

## Dark Photons, Information and Thoughts

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**Abstract:** It is true that the superluminal dark photons responsible for quantum entanglement mimic the electromagnetic interactions but they cannot be detected directly i.e. they are dark. The dark matter is entangled with visible matter due to the superluminal dark photons carried by the superluminal entanglons the luminal Einstein-spacetime components consist of. Information can be sent with superluminal speed between entangled particles but appearing entanglement is created when luminal particles are very close one from another - it leads to conclusion that we cannot send information with superluminal speed because at first we must separate the entangled luminal particles. But when such separation is made then superluminal information is possible - it leads to the superluminal entanglement in quantum physics. Arrangements of the entangled Einstein-spacetime components in the physical matter and mental matter are different. For example, the unitary spins of the Einstein-spacetime components on a torus/electric-charge are perpendicular to surface of the torus whereas the unitary spins of the Einstein-spacetime components in the loops the thoughts consist of are tangent to the loops. It causes that the mental matter is flexible (the mental solitons are flexible) whereas the physical matter is rigid i.e. the bare particles are rigid.

The Scale-Symmetric Theory (SST) follows from the succeeding phase transitions of the superluminal non-gravitating Higgs field which lead to five different size/energy scales. There is the superluminal Higgs-field scale (size about  $10^{-64}$  m), superluminal quantum-entanglement scale (size about  $10^{-45}$  m), luminal Planck scale (size about  $10^{-35}$  m), the electric-charges/condensates/loops/quantum-physics scale (sizes about  $10^{-18}$  to  $10^{-13}$  m; most important is size about  $10^{-15}$  m), and cosmological scale (size about  $10^{24}$  m) [1A].

The quantum-physics scale ( $\sim 10^{-15}$  m) leads to the atom-like structure of baryons whereas the cosmological scale leads to the cosmic-structure/Protoworld which appeared in the luminal Einstein spacetime after the inflation but before the expansion of the Universe [1A], [1B]. Evolution of the Protoworld leads to the visible matter, dark matter, dark energy and CMB [1B].

The dark energy is the field composed of additional non-entangled Einstein-spacetime components – such “free” dark-energy particles interact gravitationally only [1B].

Dark matter consists of the additional Einstein-spacetime components (they are the luminal neutrino-antineutrino pairs) entangled with the visible matter (there appear the dark-matter structures as well [1C]) – the quantum entanglement is realized via exchanges of the superluminal binary systems of closed strings (the entanglons) between the Einstein-spacetime components because they are built of such objects [1A], [1B]. The entanglons carry

the unitary spin. They can rotate so they can carry rotational energies but they have only inertial mass (their gravitational mass is equal to zero) [1A].

On the other hand, the photons and gluons are the rotational energies of the luminal Einstein-spacetime components. In the strong fields, i.e. in fields which have internal helicity, the photons behave as gluons [1A]. For example, the strong fields produced by the internally left-handed baryons (antibaryons are right-handed) have left-handed internal helicity. The carriers of photons and gluons have the unitary spin also (the same as the entanglons).

We can see that the superluminal rotational energies of the entanglons are some analogs to the luminal photons and gluons so the superluminal rotational energies we can refer to as the superluminal dark photons. Whole quantum physics is based on the superluminal dark photons carried by the superluminal entanglons which are responsible for the quantum entanglement. We can see that in reality the properties of the superluminal dark photons are different from properties of the dark photons postulated in other theories [2]. But it is true that the superluminal dark photons mimic the electromagnetic interactions but they cannot be detected directly i.e. they are dark. The dark matter is entangled with visible matter due to the superluminal dark photons carried by the superluminal entanglons the Einstein-spacetime components consist of.

SST shows that the whole Cosmos consists of bound and free tachyons [1A]. Due to the stable boundary of the Cosmos, [1B], the mean kinetic energy and mean rotational energy of the tachyons is invariant [1A]. The superluminal linear and superluminal rotational speeds of tachyons are much greater than the luminal and subluminal particles so in good approximation we can assume that information is coded in dynamically changing distribution of bound and free tachyons in the Cosmos. Such distribution changes due to the 7 different interactions i.e. the dynamic viscosity of tachyons, quantum entanglement, confinement, gravity, electromagnetism, weak interactions and nuclear strong interactions [1A].

Information can be sent with superluminal speed between entangled particles but appearing entanglement is created when luminal particles are very close one from another – it leads to conclusion that we cannot send information with superluminal speed because at first we must separate the entangled luminal particles. But when such separation is made then superluminal information is possible – it leads to the superluminal entanglement in quantum physics.

The Scale-Symmetric Theory shows that thoughts are the solitons composed of loops built of the entangled Einstein-spacetime components also – they are the dark-matter structures as well [1C]. Emphasize that arrangements of the entangled Einstein-spacetime components in the physical matter and mental matter are different [1C]. For example, the unitary spins of the Einstein-spacetime components on a torus/electric-charge are perpendicular to surface of the torus whereas the unitary spins of the Einstein-spacetime components in the loops the thoughts consist of are tangent to the loops. It causes that the mental matter is flexible (the mental solitons are flexible) whereas the physical matter is rigid i.e. the bare particles are rigid [1A], [1C].

## References

- [1] Sylwester Kornowski (2015). *Scale-Symmetric Theory*  
 [1A]: <http://vixra.org/abs/1511.0188> (Particle Physics)  
 [1B]: <http://vixra.org/abs/1511.0223> (Cosmology)  
 [1C]: <http://vixra.org/abs/1511.0284> (Chaos Theory)  
 [1D]: <http://vixra.org/abs/1512.0020> (Reformulated QCD)
- [2] Lotty Ackerman, Matthew R. Buckley, Sean M. Carroll, Marc Kamionkowski (submitted on 28 October 2008). “Dark Matter and Dark Radiation”  
 arXiv:0810.5126 [hep-ph].