

Toward an A-Temporal Physics

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Key Words: time, measurement, motion, space, density of space, elementary perception, gravitation, EPR experiment

Abstract

In this article it is shown that time enters into existence when one measures it. With clocks one does not measure time, one measures duration of motion of material bodies and elementary particles into space. Time is not a physical reality into which motion happens, motion happens into space only, time is a mind construction into which one experiences motion. Space itself is a-temporal, no time is running into space on its own. Time is a mind construct, motion is a physical reality. Replacing time with motion, the physical model of the universe will gain on its accuracy. This new approach is close to the Godel understanding of time, it opens new perspectives into cosmology and gravitation.

Introduction: By moving a hand one can observe hand movement into space only and not into space-time. There is no scientific evidence of space-time being a physical reality into which movement happens. With elementary perception one experiences only movements of massive bodies and elementary particles into space. Movement of hand has no duration, one gives it duration by measuring it. One measures duration of whatsoever movement by clocks. One can experience clocks running into space only and not into space-time. There is no scientific evidence of time running on its own into space, space itself is a-temporal.

The concept of space-time is here developed into the concept of a-temporal space into which movement of massive bodies and elementary particles occurs. In the universe one can observe a continuous motion into a-temporal space that also is a-temporal, it does not happen into time, it happens into a-temporal space only. In the universe there is no time existing as a physical reality, there is no past, no present and no future. Time enters into existence when one starts measuring a duration of motion. Time is a psychological reality based on the constant speed motion of clocks. Space-time is a math model into which one describes motion of massive bodies and particles into the a-temporal universe. In physical formulas symbol "t" means "duration of motion" (1).

Methods and Results: One can sit in front of a pendulum and watch it for an hour. The pendulum is moving into space only and not into time. Movement 2 is after movement 1, but in space only and not in time. As one experiences movement of pendulum inside mental concept of linear time, movement 1 appears to be before movement 2. Movement 1 represents past, movement 2 represents present and movement 3 that did not appear yet represents future. One is not aware that pendulum moves into space only and not in time. By taking into account the process of "perception – elaboration - experience" one can understand that pendulum moves into space only.

movement of pendulum - perception (eyes) – elaboration (into time as a mind construct) - experience

The features of time can be realized on the basis of elementary perception (sight) and not on the basis of what one experiences. One can not perceive time in the universe because time does not exist as a physical reality. One can experience time only because time exists as a construct of the mind. Temporal experience of the universe is based on the time as a mind construct and not on the time as a physical reality.

Discussion: This new approach on time raises following question: if time does not run into the universe, when universe has started? Some recent research considers universe as an a-temporal phenomenon in dynamic equilibrium. Universe has no beginning and no end, it is a system that renovates itself (2). Also Godel sees universe as a "rotating system" with no beginning (3).

According to the a-temporal approach time does not run into space on its own. Besides, on the ground of our research, space has a granular structure, it is composed by quanta of space (QS). Quanta of space (QS) constituting a-temporal space have a size of Planck length, they change their electrical charge from positive to negative in a Planck time ($5.39 \cdot 10^{-44} s$), vibrate at the "basic frequency" $0.19 \cdot 10^{44} s^{-1}$, have a "basic energy" given by the relation $E_{qs} = h \cdot 0.19 \cdot 10^{44} s^{-1}$ where h is Planck's constant ($6.626069 \cdot 10^{-34} J \cdot s$), and thus $E_{qs} = 1.26 \cdot 10^{10} J$. QS of a-temporal space are complete into themselves. Their existence does not depend on other physical entities. They have no radiation, no "dispersion of the energy": their energy is always the same and precisely the basic energy $E_{qs} = 1.26 \cdot 10^{10} J$. This means that QS that build up a-temporal space have no entropy. Quanta of space are basic packets of the energy that cannot be created and cannot destroyed (4).

