

The conglobulation of coordinates and the global time

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We are located in the world, in which different bodies constantly change their position. But there are such bodies, which do not change their relative attitude and is not achieved rotary motion. With a large quantity of such bodies always it is possible to find three bodies, through which they will belong to three axes of the selected Cartesian coordinate system. Let us name this coordinate system global.

Let us prepare a number of identical hours (for example, switch), we synchronize their motion and will spread on the desired points of space. We will consider one revolution of the pointers of such hours the unit of time, and we will consider the indications of hours global time. Let us assume that some body, to which not deystvovuyut external forces, moved between two fixed with respect to the coordinate system points, the distance between which is equal L . If in this time of the pointer of hours they made N revolutions, we will consider that the speed of the body $V = \frac{L}{N}$. In this context the procedure of the creation of the conglobulation of coordinates and establishment of global time is simple and intelligible. But the question is such hours, as them to prepare and as their properties depend on the physical properties of the surrounding space and properties of bodies, its filling.

In the literature the concepts of mass, space, time are not accurately determined. Mass as physical concept possesses the following fundamental properties: it has the linear dimensions (it cannot be otherwise observed), it possesses the gravitational and inertia properties (for accelerating the mass necessary to exert force). Mass under specific conditions can possess potential and kinetic energy. The presence of kinetic energy escapes from inertness. Masses are attracted as a result of the presence around them of the potential gravitational field, whose gradient determines attracting force. Thus, the system of two remote bodies possesses potential energy.

The concept of space with the concept of linear dimensions or length, space is connected three-dimensional. Another characteristic of space, which can be named exclusion principle, indicates that the fact that at one and the same point two different bodies at the given instant cannot be located. Strictly this principle defines one of the characteristics of this concept as time, that attests to the fact that the different bodies simultaneously can be located only at the different

points of space. It is known that time on the level with the mass and the length, enters into all systems of units as primary not on what the not depending value. However, for measuring the time hours are necessary. One special feature unites all numerous types of hours, their realization indicates interaction of other primary physical quantities, such, for example, as masses, length and force. In the pendulum hours their motion is determined by the mass of the Earth and by the length of pendulum. The same relates also to the satellites, which revolve around their stars or planets. In the hours with the mechanical springs the motion is determined by mass and dimensions of pendulum, and also by elastic properties of spring. Mechanical resonance systems can be used as the hours, but also in the required order here occurs interaction of three primary parameters: force, mass and length. Electromagnetic resonance systems also can be used as the hours, but also here their motion will depend on the dimensions of resonator, and also on the dielectric and magnetic properties of medium.

But give let us visualize that in this inertial system [IS] suddenly for some reasons changed the gravitational constant, either the inertia properties of mass changed, or the electrodynamic properties of medium finally changed - all this will involve a change in the rate of the motion of hours. Thus, asserts itself the conclusion that time is not primary physical quantity as, for example, the mass length and force, but directly it depends on the values indicated it can be through them expressed [1,2].

That is important, to what side and as rapidly flows the time. Practically all laws of microcosm are invariant with respect to sign change of time, i.e. for them it does not have value, flows time forward or back.

If frame of reference [IS] passes of one to another, which is unavoidably connected with the retarding or the acceleration, then in this system time must slow down or be accelerated. Thus, it is possible to consider that time.

Leak can unevenly, first being accelerated, then slowing down. But if so, then can time stop or change direction? Almost obvious it is the fact that, if any motion suddenly ceased, and all bodies, including atoms, suddenly they stood still at its places, then the concept of time would lose its sense. The same would occur when the universe was absolutely empty. Thus, asserts itself the conclusion that the concept of time is the consequence of existence of material objects and their properties.

Is known that time reversal, i.e., sign change of time does not change the form of equations of motion. This means that for any possible motion of system can be achieved the time-reversed motion, when system consecutively passes to the reverse order of the states, symmetrical to states, passed in the previous motion. Naturally to assume that in the absence changes in the

system time for it not at all flows. When in the system some reversible changes occur, i.e. it after a certain evolution returns reversibly to its initial state, the time flows first in one, and then in other direction. So time finds the sense of the proper time of system, in each – its. States symmetrical on the time are characterized by opposite directions of the speeds (pulses) of particles and magnetic field. Temporary invariance leads to specific ratios between the probabilities of direct and reverse reactions, to the prohibition of some states of the polarization of particles in the reactions, to the equality to zero electrical dipole moment of elementary particles. It follows from the general principles of the quantum field theory that all processes in nature are symmetrical relative to the work of three operations: the time reversal, three-dimensional inversion and charge conjugation.

The existing systems of units do not provide for the different signs of time, most likely, because the time as physical quantity is introduced not on the basis of deep physical principles, but the solution of the chamber of measures and weights undertook natural periodic processes, frequently different nature.

Thus, hours compulsorily operate with other physical quantities, for example, with mass, length and force. The square of time is expressed as these parameters directly, so that time itself can take values of both signs. But, although mass, length and force exist as the primary objectively existing physical quantities, we will encounter that difficulty, that by the existing systems of units force itself is evinced after the already introduced time. However, there is a way of overcoming this difficulty. As the fundamental bases for the introduction to time as physical quantity, they can be undertaken the law of universal gravitation, which makes mass with the carrier of force, and the principle of the equivalence of heavy (gravitational) and inert mass, experimentally confirmed with the very high degree of accuracy.

The attracting force of two identical masses m is at a distance $2r$ equal:

$$F_g = \frac{m^2}{4r^2}.$$

It will be shown below, what it is necessary to use conversion factors in order to switch over to customary us to the units of time.

If the masses indicated revolve around the overall center of masses, then we have

$$T = 4\pi\sqrt{\frac{r^3}{m}} \quad (1)$$

where T - period of revolution of masses around the overall center.

Relationship (1) includes immediately two laws: the law of universal gravitation and the principle of the equivalence of gravitational and inert mass. It also determines the dimensionality of time. Certainly, this dimensionality to us is unusual, but became accustomed we to other dimensionality in physics, into which enters incomprehensibly from where undertaken second. The advantage of this approach is the fact that the time as physical quantity is introduced on the basis of the fundamental laws of physics and it, as a consequence of this, corresponds to the principle of time reversal.

If we select meter and kilogram by the units of length and mass, then by the force (1) it will be the unit of time 4π . For the conversion of this value into seconds let us divide it into square root of gravitational constant. If we this make, then let us see, that the newly introduced unit of time is approximately five orders more than second. This, of course, is not very convenient, but in order to avoid these inconveniences, it is possible to introduce the dimensionless coefficient, equal to square root of the absolute value of gravitational constant. In this case the relationships between the values of all physical quantities will be preserved, although the dimensionality in them will be others. All mechanical values in this case will be expressed only through the length and the mass.

For the passage to the new electrical systems of units it is necessary into the old to put the new dimensionality of time with the selected dimensionless conversion factor. If we for measuring the electrical units use to Gauss a system and to express in it time in the units of mass and length, then all electrical and magnetic units will be also expressed in the units of mass and length.

It should also be noted that the adoption of this innovation can lead to serious reconstruction of our views.

References

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