Sending and receiving the information of decoherence entanglement.

Alexander B. Ilin

ilinab@list.ru

Information about the concrete value of the characteristic is not transferred from object to object but transmitted simultaneously by the third object to both tangled objects. The length of the third object equals to the distance between the two objects. Fronts of the electromagnetic waves which spread in the space of quanta dissemination with the direction of the spread perpendicular to the quanta dissemination satisfy the requirements of the third object. Introduction of the alternating asymmetry in terms of the waves' fronts impact on the spin / polarization of the quanta during their registration allows you to transfer information of decoherence entanglement. Additional shielding element introduced in the existing experimental devices allows to observe the influence of the third object and send / receive information through the manipulation of this element.

The current state of the problem of nonlocal correlation of quanta (researches of EPR, Bohm, Bell, Aspect and others) is formulated as "intransferability of information" (B. Greene) within the act of measuring spin / polarization of one of the quanta causing instantaneous change toward the opposite direction of spin / polarization of the other quantum tangled with it. Moreover, a causal link can be established only under the condition that "something faster than light" in force between quanta.

The resolution of the contradiction is possible if we assume that the information about the concrete value of the characteristic is not transferred from object to object but transmitted by the third object which length equals distance between objects.

Consider (Fig. 1-3) behavior of the two traditionally linked model macroobjects typically illustrating properties of entanglement, in particular, the directions of rotation. The objects can be located at a fixed distance between them or can fly apart at a considerable distance.

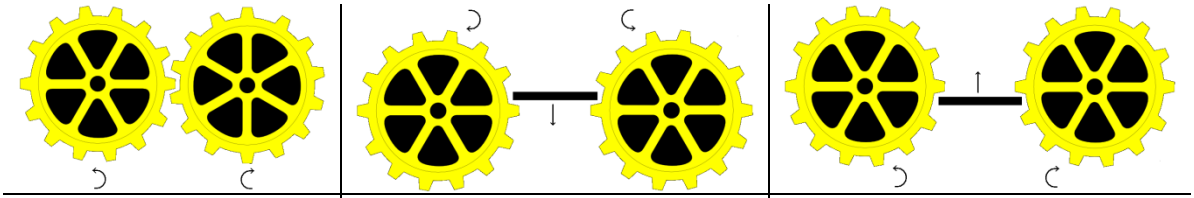


Fig. 1 Fig.2 Fig.3

In the initial moment of the linkage (Fig. 1) the objects have linked spins which directions are opposite to each other and able to change synchronically.

When some distance appear between the objects (Fig. 2) the third object moves in from above and links to the objects for a short time. While moving downward the third object changes directions of the spins to opposite. After that change the third object moves in to the upward direction (Fig.3) - at that time directions of the spins change. Alternate movement of the third object provide initial entanglement of the spins of the linked objects. The velocity of the synchronization is more than velocity of light, moreover, tends to infinity with any distance between the objects because the third object influences both objects and doesn't move in pursuit of them.

The set of "third objects" with continuously increasing length is needed for the spin-synchronization of continuously forward moving of linked objects.

Macromodel of two gears on the desk with measuring rulers of different lengths, but "the ruler will never reach infinity".

In the capacity of the ruler may be something that initially exists in the space along all its length and has necessary range of the longitude and able to interact with quanta possessing spin / polarization in the open vacuum, air atmosphere and fiber-optic light guide. Electromagnetic waves in the form of optical or radio emission satisfy such requirements - for instance, cosmic microwave background radiation, optical or radio emission from stars, pulsars, other astronomical objects, emission of light-fibers. Gravitational waves and quantum fluctuations in the physical vacuum aren't considered in this article because they require a separate study of the effects emerging on micro-and macro-levels.

