Review of: "A Metaphoric Exploration of Objective Constructivism"

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Potential competing interests: No potential competing interests to declare.

The paper is interesting – it tries to merge an objective and an epistemically limited concept of „reality" in physical measurements. The author gives an excellent presentation of the algebraic formulation of quantum measurements.

The paper is written very clearly, I would say even – didactically. The Hilbert space allows one to describe a harmonic oscillator as a ladder, and the spin as Pauli matrices. Even few students of physics have these notions "at hand."

The author shows a master knowledge of the modern questions of quantum theory, saying, for example:

"Note that the causality axiom is not in odds with the Einstein-Podolsky-Rosen states and

Bell's inequality, as explained by Haag".

However, as an experimental physicist with a hard research background, I must oppose some simplified formulations that are rather common in the literature.

First, the state of the physical objects exists *per se*, as the authors correctly say. But this is not „a state in a Hilbert space," like a sound of a guitar is the sound produced (and also the sound heard) and not just a combination of sine waves in the Fourier expansion. The Hilbert space is *a mathematical description* (one of many possible) and not a real world, which is unique.

Obviously, without the greatness of the mathematical description, we would be at the level of a child trying to reproduce the sound of a donkey…

Coming back to the statements that are common but not justified in the hard, physical reality, one of them is the „wave function of the universe." Just moving a step from a pure abstract concept towards the practical reality – how can we describe such a wave function? Treating the Universe as a single atom, or defining a separate wave function for every atom constituting a universe. Where do we want to store such a wave function? In a computer made of atoms of a parallel universe?

Resuming, the paper is very interesting and deserves further development of the subject by the author.