

The fundamental role of information in exploring of the universe

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Information is a category that is currently being studied in many aspects in relation to various scientific disciplines, especially biology and physics. However, individual aspects of its specific action in relation to matter and energy are often cognitively separated from each other depending on the cognitive perspective within which scientific research is conducted. In this respect, e.g. in physics, they often focus on the processing of research data including thermodynamic parameters, with the state of information measured using entropy. On the other hand, in biology, the issue of precise determination of information's action relates, among others, to the morphogenetic multi-aspect nature of organism development, such as processes associated with the differentiation of totipotent cells into various tissues and organs during embryogenesis. "Cognitive separation", which ignores the overall image of information reality as a whole at the very starting point, reducing it only to understanding its selected "slices", limits our ability to fully understand the comprehensive nature of reality. In a broader perspective, this approach adversely affects our ability to understand and explain the universe as a functional whole, taking into account the incomplete role of information in the context of material-energetic foundations. Therefore, the category of information should be considered as a universal natural parameter, encompassing both physical and biological reality. In the longer term, it requires a clear formulation in the form of a general law covering the entire material and energy reality. In this sense, it would involve specifying a hypothesis of such dependency that would enable capturing the controlling role of information alongside material and energy potentials in the execution and synchronization of universal events within the framework of its informational logic, harmonious balance, and purposefulness of ongoing events, both physical and biological. The success of this challenging endeavor could ultimately lead to a clear and final determination of the genesis and direction of development of reality in the context of the comprehensive role of information as a basic and universal category controlling material-energetic potentials in the overall development of events in the unknown universe. This, in turn, could lead to new discoveries and opportunities in various fields of science, technology and philosophy etc.

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