

RELATIVITY OF PART AND WHOLE, PAST, PRESENT, FUTURE, SIMULTANEITY

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Abstract - In the modern Physics almost as an axiom is accepted that the speed of light is the highest possible terminal velocity by which energy and information transferring in reality is possible. This exposition offers some philosophical reasons in support of the existence of the thesis that there is an "action at a distance" known in quantum mechanics as "nonlocal interaction." Put another way, "nonlocal interaction" is a movement with infinite speed.

Keywords : Einstein, Special Theory of Relativity, Space and Time, infinite speed, simultaneity, nonlocal interaction, field of effort.

1. INTRODUCTION

In 1905 Einstein published the article "On the Electrodynamics of moving bodies" [1], which gives (lays) the foundation of the Special Theory of Relativity (STR).

Two principles proposed in an axiomatic form perform a basic role in this theory:

1. Invariance principle of the laws of motion in inertial frame of reference.
2. Principle of constancy of the speed of light.

The first of these two principles, Einstein developed from Maxwell's Electrodynamics, which shows that in relative movement between the electric wire and magnet flow of electric current occurs.

The reason for the electrical current is either running of conductor on a magnetic field or movement in the magnetic field on the conductor. [2]. Einstein combines in one these two possible causes of the same phenomenon, declaring that the relative movement between the conductor and the magnet is the only source of electric current in the conductor. Thus, according to Einstein, disappears the "ghost" of "space which lies in absolute peace" [5 p. 24], defined by Newton, which until now was considered as an absolute frame of reference (ether).

Absolute movement is reduced entirely to the relative, from which it follows that the laws of Mechanics are invariant, we would say also symmetrical, and are valid (true), and do not change with respect to the transition from one reference system to another, provided that these reference systems are inertial.

Thus in Physics a special kind of reference systems and reference points that essentially absolutise the relativity are

introduced, or in other words, define the absolute relativity of Space and Time

This is a paradoxical contradiction, which has the rank of antinomy, and the most common philosophical considerations stand serious criticism. We will present the logic of this criticism in this analysis and will offer reasoning that will solve the conflict in favor of the Action at a distance which in quantum Mechanics is called "Nonlocal interaction."

We have to note that when we talk about Action at a distance, in this exposition, we stick to the meaning and content of that concept, in accordance with the ideas of Max [3] and Newton [4], which shall be limited to the existence of interaction performing with infinite speed.

For example, according to Newton, the gravitational interaction between massive objects in the universe is done with infinite speed, and in turn, Max rises to the rank of principle that inertia and inertness of any particular body is dependent on all other masses of the universe and this is a typical case of "Action at a distance".

2. PROBLEM DESCRIPTION

An example of philosophical consideration in support of an action at a distance naturally connects with the categories of PART and WHOLE that in a hidden form are one of the most used in modern Physics.

It's about following:

In each modern scientific publication examining any physical problems, no matter fundamental or not, the term

"...it is in a state of..."

is constantly used.

Newton's First Law [4], a typical example of that, in general sounds like this:

„An object is in a state of uniform, rectilinear motion or in a state of rest, unless acted upon by a force“.

The interesting here is the category STATE (in a state of), most often is used when it is necessary to define the essences of phenomena, or at least to set some restrictive framework, which essentially is definition.

Thus saying that the system or the thing or the object "... is in a state of..." is always understood that this system, object, etc., is something WHOLE in the SPACE, and WHOLE in the TIME, and as such exists in a sufficiently small interval of time (infinitesimal by default), which is usually marked as a moment in time T_0

Here we should note that "one moment of time T_0 " is something fundamentally different compared to the period of time "Delta" T_0 (ΔT), which is always set with the difference between two moments of time T_2 and T_1 ($\Delta T = T_2 - T_1$), and its amount is greater than zero.

According to modern concepts of Physics, in the face of the STR and GTR, the moment of time T_0 is a point on the axis (coordinate) of the Time in four-dimensional Space Time of Einstein, which means that it is infinitely small piece of (spot) TIME and has the characteristics of both together SPACE and TIME, tending to zero.

When we define a physical object large enough, inherent to the macro and mega reality, for example a planet (Earth), Sun, Galaxy, just as some, WHOLE and indivisible, we must use the category STATE, and define moment in time T_0 .

In these and similar cases the subject expresses the following reasoning:

“At a moment in time T_0 , the Earth or the Sun or... etc., etc., are in a state of...”

Having said that, without enhancing explicitly, it is implied that STR requirements in terms of physical TIME, and its gradual character set of the final and the greatest possible speed of light spread in the face of the second Principle of the STR, at a precise moment in Time falls off, and studied physical object appears out of Time and therefore simultaneous.

The paradox of the examined problem consists namely in this. If the thing is WHOLE in the CURRENT REALITY and at a precise moment in Time T_0 of the CURRENT REALITY, it comes outside the relevant TIME, defined by Einstein.

We come to the problem with the moment of the PRESENT and its relation to PAST and FUTURE, and this complicated with STR requirements and the second Principle by which the TIME intervals Spatial sections.

If at a precisely specific moment of Time T_0 we define a particular point in SPACE as a point of the CURRENT REALITY, all other set is carried in the PAST and this is a consequence of modern concepts of Physics.

