Information Field based on Entangled Photon Loops – Hypothesis

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Abstract: The hypothesis suggests a possibility for existence of information field based on loops of entangled photons with different circular polarization connected in complex compound of loops. Such hypothetical loops are predicted to preserve the quantum energy like the photons, while being localized in a closed volume. They could be possibly generated by the molecules of DNA and proteins possessing long chain structures with distributed atomic rings. According to BSM-SG theory the atomic rings in such bio-molecules are able to store energy as rotating quantum states. When properly triggered, the stored energy of many molecules could be emitted as avalanche of closed loop entangled photons that could carry the code sequence of the DNA or protein. The human brain contains an enormous quantity of proteins with atomic rings so it might be a proper environment for generation of complex field of entangled photons connected in loops. Once generated, such field might exist also outside of the brain. The large variety of the loop interconnections theoretically permits to store a significant amount of information in a closed volume of space. Information field of such kind is massless, so it could be considered as non-material.

Keywords: Information field, entangled photons, biofield, bioelectromagnetics, aura, consciousness

It is well known that the photons preserve their quantum energy while propagating in enormous distances. In classical interferometry the interference pattern is explainable by the interference between the wavetrains of the EM waves. From a theoretical point of view the wavetrain of a single photon should have a length much larger than its wavelength. The physical model of a single photon as a quantum electromagnetic wave according to the BSM Supergravitation Unified theory is presented in Chapter 2, §2.10.4. [1,2]. This model preserves all the known feature of the photon defined by the wavelength and the property of the E and H vectors. Additionally the model defines the boundary conditions of a single photon as a feature of the physical vacuum that assures the preservation of the quantum energy of the photon. As a result the photon will be transmitted, reflected or absorbed, while carrying its constant energy. The position of the photon carrying energy $h\nu$ at any moment t from the emitter is described by the momentary position of the vectors E and H propagating with the speed of light and the direction of their rotation. The photon may also have a circular polarization - clockwise or counterclockwise. In a homogeneous medium the photons propagate in a straight direction. In a medium having a spatial gradient of the refractive index they propagate in a curved line. Such example is the propagation of light in a single mode fiber optics with a gradient index of refraction.

Apart of a single photon, the existence of entangled photons is also experimentally proved. Once generated, the entangled photons propagate together, so they cannot be separated. The coherent laser beam contains a large number of entangled photons. They contribute to the speckle pattern observed when illuminating a smooth surface. The speckle pattern is difficult to be removed unless applying a spatial filtering technique based on diffraction through a pinhole.

The entangled photons may exist in two forms: with a serial entanglement of their wavetrains and with a parallel entanglement. Let us consider the first one. This means that

the back end of the wavetrain of the first photon is connected to the front end of the second one. Then a few entangled photons will form a chain.

Now let us consider that a chain of entangled photons with a same circular polarization is generated in a specific way in a medium having a spatial gradient of the refractive index. In such medium we may also assume that some specific way of generation provides the possibility that the front end of the first entangled photon is connected to the back end of the last entangled photon in the chain. Then the emitted loop chain of entangled photons will exhibit very unique features. Such loop after leaving the emitting environments might be localized in a finite space volume, while its quantum energy is preserved even in a homogeneous optical medium. The reason for this is that the photon wavetrain chain will have stability similar like the stability of a single photon traversing a huge distance. In fact the vectors E and H will rotate and propagate with the speed of light but in a curved trajectory of the loop. Since this loop is localized in a closed volume, it could not be detected by any EM detector surrounding this volume. Even a moving detector will not detect such a loop. The detection requires the photon propagated with the speed of light to strike the detector. The existence of such loop means an existence of some kind of information. If one loop is formed of clockwise polarized entangled photons and another from counterclockwise polarized they will always be distinguishable independently of their spatial orientation. If we denote the loop of a clockwise vector rotation with R and a counterclockwise rotation with L, their combination will present two bits of information like 1 and 0. The preservation of constant energy of the entangled photons in such loops means that they should be quite stable. Therefore they may take not circular shape avoiding in such a way some physical obstacles, such as molecules, nanoparticles and dust.

