

## The series *Problems of Nonuniform Physical Vacuum*

A review of the books *Natural Self-Luminous Structures* by A N Dmitriev, *A Polarization Model of Nonuniform Physical Vacuum* by V L Dyatlov, and *Electrogravodynamic Model of UFOs, Tornadoes and Tropical Hurricanes* by V I Merkulov (Novosibirsk: Institute of Mathematics Publ., 1998)

There is now a sufficiently large data set concerned with the observation of rare natural phenomena: natural self-luminous structures (NSSs), tornadoes, unidentified flying objects (UFOs), etc. Among the observations of NSSs and UFOs there are obviously reliable data. The reliability of tornado observations are not at all in doubt. The only question is of how to interpret all these phenomena.

The books by A N Dmitriev, V L Dyatlov, and V I Merkulov describe the phenomena mentioned and attempts to explain their origin. It is clear at once from their forewords that in essence they form a unified series of publications aimed at the development and substantiation of a novel model of physical vacuum. On this path, far beyond the frameworks of modern physical conceptions, the authors try to find an explanation of rare natural phenomena like NSSs or tornadoes. For example, on p. 215 in his book A N Dmitriev directly states that the question is of the development of NSS models based “on new physical principles”. Not without reason the books are issued in the series *Problems of Nonuniform Physical Vacuum*.

The fact that the physical vacuum has various and quite complex properties has long been known to scientists working on high-energy physics and quantum field theory. Voluminous experimental data have been obtained that demonstrate how these properties manifest themselves in the structure of elementary particles and peculiarities of their interactions. Therefore, the suggestion of any new model of physical vacuum should be accompanied by a detailed analysis of agreement between the model and experimental data obtained in high-energy physics. If gravitation is also concerned, it is necessary to take into account the results of experiments testing the general theory of relativity.

Nothing of the kind is there in the reviewed books. The level of understanding of modern concepts of, for example, a vacuum in quantum chromodynamics (QCD) by V L Dyatlov, who is author of a *polarization model of nonuniform physical vacuum*, is characterized by the following passage on p. 33 in his book: “In QCD, the physical vacuum is considered as a lattice at the sites of which are located an s-quark and an s-antiquark connected ‘by a string’ ...”. The total fallacy of the statement is obvious to anyone who ever read a textbook on QCD.

In another example, to develop his model, V L Dyatlov makes use (see p. 52 and the following) of ‘little-known’ particles and antiparticles with nonzero electrical charges,

which are similar to normal particles but have negative (!) mass. V L Dyatlov is not confused by the assumption that is not only intrinsically inconsistent from the theoretical point of view but is also in flagrant contradiction with experiments, in particular, on the annihilation of electrons with positrons. For the sake of correctness, it is necessary to note that the honor of ‘discovering’ these ‘little-known particles’ falls on other authors, Ya P Terletskii and G I Shipov.

And what are the facts that a *polarization model of nonuniform physical vacuum* is based on? V L Dyatlov and, following him, V I Merkulov modify a theory of gravitation, which was suggested by Hagedorn and has long been rejected, in which the spin of a graviton is 1 (in any ‘viable’ theory the spin of a graviton is 2). As a result, the authors get, in particular, a conclusion that a planet rotating around a star should absorb gravitational waves (in these books the waves are called gravispin waves) rather than to radiate, i.e. the size of the orbit should increase rather than decrease with time. The fact that such a conclusion is not only intrinsically inconsistent but is also forbidden by available observations of close double systems is again ignored.

In their books V L Dyatlov and, following him, V I Merkulov offer a hypothesis that these rare natural phenomena may be caused by new-vacuum domains imbedded in the conventional vacuum. It is supposed that such domains have a macroscopic size and long lifetimes and the properties of fields and particles in the domains differ markedly from that in normal vacuum. In this connection it is necessary to note that there really are unusual vacuum states in a number of models of the quantum field theory; in the early Universe vacuum domains could really have arisen for a short time. Not going into details, we shall stress, however, that there are forcible theoretical arguments that exclude the opportunity for vacuum domains to exist for a long time in macroscopic areas of space. Evidentially, the authors know nothing about these arguments; anyway, they ignore all of the numerous papers in the top-level scientific journals on the problem concerned.

