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THE PROBLEMS IN EXPERIMENTAL FOUNDATION OF CAUSAL MECHANICS

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Causal mechanics developed by N.A.Kozyrev (1958,1968) and based on the concept of active properties of time has been a subject for emotional scientific discussions for four decades running. An unusual combination of the attributes "emotional" and "scientific" refers not only to the fact that N.A.Kozyrev's theory provides insight into a number of "dark" effects and phenomena of science such as quantum nonlocality, violation of parity, asymmetry of the right-hand and left-hand in biological objects. The most important thing is that the theory infers the everyday correlation between all objects and processes in the universe — even the most widely spaced ones. What is most appealing is that the universal correlation results from a few simple postulates that are consistent with common sense. Equally important is that causal mechanics is consistent with both classic and quantum mechanics.

Causal mechanics, in contrast with many other well-explained hypotheses, can be verified. N.A.Kozyrev (1968, 1977,1980) himself made attempts to substantiate his concepts by means of a complex of experiments and astronomic observations. Lately, the results derived by N.A.Kozyrev, has become a subject for verification by other researchers (Lavrentyev et.al. 1990,1991; Akimov, Pugatch et.al. 1992). However, the experimental foundation of causal mechanics is considered inadequate by scientific community. The reason for this is not mere doubts about existence of the experimental and observational facts described by N.A.Kozyrev (we know N.A.Kozyrev to be the most masterful experimenters of our time and the most honest man), but, to a great extent, lies in a possibility of different explanations. Some effects described by N.A.Kozyrev may account for a suggestion that they are related to action of quite ordinary factors which have eluded the experimenter having his or her quite natural preferences while being carried away by their own ideas.

Let us consider, as an example, the experiments with the torsion balance that have been carried out by N.A.Kozyrev and V.V.Nasonov. In these experiments, observations were made of the changes in a position of the indicating bar suspended upon a thin thread inside a tin-plate vessel with a sheet of glass on top of it, under evaporation of acetone or liquid nitrogen, or melting/dissolving some substance. The results obtained were interpreted as a response to irreversible processes which affect the properties of time. The experimenters pointed out that the temperature difference over the area of location of the torsion balance did not exceed 0.1 degrees Celsius, thus the effects observed could not be caused by heat.

The studies carried out by the present author (Parkhomov 1992) have confirmed the validity of effects described by Kozyrev and Nasonov. However, additional experiments performed with the use of thermocouples (and, latter, with the use of thermoscope) have shown that the direction which is taken by the indicator differs too slightly from the direction forward the most warm spot across the wall of the torsion balance vessel. It has become clear that the indicator orienting factor is an airflow generated as a result of thermal convection. The presence of such a flow becomes evident when several indicators (in contrast with a single one) are suspended inside the vessel at different levels and aerosol is introduced into the vessel. Generation of convection can be caused by a thermal gradient of 0.01 degrees Celsius or even less.

Therefore, the unstability of the thermal field which N.A.Kozyrev and V.V.Nasonov considered inessential is, in fact, the dominant factor that affects the orientation of the torsion balance indicator. However, may there be a direct influence of irreversible processes, alongside with the influence of temperature? In the above experiments with evaporation, melting or dissolving, the effects were observed only in those cases where they were accompanied by temperature changes. Intensive melting of hexadecane after switching on the electric heater did not affect the orientation of the indicator whereby the melting took place under temperature equal to the temperature of the torsion balance (19 degrees Celcius). If the torsion balance is shielded with high quality heat insulation (using a Dewar vessel), it ceases to respond to any external exposures, short of strong magnetic field.

Thus the torsion balance (at least, of the design that was used by Kozyrev and Nasonov) cannot be looked upon as an indicator which responses directly to irreversible processes. Should such an influence be discovered, this cannot be considered a proof of validity of Kozyrev's ideas until the fallacy in different explanations is not proved.

The same can also be said about Kozyrev's experiments with gyroscopes. However, there is some important feature: the magnitude of the effect does not vary smoothly but stepwise, and the size of the steps can be correlated with fundamental physical quantities. This underlines the importance to verify and interpret the results obtained by Kozyrev, regardless of whether they are correlated with causal mechanics or not.

The most significant argument in favour of causal mechanics is, from my point of view, that it can be used as a basis for an explanation of cardioidness of the shapes of planets. However, different explanations are possible here. Such deformation of the planets can be caused, for example, by manifestation of fundamental interaction related to rotation (Akimov et. al. 1989).

An important discovery made by Kozyrev has been his observation with the use of a light shielded reflecting telescope, of the objects whose location on the celestial sphere does not always coincide with the locations of the stars. These results were reproduced by Lavrentyev et.al. (1990), Akimov et. al. (1992). The observation of these objects, as the present author had a chance to check, is possible even using small telescopes with mirrors of about 10 cm in diameter. N.A.Kozyrev came to a conclusion that the result obtained has been a manifestation of active properties of time, but there has been no conclusive evidence in favour of this yet.

The basis for alternative explanation of the effects discovered by N.A.Kozyrev in observations with the reflecting telescope is provided by the investigations of low-energy weakly — interacting particles of neutrino type that are constituents of the dark matter of the universe (Parkhomov, Ulanov 1991, 1992; Parkhomov 1993a,b). These particles are reflected from the border between two media, and thus are focused by the mirror of the reflecting telescope at the same location as the photons are. The flows of the particles are focused in gravitational fields of stars, black holes, and planets, in the form of directional condensed beams, and, consequently, are perceived as quasi-point objects. The penetrating ability of these particles is great, and they travel freely through the lighttight shields. At the same time, they interact rather extensively (although in a peculiar way) with matter and consequently, can be detected. The registration technique as well as appropriate detectors have been developed; laboratory models of the telescope which detect the flows of low-energy weakly-interacting particles have been built.

Thus at present there are no experiments or astronomic observations which could unambiguously validate or disprove causal mechanics. The undoubtful outstanding importance of Kozyrev's theory, its potential cosmologic and ontologic significance make this situation intolerable. This reproach is addressed to physicists. It is high time to pass from speculative reasoning on causal mechanics to its comprehensive and virtually qualified verification.

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