To be completely honest and accurate, the cited set of points appear as PAST in terms of section A for signals spreading

from multiple points to point A, and appear as points of the FUTURE at the moment of arrival of signals moving from point A to the set of points which do not coincide with point A.

We defined on condition that the set (of points) belongs to the studied physical object and its appearance in the current REALITY as a WHOLE is possible only as appearance of the entire set of points, that appear as PARTS of the particular WHOLE. It turns out that, at a specific point in time T_0 , PARTS of the WHOLE are SIMULTANEOUSLY in the PAST and in the FUTURE, but in any case not in the PRESENT, with the exception of point A only.

This paradoxical picture arises as a result of physical definition of simultaneity imposed by Einstein, by the second Principle of the STR, which announces the speed of light for permanent, constant value, and at the same time as a speed, which ... "physically performs the role of infinite speed "[5] in the REALITY. Through this limitation the concept of simultaneity in modern science is defined, which is undergoing serious criticism from a purely cognitive attitudes. From a philosophical perspective, the category WHOLE indicates phenomenon, the essence of which lies in the indivisible continuity of the objective appearance of the thing in TIME and SPACE.

Summing, it is clear that the reality is ONE and thus it is the reason to appear (as) WHOLE in the TIME and SPACE.

This fact, this phenomenon in its deep nature makes it necessary to clarify what is the mechanism that made possible the integrity of each, any THING, first in the TIME and then in the SPACE. In terms of TIME, the phenomenon of "WHOLE" requires the existence of interaction with infinite speed between PARTS of the only WHOLE. Assuming that this interaction is carried out with some speed less than infinite then we will create an idea of a physical reality that in its essence will be relative in the sense of Einstein's ideas presented in STR. In such a reality, the different PARTS of the WHOLE will be in the PAST or FUTURE and only an infinitely small PART in relation to which the TIME is read off will be at the PRESENT.

In this case we are not able to say that the thing that we have subjected to analysis is a WHOLE. An objection against our conclusion is possible, which according to its profound essence and presented in summary form, will sound as follows:

“The whole appears as a WHOLE at the same time in the PAST, PRESENT and FUTURE.”

Intentionally written this way only shows its logical, cognitive and purely objective unsoundness (inconsistency). It is quite clear that the term "simultaneity" is not applicable to categories of PAST, PRESENT, FUTURE and the reason for this is that according to the idea PAST, PRESENT and FUTURE are phenomena, necessarily marked as simultaneous.

In our analysis we would not consider the essence of phenomena PAST and FUTURE, and will focus on unambiguously firm requirement that the PRESENT of any (one) particular WHOLE THING is simultaneous by necessity, which is a special case of a general and inescapable necessity, which owns the necessary conditions to be offered as Principle:

The WHOLE (infinite) REALITY (is simultaneous), and appears simultaneously in the PRESENT.

3. DISCUSSION

Here we should note the rise of some interesting, basic issues, requiring a position in conformity with the basic scientific requirements.

1. What are the considerations and necessary reasons which necessitate the demand to define moments in time with the assistance of transmission and reception of any signals - light in this case, as is accepted in modern Physics, on a proposal made by Einstein?

The truth is that consistently conducted impartial philosophical analysis does not find these (necessary) reasons and considerations.

2. Is a physical and objective simultaneity attached to the knowledge of the subject possible, where the verification of authenticity and objectivity is possible (reflected) in the next present, and appears as a consequence?

From a purely philosophical positions our definite answer is "yes" and the reason is that reality itself is the objective in this way

3. What will change in the subjective picture of reality, which is a physical picture of reality, if principled possibility of the existence of simultaneity of events occurring and parallel non observability of the act of happening by the Subject is introduced. In short, it sounds like this: Is simultaneity without Subject possible? Our answer is again a positively "yes."

In modern science, particularly in Physics, hiddenly exists the idea that if a Subject reflecting the Reality simultaneously does not exist, the simultaneity itself appears impossible or at least becomes relative, which deprives of content the idea of simultaneously.

It should be noted that in general, the principle simultaneity of the existing reality is non-relative, which means absolute. This thesis, elevated to the rank of a postulate in relation to the existence, is pre-primary prerequisite for the very existence. This fundamental formulation is a classic philosophical problem, a casus which cannot be solved by the science Physics. The said principle should be introduced into Physics, and simply observed by those working in this field. The reason for this is the existence of things in general is not a physical problem and cannot be resolved by physical

methods. Research and enrichment of the category existence is a classic Philosophical issue, solved with the help of accordingly required philosophical methods. Naturally in this case will be used empirical material gained from the private scientific research and especially the latest developments in Physics.

4. CONCLUSION

Returning to the requirement (necessity) for the existence of infinite speed of motion (of something), indicated at the beginning of our presentation, we should emphasize expressly that modern Physical science is unable to define categorically and definitely the holder (the causer) of such interaction, or more precisely - it is not able to indicate such a universal connection between things that is (possible) cause of their simultaneous appearance as PARTS of the WHOLE REALITY.

The conclusion is clear that this is one of the most difficult cognitive tasks standing in front of the modern natural science, which holds enormous methodical charge, and decision of which will be the reason for the creation of fundamentally new concepts of objective REALITY.

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