Thus, the books by V L Dyatlov and V I Merkulov are typical examples of a scholastic approach to the development of new theories, the approach allows one to disengage oneself from reality and to ignore all the experience gained in science.

A N Dmitriev also tries to explain NSS on the basis of physical vacuum properties that are unknown in science. He writes: “In science, efforts are already being made to take into account the influence of properties of physical vacuum (in particular, torsion fields) on short- and large-scale periodic variations of geophysical fields” (see p. 37). Notice that in physical science such efforts have not been made. Along with the two other reviewed books, the book by A N Dmitriev is saturated with terminology which is rather strange to a physicist, and sometimes it is dubious. For example, “an intermediate physical reality in the interaction of universes of substance and ether” (p. 52), “a region of geoether activity” (p. 170), “the fundamental role of ether materiality” (p. 188),

and “man is a user of ether, and, maybe, a producer of the ether” (p. 189).

A N Dmitriev does not treat the reader with evidence. He only ‘prophesies’ that “In vortex systems, electroprocesses adjoined closely with torsion and gravitational phenomena and effects, i.e. NSSs can be considered as though they are built into the overall system generating anomalies of physical fields” (p. 205). Following V Kh Khoteev, unknown in physics, on p. 229 the author asserts that there is another mantle of the Earth, the ethersphere. Next he writes: “The ethersphere of a planet ... is extremely transparent and, if it could be seen, we would observe that it is a part of a vortex pipe, increased in diameter (similarly to a magnetic line of force but of much greater diameter)”. It looks as if Mr. Dmitriev does not realize that a magnetic line of force has no diameter.

Some statements of Mr. Dmitriev can cause nothing but bewilderment. On page 186 we read that “It is possible to suggest a scenario, where the leader of linear lightning is some ether breakdown of the atmosphere, the breakdown preparing ‘an atmospheric break’ for the following electric discharge”. Let us now open the book *Electrical Breakdown of Gases* by J Meek and J Craggs (Oxford: Oxford University Press, 1953) [Translated into Russian (Moscow: Inostrannaya Literatura, 1960)] and quote a phrase from the book: “Lightning is a special case of electrical sparks. During last few years it has been intensively investigated and now a clear-cut picture for the development of a lightning discharge has been obtained”.

Notice that lightning is a phenomenon which is difficult to observe. Nevertheless in 1950s–1960s with the use of a high-velocity photography the excellent scans for the movement of the lightning leader were already obtained, oscillograms were recorded for electromagnetic fields accompanying lightning discharges, the gradients of potential were measured in the storm-cloud, between the cloud and the ground, and at the ground, as well as the currents of the

lightning discharges were observed. Nothing of the kind was presented by the hunters for NSSs.

Instead, they offer some rather vague reasoning without any serious sense. “A local man-caused electro-overload of the atmosphere, large-amplitude and frequency variations, large gradients of voltage and a pulse series can result in the conditions for the ether background state to be excited thereby producing ether domains, especially during the time interval of thunderstorm activity” (see p. 182 of the book by A N Dmitriev).

A N Dmitriev has been engaged in the search for UFOs (nowadays NSSs) for a period of almost thirty years. As he said, in Altai region there are places where these objects occur quite frequently. But in such a case it seems very strange that during all these years the author has not recorded any NSS radiation spectrum that could help in obtaining the first really objective information about the mass composition, concentration, degree of ionization and temperature of the objects. Alas, nothing of the kind is presented. In addition, the photographic material selected for the book is far from faultless. Indeed, the image of a self-luminous structure, which is shown on p. 53 and on the cover of the book, looks like a clumsily made photomontage. The evidence given by the eyewitnesses also seem unconvincing.

Let us summarize. Undoubtedly, the data gathering, processing and ordering of information on rare natural phenomena are useful for science. It is bad that the quality of the information is in doubt. And that is no good for anything, if based on this doubtful information, ‘fundamental physical theories’ are developed and published that do not stand up under scrutiny. This is the case for the reviewed book series.

We regret that the books are published in Akademgorodok, Novosibirsk region where a lot of academician institutions of RAS are situated

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