RELATIVISTIC INERTIA OF THE INVARIANT MASS

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Abstract: RELATIVISTIC INERTIA OF THE INVARIANT MASS

The teaching of the relativistic mass does not exist in the teaching of Physics, but according to my theory, RELATIVISTIC INERTIA OF THE INVARIANT MASS must be taught. There was something complicated about mass teaching at rest and on the move. 2017 will be a new year for Physics with the concept of relativistic inertia of the invariant mass substituting discordant teachings of relativistic masses that have not existed for a long time. So we can write:
"All body on motion has invariant mass but it has relativistic kinetic energy and this energy is measuring of its relativistic inertia as   Ri = y . m
The result is relativistic inertia of energy in joules because according Einstein energy also has inertia."

RELATIVISTIC MASS DOES NOT EXIST IN THE TEACHING OF PHYSICS, BUT IN MY THEORY THERE IS THE "RELATIVISTIC INERTIA OF THE INVARIANT MASS"

Some physics articles on mass say that: relativistic mass of an object increases with its speed and depends on the referential, but this concept of relativistic mass has gradually fallen into disuse in Physics since 1950, when physical particles showed the relevance of the invariant mass, so the relativistic mass is practically without use in the scientific literature. However, material from the early 1920s, written by renowned physicists, made the name mass relativistic popular in discussions and is still found in books nowadays - (*Wikipedia*). The same articles say: "Mass is the measure of a body's inertia". Thus, as the speed of a body increases its inertia increases as well, and when the velocity of the body tends to the speed of light, its inertia and its mass tend to infinity. **But it is not the true! In reality it is not so.** ONLY INERTIA INCREASES, THE MASS NOT INCREASE BECAUSE THE MASS IS INVARIANT.

One of the greatest difficulties and complications of physics is to define mass.

I think the definition of MASS should say: "MASS is not the measure of INERTIA of a body", because as I shall demonstrate, increased at the mass of the body there may be "other" inertia and this inertia is NOT INERTIA OF MASS OF THE BODY, although of course, any body has its own mass and has its own inertia before to appear this other inertia.

Let us understand by this example: a mass 2 kg of any element, its mass is 2 kg in all hypotheses, and if at rest its INERTIA is relative to mass 2 kg. Let us call this mass 2 kg as m1 and its inertia as i1 being that at rest its kinetic energy is zero.

However, if we put m1 in motion, m1 continues with the value of m1, because mass is invariant, m1 does not increase its mass. But increasing to m1 a motion energy, kinetic energy that we call Ec1, then by the (kinetic) motion energy, now m1 has increased or added to itself more E1 and the whole demonstration looks like this:
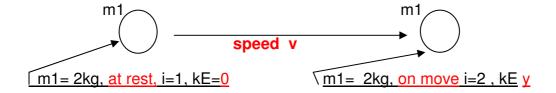
M1, i1, Ekc0 (mass 1 at rest has inertia 1 and has zero kinetic energy)

However, when on the move it looks like this:

M1, i1, Ek0 + Ec1, i2 (mass 1 already has inertia 1, and now in motion appears + Kinetic energy 1 which has INERTIA 2 because as EINSTEIN TAUGHT, ENERGY ALSO HAS INERTIA.

ANY MASS IS ALLWAYS INVARIANT $\rightarrow$ **ANY MASS IS ALLWAYS INVARIANT**

BUT ANY INERTIA OF KINETIC ENERGY IS ALLWAYS RELATIVISTIC

m1   m1

speed v

m1= 2kg, at rest, i=1, kE=0   m1= 2kg, on move i=2 , kE y

We know when at lower speed we calculate the kinetic energy as $kE = m.v^2/2$

But for great velocities the RELATIVISTIC INERTIA can be calculated as $Ri = y . m_o$, as Ri will be the relativistic inertia value of the moving mass, y (gamma) is the Lorentz factor, m_o is the mass at rest. The Lorentz factor is the factor multiplier of the value of the mass at rest to find the value of RELATIVISTIC INERTIA (kinetic energy) which is produced due the inertia generated by invariant mass in movement. The Lorentz factor (at high speed) is first found by the Lorentz equation shown below.

We easily understand there that the mass is INVARIANT; BUT INERTIA IS VARIANT. INERTIA would vary according to the speed variation v^2. Thus, we can imagine as true a new concept of RELACTIVE INERTIA or Ri.

