

# Standard conception as genuine quantum realism

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#Realism, #Materialism #and  
#Determinism?

## Philosophical Issues in Quantum Theory (Stanford Encyclopedia of Philosophy)

Jeffery Ketland 2004 argues in detail that the Newman objection trivialises the Ramsey sentence formulation of ESR.

## The standard conception as genuine quantum realism (2006 edition)

The revolutionary changes in fundamental physics have challenged our usual concepts and view of the world leading to a prompt philosophical rethinking of some of our basic presuppositions in the description of nature or even a fundamental reorientation with regard to our cognitive or ontological positions in relation to the world. The formal structure of a relation can easily be obtained with any collection of objects provided there are enough of them, so having the formal structure cannot single out a unique referent for this relation; in order to do so we must stipulate that we are talking about the intended relation, which is to go beyond the structural description. That is, we can treat the particles as if they obeyed approximately definite trajectories, and apply probabilities in a classical manner.

## David Favrholt, Anmeldelse: Jens Hebor: The Standard Conception as Genuine Quantum Realism

Everett, Quantum Theory, and Reality, Oxford: Oxford University Press, 1—50. The noncontroversial core of quantum theory consists of rules for identifying, for any given system, the appropriate operators representing its dynamical quantities, and an appropriate Hilbert space for these operators to act on. Mathematical objects can be characterised in terms of which symmetry transformations leave them unchanged or invariant.

## Does Quantum Physics Refute Realism, Materialism and Determinism?

The existence of pure entangled states means that, if we consider a composite system consisting of spatially separated parts, then, even when the state of the system is a pure state, the state is not determined by the reduced states of its component parts.

## **Classical and Quantum Realism**

Ontic structural realists argue that what we have learned from contemporary physics is that the nature of space, time and matter are not compatible with standard metaphysical views about the ontological relationship between individuals, intrinsic properties and relations. Ladyman and Ross 2007 argue that no account can be given of what makes the world-structure physical and not mathematical. Neither von Neumann nor Dirac, however, seem to think of it this way; it is treated by both as a physical process.

## **Classical and Quantum Realism**

The chief philosophical issues raised by quantum mechanics remain when the transition is made to a quantum field theory; in addition, new interpretational issues arise. OSR is also further elaborated in Ladyman and Ross 2007 and defended against various criticisms in French and Ladyman 2011.

## **The Metaphysical Challenge of Loop Quantum Gravity**

These objections go back to Russell: ...it is impossible that the ordinals should be, as Dedekind suggests, nothing but the terms of such relations as constitute a progression.

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