Space built up by quanta of space has nothing to do with ether theories. Space is not fuelled with some hypothetical substance called ether, space is full of itself, space is built up by elementary grains (that we can call quanta of space). As regards their physical existence ether and time have something in

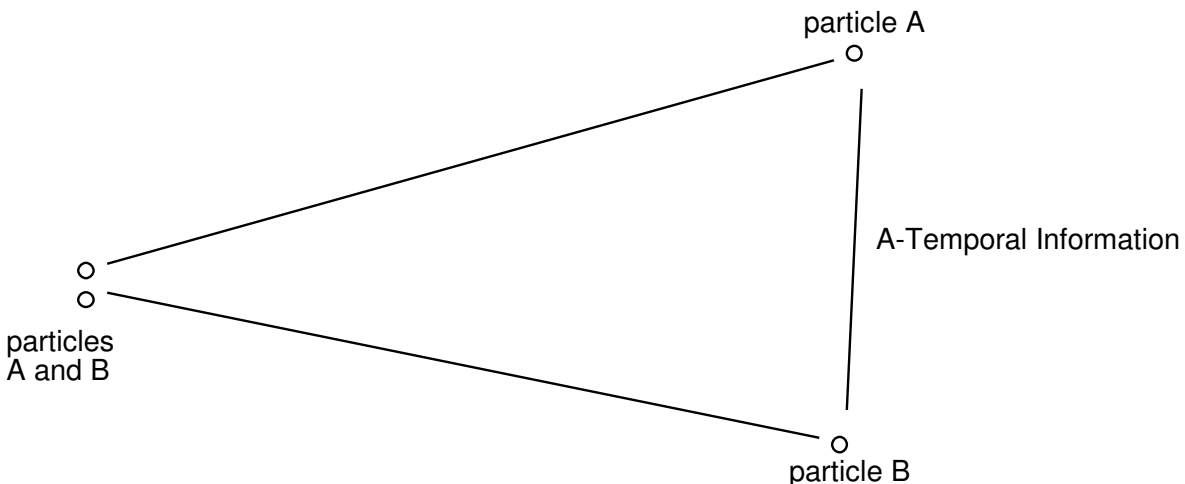
common: both can not be perceived by the elementary perception (eyes), their existence can not be proved by experiment, they are both only hypothetical.

Gravitation is carried by the a-temporal cosmic space, gravitation is immediate, acting on the distance is not a problem here. Gravitation works between quanta of space, it is a non propagating force that keeps together space, it does not act between two material objects. The most important and universal physical property characterizing a-temporal space is its density D that depends on the amount matter.

Density D associated with a material object in a point situated at distance r from its centre is given by the relation $D = \frac{Gm}{r^2}$, where m is the mass of the object and G is gravitational constant. Density of space determines its geometrical structure, its curvature. In the centre of a black hole density is so strong that transforms all elementary particles back into quanta of space, in the centre of the galaxies quanta of space transform back into elementary particles. The circulation of the energy represented by the cyclic process "matter-space-matter-space" is in a permanent dynamic equilibrium, without no beginning and no end.

Speed of light motion is constant, independent on the density of the space that defines its curvature. When light leaves massive stars where density of space is very high its frequency will decrease, but its speed will remain unchanged. This is known as "gravitational red shift" (5).

A-temporal approach brings new light also about the famous experiment of Einstein, Podolsky and Rosen (EPR). This experiment shows that two quantum particles A and B, which have been together and then sent into space in opposite directions, "know" each other at any instant or moment. One could predict that in the EPR experiment the information medium between two particles is physical space itself. As gravitational force between Sun and Earth also information between particle A and particle B is a-temporal (6).



Conclusions: In today physics motion happens into time. For this view there is no experimental evidence. The a-temporal view is born on the base of clocks measurement: with clocks one measures motion into space, motion happens into space only, time is here only a mind construct. A-temporal view dos not take anything away from the physics, on the contrary: it gives it more précis ness and adequacy with the material universe.

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