Results of the Baikal Experiment on Observations of Macroscopic Nonlocal Correlations in Reverse Time[1]

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Although the general theory macroscopic quantum entanglement of is still in its infancy, consideration of the matter in the framework of action-at-a distance electrodynamics predicts for the random dissipative processes observability of the advanced nonlocal correlations (time reversal causality). These correlations were really revealed in our previous experiments with some large-scale heliogeophysical processes as the source ones and the lab detectors as the probe ones. Recently a new experiment has been performing on the base of Baikal Deep Water Neutrino Observatory. The thick water layer is an excellent shield against any local impacts on the detectors. The first annual series 2012/2013 has demonstrated that detector signals respond to the heliogeophysical (external) processes and causal connection of the signals directed downwards: from the Earth surface to the Baikal floor. But this nonlocal connection proved to be in reverse time. In addition advanced nonlocal correlation of the detector signal with the regional source-process: the random component of hydrological activity in the upper layer was revealed and the possibility of its forecast on nonlocal correlations was demonstrated. But the strongest macroscopic nonlocal correlations are observed at extremely low frequencies, that is at periods of several months. Therefore the above results should be verified in a longer experiment. We verify them by data of the second annual series 2013/2014 of the Baikal experiment. All the results have been confirmed, although some quantitative parameters of correlations and time reversal causal links turned out different due to nonstationarity of the source-processes. A new result is displaying of the advanced response of nonlocal correlation detector to the earthquake. This opens up the prospect of the earthquake forecast on the new physical principle, although further confirmation in the next events is certainly needed. The continuation of the Baikal experiment with expanded program is burning.

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