

The Dangers of Misdirected Increase of Knowledge

Post by "Martin" of October 11, 2020 at 12:00 PM

Answer to Susan and Cassius:

The Schroedinger equation is - within its range of validity - well supported by evidence. Quantum entanglement is well supported, too, and is already used for secure communication in the sense that any attempt to spy on the stream of information between transmitter and receiver would be detected. Billions of dollars are spent to develop quantum computers, which independent of the specific design are all based on entanglement.

Schroedinger equation and quantum entanglement really point to something VERY weird going on that does not fit with classical physics.

In general, quantum mechanics itself is rock solid with lots of experimental evidence. Future discoveries or an ingenious new theory might lead to a major overhaul but that is not likely to happen any time soon.

For many physicists, using "Shut up and calculate!" as the motto, the quantum woo starts already with any attempt of an interpretation.

I do see some value in interpretation but have no criteria at hand to tell in general how sensical interpretations are different from nonsensical ones.

When an interpretation is used to derive conclusions which are not backed by plain quantum mechanics, that interpretation is most likely nonsensical. Other than that crude indicator, the assessment is case by case.

The most common nonsensical interpretation is to attribute quantum uncertainty or other features of quantum mechanics to the influence of the consciousness of the observer.

(When playing golf with a demolition crane, the uncertainty of the trajectory of the ball is not due to the consciousness of the player but due to the clumsiness of the tool.)

Another kind of woo is when theories which so far have been untestable (i.e. they are not even hypotheses as of now) are misrepresented as factual descriptions of reality (e.g. string theory, multiverse theories). A far-reaching interpretation of such a theory is most likely nonsense to the power of 2 (e.g. an interpretation with teleportation between "parallel universes").