We can describe scheme of spin / polarization synchronization (Fig. 4) with the interaction of electromagnetic waves with flying away quanta as follows:

- an electromagnetic waves' fronts are parallel to the axis of scattering of quanta;
- the direction of fronts expansion is perpendicular the axis of scattering of quanta and directed to this axis;
- the density of electromagnetic radiation in space is that at each moment there is a front which has got nearer to the axis at the distance of interaction with quanta;
- oncoming front, moving on, simultaneously influences the parameters of quanta;
- in the next moment, the front oncoming from the opposite direction again simultaneously changes parameters on the opposite and continues its motion;
- the alternation of the impacts of fronts oncoming from opposite directions permanently, in every moment, fixes contrary spins values, but on average a particular value is not defined and appears only at the time of measurement.

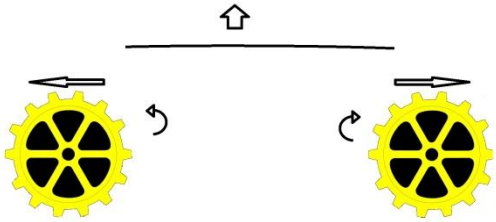


Fig.4-3

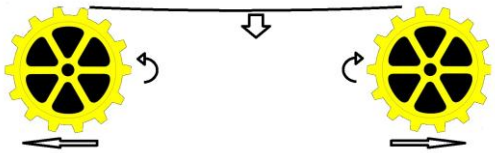


Fig.4-4

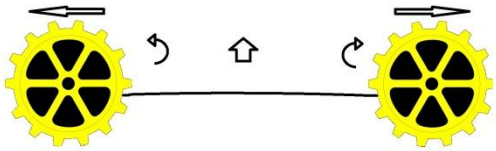


Fig.4-2

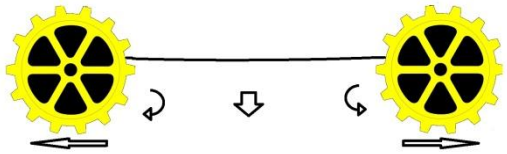


Fig.4-5

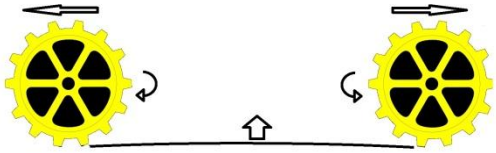


Fig.4-1

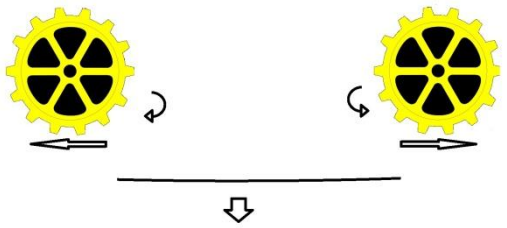


Fig.4-6

Fig.4 The up coming front is being changed with the down coming front.

Consider the traditional scheme (Fig. 5) of the measurement of entanglement with emerging of the third object.

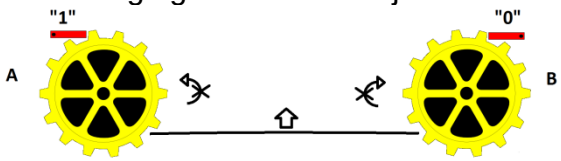
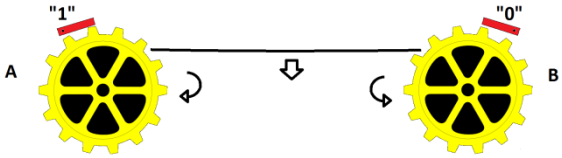


Fig. 5. At the moment of upcoming front influence spins / polarizations of quanta correspond to the setting of registrars and the "ratchet" stops "rotation". At the point A registration of value "1" takes place, at the point "B" registration of value "0" takes place.



At the moment of down coming front influence spins / polarizations of quanta don't correspond to the setting of registrars and the "ratchet" doesn't stop "rotation". The registration is possible in the next moment by the contact with another lower front.

The logic of the registration doesn't alter fundamentally if we change setting at points A and B on the opposite (the "ratchets" located below) or the cross ("1" up/down, "0" down/up), because in general the source of tangled quanta generates a flow of "1" and "0" to left/right directions with probability of 50/50.

