.F.E.R.N.

(Doppler – Fizeau Effect with Radioactive Nuclei)

Experiment D.F.E.R.N. is elaborated here below:

In an accelerator *A*, we accelerate the radioactive nuclei of an atomic element.

After acquiring very high kinetic energy inside the accelerator, these radioactive nuclei exit it at a high velocity *υ* (Fig. 1).

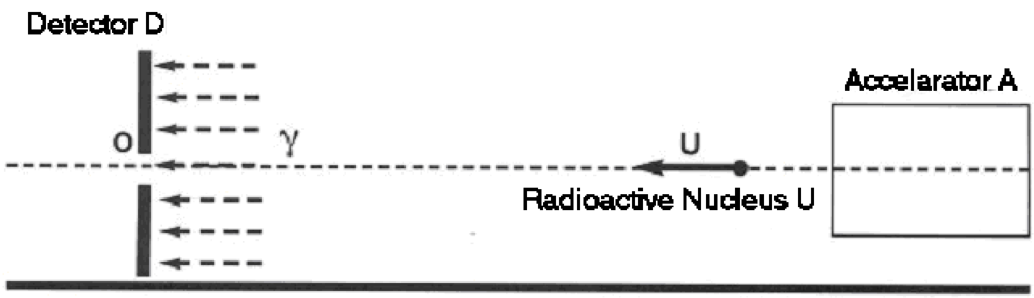

fig 1

After exiting accelerator *A*, the radioactive nuclei pass through a small hole *O* of a gamma ray detector.

As it is well known, these radioactive nuclei are in essence "emitters" of gamma radiation.

Lets us assume now that the gamma-ray frequency of these radioactive nuclei (when the latter are at rest, i.e. $\upsilon = 0$) is v.

Therefore, according to the well-known Doppler - Fizeau effect, when these fast moving radioactive nuclei approach detector *D*, the latter shall measure the frequency of the gamma radiation they emit during their movement.

Let us see analytically the gamma-ray frequency of these radioactive nuclei which Detector *D* will measure.

a. As it is well known, according to the Theory of Relativity, detector *D* should measure the following frequency v':

$$v' = v\left((1+\beta) / (1-\beta)\right)^{1/2} \qquad (1)$$

where $\beta = \upsilon/c$, υ = the velocity of the moving radioactive nuclei, c = the speed of light ($c = 10^8$ m/s) and v = the frequency of gamma rays emitted by the radioactive nuclei when the latter are at rest ($\upsilon = 0$).

b. On the contrary, in accordance with Classical Physics and in particular with the 'New Ether Theory", detector *D* should measure another frequency v'' which will be as follows:

$$v'' = v\, c / (c - \upsilon) \qquad (2)$$

EXAMPLE

Let us assume (Fig. 1) that the frequency *υ* of the moving radioactive nuclei exiting accelerator *A* is for example *υ* = 0,8 *c* of the speed of light. Then:

1) According to the Theory of Relativity, detector *D* based on relation (1) shall measure the following frequency *v´*:

$$v' = v\left((1+\beta)/(1-\beta)\right)^{1/2} = v\left((1+0{,}8)/(1-0{,}8)\right)^{1/2} = 3v$$

2) On the contrary, on the basis of Classical Physics (and the "New Ether Theory"), detector *D* shall measure another frequency *v´´* which will be as follows:

$$v'' = v\,c/(c-\upsilon) = v\,c/(c-0{,}8c) = 5v$$

As it can be observed (on the basis of relations (3) and (4) of the above example), if the Theory of Relativity is valid, detector *D* shall measure a frequency *v´* = 3*v,* while in the event that the "New Ether Theory" applies, then detector *D* shall measure another frequency *v´´* = 5*v*.

In other words, frequency *v´* = 3*v* which detector *D* will measure if the Theory of Relativity is valid equals 0,6 (or 60%) of frequency *v´´* = 5*v* that detector *D* will measure if the "New Ether Theory" applies, namely:

$$v'/v'' = 3v/5v = 0{,}6 \text{ ή } v' = 0{,}6\, v'' \qquad (5)$$

As it can be perceived, this difference between the two frequencies *v´* and *v´´* is considerable enough to show us in an indisputable manner whether the Theory of Relativity is accurate or erroneous.

Therefore, the question being raised is the following:

Which frequency will detector *D* measure in experiment D.F.E.R.N. (and in particular, in the example given above), *v´* = 3*v* or *v´´*= 5*v*?

Obviously, the answer to this question will be given only if this highly significant Physics experiment is carried out.

In conclusion, as it can be inferred from the result obtained by experiment D.F.E.R.N., the accuracy or inaccuracy of the Theory of Relativity, as well as the existence or inexistence of Ether in Nature will be indisputably demonstrated.

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