Now let us assume that some specific generating environments are able to generate an entangled photon loop that passes through another entangled photon loop as shown in Fig. 1. According to the above mentioned considerations the connection between these two loops will be stable because both loops are stable. Then this chain of two loops will carry two bits of information. In a non-homogeneous optical medium the loops will not have a circular shape. Fig. 1 illustrates interconnected two loops composed of entangled photons. The two options of the circular polarization are denoted by R and L.
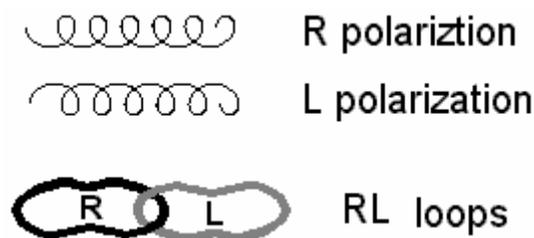
Fig. 1. A chain of two loops of entangled photons with different polarization forming a 2-bit word

Let us consider that the generating environment of such loops is able to generate also interconnected loops. Fig. 2.a, b, c, d. show different possibilities of interconnected loops.
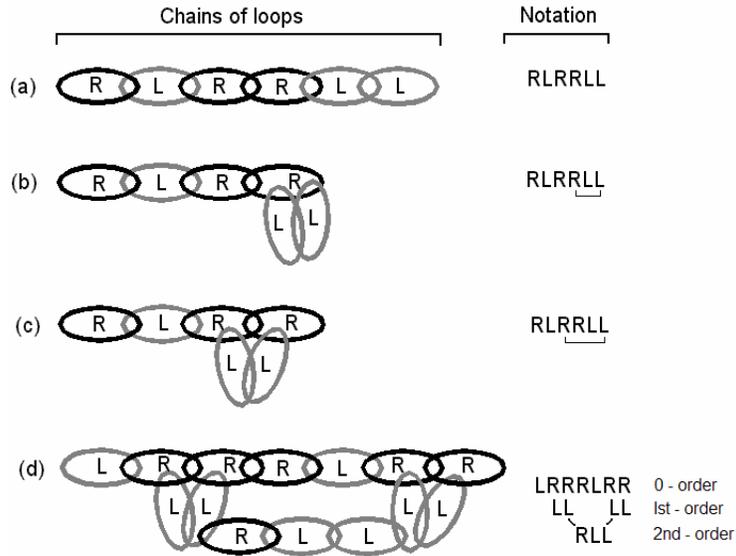
Fig.2. Interconnected chains of loops. (a), (b) and (c) – illustrate different connection; (d) illustrated connections of different order

