APPLICATION OF THE PRINCIPLE OF HIERARCHY IN COMPUTER SCIENCE TO REPRESENTATIONS ABOUT SPACE-TIME IN THE THEORETICAL PHYSICS

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Interesting attempt to apply an information theory to representations about space-time has been undertaken H.Harmuth from The Catholic University of America in his book ”Information Theory Applied to Space-Time Physics”. About motives of these research he wrote that the information theory developed last decades within the telecommunication limits and is almost unknown in the physics, however it is necessary to mean that for many long years of applications of an information theory and computers began natural to think on language of finite number of discrete elements the same as the similar habit to operate with a continuum has grown out of the long-term use of differential calculus. Considering that has ripened necessity of revision of representation about space and time as about a continuum, proved in the Ancient Greece Aristotle, Harmuth consistently enters into these representations a discreteness principle.

However the Russian mathematician V.Boss has shown, what even within the limits of the classical mechanics representations about space and time the guess of a continuity of a fluctuating substance leads to a wave equation, invariant to Lorentz transformation laws, though the guess of discreteness of the fluctuating substance structured as finite set of the material points, leads to the equations of undular process, invariant to transformations of Galilei. Invariancy of undular processes in an electromagnetic field proves to be true observationally (this fact promoted making of a relativity special theory); therefore we consider a space-time discreteness principle untrue.

In our opinion, in the fundamental basis the Universe is not symmetrical, and hierarchical. Particular symmetries of its particular builders cannot be complementary aspects of uniform universal symmetry as concern only separate hierarchy level. Different levels are not related among themselves by symmetry, and higher level dominates over lower so the events which have been not related among themselves by relationship of cause and effect at lower level, can be related that on higher. Unlike mathematics, in computer science hierarchy plays an important role (for example, 7-level network model OSI, 3-level architecture ANSI/SPARC, hierarchical data model). We consider that H.Minkowski's idea about the preerected harmony between an abstract mathematics and physics is necessary for exchanging idea about the preerected harmony between an abstract mathematics, computer science and physics.

We consider that on the hierarchy principle basis it is necessary from continual representations about space-time to transfer not to discrete representations, and to hypercontinual, that is to representations about space-time, as about hierarchical plurality of the interconnected continuums with differing metric. The geometrization principle can operate only for a separate existential continuum, therefore the multiplicity of continuums essentially restricts activity of a geometrization principle.

The concept of an existential hypercontinuum is entered for the first time by us as a result of joint research of algebraic and geometrical structures of the commutative algebras with unity which elements are functions of sinusoidal waves that has led the author to hypothesis promotion about hierarchical hypercontinual structure of universal physical space-time. Among set of the experimental data testifying in favour of this hypothesis, it is possible to mention, for example, the data a neutrino bundle advancing at some o'clock a light impulse during observation on February, 23rd, 1987 flashouts of supernew star SN1987A, also published by radio astronomers of the Manchester university in April, 2010 the data about quadruple excess of light speed by a radiation source in a galaxy M 82, and also the various data about observations of superlight velocities of a motion in the relativistic jets of some astronomical objects.

This our hypothesis, along with making of mathematical apparatus of PSSM-networks by us, is a starting point of the scientific researchs guided on generalisation of representations about structure of space and time in the direction of transition from the up-to-date quantum-relativistic scientific paradigm to a new system scientific paradigm, simultaneously structurally pairing in the frameworks a continuity and discreteness, dynamism and static character, and also globality and a locality. Hypothesis acknowledgement would unclose advancements of science and technicians considered as unattainable prospect at the expense of removal of such separate continuum restrictions, as boundedness of motion velocity light speed in vacuo and rigidity of cause and effect chains of events.