Symmetry may be broken either by creation of the source of quanta generating "to the left" only "1" and "to the right" only "0", or creation outside of

the source such conditions when, for instance, points A reach and are registered only "1" and at the point B afterwards are registered only "0". Than the ingress at the point B of excessive flow "0" in comparison with a background noise and the appearance of excessive flow "1" will mean that in the source or somewhere on the way to the point A the spin/polarization of quantum A has been changed deliberately.

The source of entangled quanta can be astronomical object, that's why lets consider the possibility of changing the condition not within the source but in a proximity of the point A, in one of the elements of the registering device.

Lets introduce the clipper C at the point A for time period ΔT (Fig. 6).

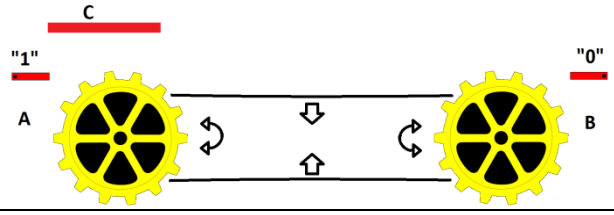
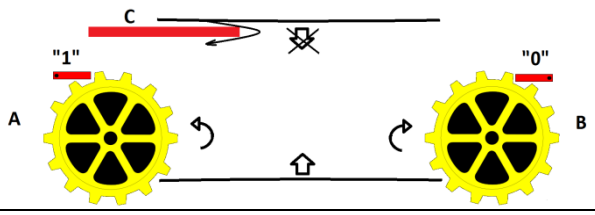


Fig. 6. Quantum A in the beginning of the zone of the clipper work and synchronizing effect of fronts on the linkage of spins / polarization is preserved.



Quantum A entered in the zone of the clipper work and upward front doesn't have synchronizing effect on the quantum A.

As a result of the clipper work only lower front is able to affect on both quanta simultaneously, and to the moment of registration in the point A quanta A and B are in the state of “1" and "0" respectively.

Upper front going round the clipper is able to overtake the quantum A, but unable to influence it. So, during the time period ΔT at the point A excessive flow "1" is registered, at the point B - "0". By moving the clipper down, for instance, for a time period 3ΔT we will create excessive flow "0" at the point A and excessive flow "1" at the point B.

By the manipulation of the clipper position up/down at the point A during subsequent naturally alternating N intervals of time ΔT and 3ΔT we simultaneously transfer information about such a manipulation to the point B. At the same time, if the side B uses its own clipper and manipulates it, the side B with its "text" written by the "alphabet" ΔT /3ΔT confirms the action of the link.

Approximate minutes of the experiment might look like this:

A point without absorber C, point B without absorber C.

The average at A recorded an equal number of left and right spins (conventional direction) and the signal is 0. On average, the point B is also registered in equal amounts, but the right and left spin and also the signal is 0. No information is transmitted.

We introduce a point A absorber C top.

Absorber properties are such that the photon came from the top and reached it as a collapse of the wave front at the point of contact with the absorber that is absorbed from the top of the absorber and the quanta (electron) at point A has no effect. At point B is also missing this particular upper absorbed photon. For simplicity, we can introduce a long absorber closing, and the point A and point B on the upper photons - we now only important logic subsequent registration.

Absorber above at A top off all the photons at points A and B. Then on quanta (electrons) will have effects only lower photons. So after the introduction of the absorber at the top and to the registration of a photon detector at a lower photon will

"tighten" just to the left, and slice at point just to the right. To A and B quanta of course come with arbitrary spins, although correlated. But the asymmetry of the direction of arrival of photons only from below, makes photons have only left spin at point A, and only the right to point B.

At point A, may come and spin left and right, but the lower left photon retains the left and from the right to make a left.

At point B may come (in a correlated opposite meaning) and right and left spin, but the lower photon retains the right right and from the left is doing right.

An effect of instantaneous transmission of information takes place because a signal moves not from quantum to quantum and the third object already contacting with registering devices affects simultaneously on the quanta in the points of registration.

The practical way for the experimental verification of the third object can be in insertion of the clipper in existing devices which can rotate about the axis of a polarizer or a polarizer can rotate about the clipper and asymmetrically change the conditions of registration of spin / polarization.