Following the above considerations additional formations of compound loops are possible. These formations may contain also loop combinations of different orders. Some of the simplest combinations are shown in Fig. 3.
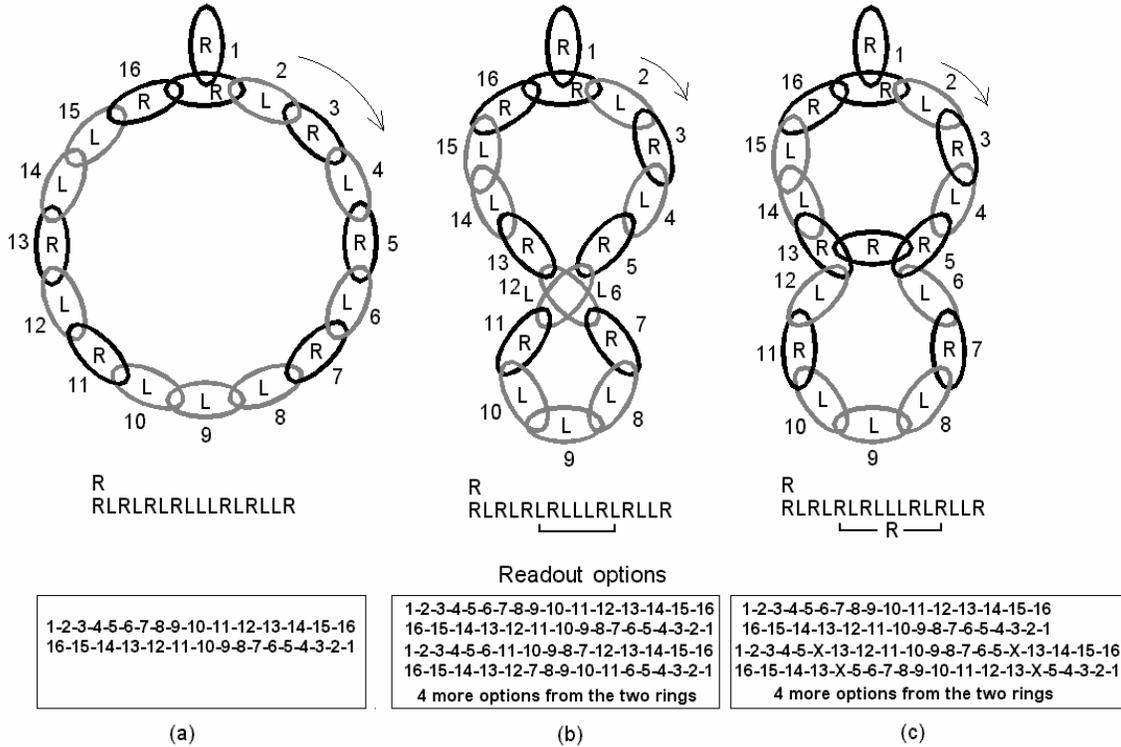
Fig. 3. Example of compound from entangled photon loops. Below each compound the notation for interconnections are shown. The corresponding readout options are shown in the boxes at the bottom: (a) – a simple compound loop where the loop R indicated the beginning of the encoded word; (b) – a compound loop with an internally connection of 0-order; (c) – a compound loop with an internal connection of 1st order.

Fig. 3 shows a compound loop (a), the same compound loop (b) with internal connection of 0-order and a compound loop (c) with internal connection of Ist order. The illustrated compound loops can be considered as 2-dimentional structures. Following the same rules a 3-dimentional structure of compound loops is possible. We also see that the readout options of encoded information increases significantly as a result of simple interconnections. If the wavelengths of the entangled photons are in the IR and microwave range a compound formation of such 3D structures may encode a tremendous amount of information. We may call it an Information Field.

The consideration for the existence and stability of loops of entangled photons was partly supported by the study of the ball lightning. Such natural phenomena are spontaneously created in a specific storm environment. Creation of artificial ball lightning by some experiment is also reported. It is known that the ball lightning contains cold plasma in a specific dynamic state. There is a significant research and publications in Russian language treating this problem theoretically and experimentally. Theoretical models are developed based on observations showing that the ball lightning stability is due to a toroidal shape of magnetic lines holding circulated electrical charges. The toroidal shape is often observed and proved by intensity scanning of some pictures of ball lightnings. Studying of the ball lightning research, the author of this article arrived to the idea that their stability is due to the boundary conditions provided by closed magnetic lines similar like in the boundary conditions model of a looped entangled photons. The stability of the looped entangled photon, however, could be greater because no real electrical charge is enclosed and it could exist in pure physical vacuum. The stability also could be greater due to formation of single mode or a low number multimode magnetic lines, as envisioned by the BSM-SG unified theory.

