General Relativity and Quantum Mechanics as the Theories Dependent on the Observer/Detector

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Abstract: General Relativity (GR) and Quantum Mechanics (QM) are the theories dependent on the observer/detector so they are not the theories of the independent from observer Nature. In GR it follows from the fact that each act of observation (the photon-detector interaction via exchanges of the invisible superluminal particles responsible for quantum entanglement i.e. there are exchanged the spin-1 entanglons) sets the speed of light in "vacuum" c in relation to the detector (the speed c is in relation to the emitter or a last-interaction object - sometimes it is a detector). In QM it results from the fact that we cannot observe the entanglons directly and because time of observation lasts much longer than the time of exchanges of the invisible superluminal entanglons so there appear wavefunctions, superposition of states, and probabilities to find a particle in different states. Simultaneity of different states of the same particle is an illusion that appears only in the theories dependent on the observer. There must be in existence a more fundamental theory, which should be a theory of Nature independent on the observer - it is the Scale-Symmetric Theory (SST). SST leads to the initial conditions applied in GR and QM and shows that these theories are dependent on the observer. Moreover, SST shows that we cannot unify GR and QM within the same methods. SST shows that Nature behaves classically in a deterministic way but it does not mean that the free will is not in existence.

The Scale-Symmetric Theory (SST) shows that the successive topological phase transitions of the superluminal non-gravitating Higgs field during its inflation (the initial big bang) lead to the different scales of sizes/energies [1A]. Due to a few new symmetries, there consequently appear the superluminal binary systems of closed strings (the spin-1 entanglons) responsible for the quantum entanglement (it is the quantum-entanglement scale), neutrinos and the spin-1 neutrino-antineutrino pairs moving with the speed of light in "vacuum", c, which are the components of the gravitating Einstein spacetime (it is the Planck scale), cores of baryons (it is the electric-charge scale), and the cosmic-structures/protoworlds (it is the cosmological scale) that evolution leads to the dark-matter (DM) structures (they are the loops and filaments composed of entangled non-rotating-spin neutrino-antineutrino pairs), dark energy (it consists of the additional non-rotating-spin neutrino-antineutrino pairs interacting gravitationally only) and the expanding Universe (the "soft" big bang due to the inflows of the dark energy into Protoworld) [1A], [1B]. The electric-charge scale leads to the atom-like structure of baryons [1A].

General Relativity (GR) and Quantum Mechanics (QM) are the theories dependent on the observer/detector so they are not the theories of the independent from observer Nature. In GR it follows from the fact that each act of observation (the photon-detector interaction via exchanges of the invisible superluminal particles responsible for quantum entanglement i.e. there are exchanged the spin-1 entanglons which are moving with speed about $2.4 \cdot 10^{59}$ times higher than light in "vacuum" [1A]) sets the speed of light in "vacuum" c in relation to the detector (the speed c is in relation to the emitter or a last-interaction object – sometimes it is a detector). In QM it results from the fact that we cannot observe the entanglons directly and because time of observation lasts much longer than the time of exchanges of the invisible superluminal entanglons so there appear wavefunctions, superposition of states, and probabilities to find a particle in different states. Simultaneity of different states of the same particle is an illusion that appears only in the theories dependent on the observer.

Quantum behaviour of particles is an illusion for the observer, not for Nature because particles contrary to the detectors see the superluminal entanglons. Nature sees the succession of states which for the observer looks as superposition of states or as probabilities.

Consider the photons. Generally, photons are composed of entangled elementary photons which are the rotational energies of the Einstein-spacetime components. So we can assume that the states of the elementary photons are the eigenstates whereas the state of a photon as a whole is a superposition of the eigenstates. Then collapse of photon wavefunction is in the place of interaction of an elementary photon of the entangled photon with detector.

There must be in existence a more fundamental theory, which should be a theory of Nature independent on the observer - it is the Scale-Symmetric Theory (SST). SST leads to the initial conditions applied in GR and QM and shows that these theories are dependent on the observer. Moreover, SST shows that we cannot unify GR and QM within the same methods.

SST shows that Nature behaves classically in a deterministic way but it does not mean that the free will is not in existence. Precisely because of number and quality of the solitons in our minds [2], number and distribution of energy levels for interacting solitons in different minds are different and there may also be states with the same energy or with energies differing infinitely little. The different distributions of energy levels in different minds cause that a ground state for a decision concerning the same problem look for each person different. It means that people can react in different ways due to the same reason.

Emphasize that to simplify the theories we can apply simultaneously the theory of Nature independent of the observer, i.e. the SST, and the theories dependent on the observer, i.e. GR and QM. When we neglect the SST, we obtain solutions that can be or cannot be realized by Nature. Just the SST is the parent theory whereas GR and QM are the incomplete theories. In GR, due to the observer dependence, we cannot explain, for example, why gas around distant quasars is about 100 times cooler than it results from mainstream cosmology or why there appear the directional anomalies that concern the alignment of spins of quasars or rotation of massive spiral galaxies. In QM, due to the observer dependence, the QCD fails at low energies, for example, we still cannot obtain the half-integral spin of nucleons from the QCD initial conditions. But there are tens of unsolved basic problems because we apply only the theories dependent on the observer.

References

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