

Discussions and replies



www.uni.lodz.pl/concepts

Remarks on the comment by Marcin Skulimowski
[Concepts of Physics 4 (2007) 300-301]
to the paper
THE ONTOLOGY OF QUANTUM THEORY
by **Z. Jacyna-Onyszkiewicz**
[Concepts of Physics 4 (2007) 263-300]

Z. Jacyna-Onyszkiewicz
Faculty of Physics
A. Mickiewicz University
Umultowska 85, 61-614 Poznan, Poland
e-mail: zbigonys@amu.edu.pl

(Received 24 September 2007; accepted 24 September 2007)

Interpretation of the quantum theory makes a specific current of philosophical and not physical research, undertaken first of all by physicists interested in philosophy who wish to understand the type of ontology is concealed in the mathematical formalism of quantum physics. Attempts to furnish it with an adequate philosophy of quantum physics have been undertaken for over 80 years. The main skeleton of the formalism including the state superposition principle, uncertainty relations, Born postulate, etc., has been found out in the second half of the 1920s, on the basis of the experiments performed

Discussions and replies

in the atomic scale (10^{-10} m). At present it is known to function successfully in the scale by milliard times smaller. For this reason we have no premises to undermine its reliability, even in the Planck scale (10^{-35} m).

Since the formulation of the quantum theory physicists have tried to uncover the reality it describes. A few tens interpretations of the quantum theory have been proposed till now, but none of them has been generally accepted by the physicists. Contradictions occur not only between the interpretations but also between the interpreters. Therefore, there are opinions that none of them is true but all of them are real, even if mutually contradictory. From this point of view all interpretations of the quantum theory are only the contemporary myths supporting our imagination and understanding of the phenomena taking place at the atomic and subatomic level and the ability to formulate the verifiable predictions of the results of measurements. It is symptomatic that the numerous and unsatisfactory interpretations of the quantum theory fall in the frames of metaphysical naturalism. In the frames of metaphysics there are no arguments against making attempts at interpreting the quantum theory from other ontological standpoints, which has been made in the paper discussed in which the metaphysical model has been assumed based on the postulate of the existence of omniscience.

Lets note that physics is based on the conviction that if something is an element of reality it can be recognized and understood by the rational mind. The idea according to which the reality is rational and understandable leads to the conclusion that there is an all-embracing act of cognition and understanding called the omniscience.

It should be emphasized that this metaphysical model is falsifiable. For instance, if the principle of linear complex superposition of quantum states was proved to be inexact, the interpretation proposed should be recognized as false.

In this model I do not refer to religious concepts thus I do not understand why the interpretation proposed is *beyond rational method* and therefore it is scientifically worthless. By the way, religious concepts do not have to be irrational by definition. The ontology proposed is a metaphysical and not a physical model, subjected to the rules of empirical-mathematical and naturalistic methodology of physical research. In metaphysics the narrow confinement of the so-

Discussions and replies

called scientific materialism does not hold. The metaphysical model must only be internally consistent and not contradictory to the results of the scientific observations. The orthodox von Neumann interpretation of quantum mechanics assumes that the self-awareness of the observer is not subjected to the laws of quantum physics and I guess it can hardly be called worthless.

An apparent contradiction between Conclusions 3 and 5 has been pointed out by Skulimowski. Let me explain that Conclusion 5 refers only to certain relations following from the Postulate assumed and it does not apply to the essence (nature) of omniscience, which in consistence with conclusion 3 is unknowable. The next reservation is if physics is actually possible in view of the fact that, according to Conclusion 4, there is nothing else except omniscience. Let me point out that physics describes only general and universal rules governing changes in the knowledge of human subjects but it does not regard their ontological nature.