Using BSM atomic model for theoretical analysis of biomolecules it was predicted an energy storage mechanism in the atomic ring structure in the DNA [3]. The amino acids are the building blocks of the proteins. Some of the aminoacides also contain atomic rings. They are: tryptophane, tyrosine, phenilanine, praline, and histidine. The first two are very abundant in the human brain. The neurons in the human brain are interconnected with complex matrices of connections known as synaptic connections [4]. Each of the 10^{11} (one hundred billion) neurons has on average 7,000 synaptic connections to other neurons. The brain of a three-year-old child has about 10^{15} synapses (1 quadrillion). This number declines with age, stabilizing by adulthood ranging from 10^{14} to 5×10^{14} synapses (100 to 500 trillion) [4]. The average human brain has a volume of 1430 cm^3. If the wavelengths of the entangled photons are in the IR and microwave range such volume could be a home for enormous information capacity. The living cells in the human brain may have micro-volume environment similar as the liquid crystals. It is known that many liquid crystals exhibit circular polarization properties. Then we may speculate that such micro-volume environment with combination of the protein containing atomic rings and involved in the neurons and synaptic connections could generate combined loops of entangled photons. The information field formed by such kind of loops may probably exist also outside of the human brain.

Our hypothesis is supported by some theoretical and experimental research on solitons in proteins and DNA. The soliton is considered as localized formation with more complex frequency spectrum generated in environment with non-linear Kerr effect [5]. Currently the definition of soliton is quite broad, but our definition of field based on loops of entangled photons matches some experimental results in which the term soliton is used [6,7]. Robert N. Boyed in his article Fabrics of Consciousness [8] cites the Andrej Detela definition of biofield:

"It is assumed that the biofield is a three-dimensional web woven of vibrating electric and magnetic fields. Lines of these fields are like tiny threads in a three-dimensional textile. These electromagnetic fields display very complex internal organization. We find a peculiar variety of chiral solutions to Maxwell equations, which do not dissipate energy and lead to stable field structures. This is the so-called informational basis of the biofield. The simplest structures of these kind are toroidal knots. When electric charge with very light mass enters the informational biofield, non-linear phenomena take place. These non-linear phenomena are based upon bifurcations in internal electric currents and upon resonance effects between currents and fields. We find an evolution of the field structure. This evolution is a syntropic process, oriented in time. There are several obvious conditions for syntropic behavior, and one of them is [found to be a] quantum coherence in the states of electric charge.

A number of features in Anrej Defela definition of biofield match our definition of information field. The envisioned possibility that it might exist outside of the human brain matches also some theoretical considerations of the Holonomic Brain Theory of Dr. Karl Pribram [9].

Someone may raise a question: why this hypothetical information field could not be detected by advanced EM detectors? The answer is that the classical EM receivers are designed for detection of a not localized photons and EM waves. They are not suitable for detection of looped localized photons. The encephalographs, for example, may not detect the primary information field but only some secondary effect with very low time resolution. However, if the information field is not fully localized inside the human brain but partly outside of it, then it could be possibly detected by some indirect methods. Let us analyze what could be the effect of the information field on the air molecules. In a volume without information field, the air molecules perform a Brownian motion that depends on temperature, pressure and humidity. At fixed value of these parameters the electronic and vibrational-rotation spectra of the air molecules are defined by the probability distribution of the excited state population. If the same volume is occupied by information field containing a complex matrix of entangled photon loops, the probability of the excited state population might be slightly altered. This may lead to some change of the vibrational-rotation spectra of the air molecules in the IR range, for example. It may cause also some phosphorescence. In some proper value of the relative humidity this effect may also influence the condensation of the water molecules. All these secondary effects could be detected by some camera sensitive in the IR spectral range or measuring the scattering light in proper selected spectral range. Some experiments in this field are known as aura detection methods. Another method, known as Kirlian effect, is based on the influence of the biological information field on the high voltage discharge. All these methods for aura or biological field detection show some consistent results but no physical explanation has been suggested so far.

In some conditions the information field between different human brains may interfere and this could be behind phenomena known as telepathy and remote viewing.

Summary:
The hypothesis of information field suggests the idea for existing of organized information field based on entangled photon loops. The combination of such hypothetical loops with interconnections of different order may form a complex 3D matrix. If assuming that the wavelengths of the entangled photons are in the IR and microwave range, the information field encoded in such matrix might have a huge capacity in a compact space volume. It is suggested that the generation of such information field could be provided by the brain. An idea is expressed that the information field once generated may exist also outside of the

human brain. Since this type of information field does not require a material substance, it may exist also in the deep space environment, known as a physical vacuum.

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