

## On the quantum memory

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We have several direct and many indirect experimental proofs of strong inequality of forward and reversed processes in quantum physics [1]. This inequality is real physical base of nonlinear optics. Such inequality also directly requires the existence of the memory of the quantum system about its initial state. There is an interesting and important question: what is the carrier of this memory and where is it stored?

It is difficult to believe that a lot of information can be written on an atom or a photon flying in a vacuum. However, today there is a general consensus that vacuum is not empty. Quantum fields, dark matter or dark energy exist here [2, 3]. Such vacuum is much better suited for recording memory. It can be assumed that the memory of a quantum system (as a physical equivalent of entropy) is recorded and stored in a vacuum. This hypothesis suggests an intriguing consequence.

Biologists today believe that our memory is stored in the brain, in neurons. However, the brain and neurons can be only the tool (as a grand piano) for extraction and reading the memory. But the memory itself (like a sheet music) is recorded and stored in the physical environment. In this case we have a simple and natural explanation of the phenomenon of psychics, extra senses. There are people who have a special, supersensitive brain. It allows them not only to extract their own memories from the environment, but also to receive information about images and events which have no relation to them. Moreover, they can extract this information partly in quite non local way.

When we remember an event, its image arises almost immediately. We don't touch the events in turn. Our consciousness (as a pianist) controls the selection of memories. When we sleep, the consciousness is disconnected and the "piano" begins to "play" by itself. It is like a car without a driver – it moves out of the way and goes at random over bumps. At the same time, images and events appear in the brain, which were not in reality. When we wake up, consciousness restores control of the brain, and we usually easily distinguish between real memories and where the dream is.

So, today we do not have the opportunity to experimentally study the dark matter. We have limited and questionable opportunities for studying the physical mechanism of brain functioning and the nature of our memory. However, we have an excellent opportunity of experimental studying of some elements of quantum memory by measurement of the difference between the differential cross sections of forward, reversed and partially reversed quantum transitions. Unfortunately, our scientific community ignores this task. It is quite simple experiments, but till now there is no any directed experiment of this kind [1]. But we believe that sooner or later the situation here will move from the dead point.

1. V.A. Kuz'menko, "On the experimental proofs of strong time reversal noninvariance in nonlinear optics", e-print, viXra:1712.0562
2. E. Santos, "Dark matter as an effect of the quantum vacuum", e-print, arXiv:1711.01926.
3. V. Burdyuzha, "The Dark Components of the Universe Are Slowly Clarified", e-print, arXiv:1705.08226.