So we can write:

"All body on motion has invariant mass but it has relativistic kinetic energy and this energy is measuring of its relativistic inertia as   Ri = y . m   The result is relativistic inertia of energy in joules because according Einstein energy also has inertia."

TO COMPLETE UNDERSTANDING - SCIENTIFIC REFERENCES

Http://www.educacional.com.br/especiais/fisica/flash/aberto/swf/eins01_7.swf

The above mentioned educational site of Physics shows that the work done on a body is converted into energy of motion (kinetic energy). The greater the work exerted on a body greater kinetic energy the body acquires. We can deduce:

THE SPEED INCREASE AND MAKES TO THE INCREASE NOT OF THE MASS (MASS IS INVARIANT), BUT TO THE INCREASE OF KINETIC ENERGY. AND THE PHENOMENON MAKES THE CONCEPT THAT HERE I THEORIZE DENOMINATED INERTIA RELATIVISTIC. There is evidence of this reasoning.

In the acceleration of the electron, from a certain moment, the work done by the force, although it increases the force, practically does not change its speed. See the proof in this experience made in 1960, please access:

Http://www.scientiamundi.com.br/site/index.php?option=com_content&view=article&id=28:a-velocidade-limite-pssc&catid=10:videos&Itemid=18

Why does this occur with the electron in accelerators? Einstein concluded that if a work is applied on a body and does not increase its speed, it (the body) must have increased its inertia, precisely the difficulty of changing the state of movement. So, if energy is supplied to the body, from a certain moment, instead of the body getting faster and faster, does it get bigger and bigger? NO, because mass is INVARIANT, MASS DO NOT INCREASE WITH SPEED. There is no relativistic mass. However, INERCIA (produced by the kinetic energy coming from the movement), this YES is VARIANT, THE INERTIA YES **IS RELATIVISTIC.**

By Einstein's concept, inertia is not a property only of matter, or of mass; ENERGY ALSO HAS INERTIA.
THEN KINETIC ENERGY ALSO HAS INERTIA, like any other energy. Therefore my conclusion is**:**
INERTIA IS RELATIVISTIC, NOT THE MASS BECAUSE MASS IS INVARIANT.
By this concept of RELATIVE INERTIA I have already demonstrated in other works that it is this relativistic inertia (inertia that increases with increasing speed due to increase in kinetic energy) that makes a clock spin more slowly when coupled to something at very high speed.

IT IS THE RELATIVISTIC INERTIA THAT CAUSES THE PARADOX OF THE WATCHES IN ANY EXAMPLE WHICH IS SPOKEN. THEN IT IS TRUE THAT THE LORENTZ FACTOR THAT COMES IN ANY MASS CALCULATION IN MOVEMENT WILL ALWAYS BE THE CLOCK TIME DIVIDER AT REST TO FIND THE TIME IN MOTION (THAT WILL ALWAYS BE SLOWER BECAUSE THERE IS GREATER INERTIA). IT IS VERY INTERESTING TO SAY AND UNDERSTAND THAT TIME t ALSO OBEY INERTIA. NEWTON'S INERTIA MAKES WATCHES OBEY ANYWHERE DUE TO THE HIGHER SPEED OR LOWER SPEED. TIME t OBEY TO INERTIA BECAUSE THE TIME t IS ALSO PHYSICAL, TIME t IS ONLY "MEASUREMENT OF MOVEMENT OF A REFERENTIAL"

Let me remember a few examples. For those who like calculations, by the Lorentz equation check out the examples below.
In the left column I wrote the velocity V of a traveler as a percentage of the speed of light.
In the right-hand column I show the Lorentz factor y for that speed.
To know how much the traveler's clock will rotate at that speed GREATER in relation to the Earth's clock, it is enough to divide ANY measure of the time of the terrestrial clock (which is considered t at rest) by the factor of Lorentz y that is the speed of the traveler.

V of the traveler   **y** = Lorentz factor found
In percentage   in the Lorentz equation.
of speed of light % c   The time of the clock at rest on Earth
                                                           will be divided by this factor.
                                                           The result will be dilated or shorter time
                                                           on the traveler's watch.

90% c ....270000 km/s........... 2.29
91% c 2.41
92% c 2.55
93% c 2.72
99.9% c 22.36
99.99937% c 281.70

THAT IS THE APPLICATION OF THIS NEW CONCEPT, **RELATIVISTIC INERTIA OF THE INVARIANT MASS** IN THE TIME DILATION OR PARADOX OF THE WATCHES.

**** Sorry for the English version if I look like an Apache speaking ****