EEG-Objectivization of Human Distant Influence on Human Subjects

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Summary

In the experiments, a subject was located in a dark, sound-proof, electrically-shielded chamber, and his electroencephalogram (EEG) was recorded. Two standard electrodes were placed in positions C_3, C_4. The reference electrode was placed on the mastoid projection. The upper limit of the EEG frequency range was 50 Hz, with a time constant of 0.1 sec. The EEG signal was fed into a computer for on-line processing.

Between 4 and 6 trials per day were conducted, some of them being control trials and some "distant influence" trials. For each given trial, casting lots determined whether it was a test or control. The direction of influence (activation or inhibition of the subject's alpha rhythm) was determined by the "sender" (the person attempting the "distant influence"). The subject was blind as to whether the given trial was a test or control. EEG of the subject was recorded for 5 seconds which was followed by a 10 second interval to allow for the computation of the Fourier transformations of the signal. The results were shown graphically on the display screen. During each trial, between 20 and 40 of these time periods were recorded, the length of the trial being specified in advance.

There were experiments conducted both at short distances (when the "sender" was from 5 to 100 meters from the subject) and at longer distances, from 1 to 10 kilometers. The tests were conducted from July 1, 1992 to November 25, 1992. The tests at short distances were carried out from July 30, 1992 to September 7, 1992. About 150 short-distance tests were conducted, with 6 subjects and 10 "senders." Two subjects with a stable alpha rhythm were selected. The data obtained from the "senders," who worked only for one or two days (performing 6 to 8 trials each), were excluded from the analysis, since it required a longer time (usually from 2 to 6 days) for each "sender" to develop his "strategy" of "distant influence." With 4 senders and two subjects ("receivers") 109 trials were conducted: 53 control trials and 56 test trials. From these, 21 test trials had the sender attempting "activation" of the subject (thereby intending to decrease the subject's alpha power) and in test 21 trials attempting "inhibition" (thereby intending to increase the subject's alpha power); in the rest of the test trials, senders did not specify the direction of influence. Thus, the main analysis was conducted with the trials in which the direction of influence was specified, in the range of alpha (8-13 Hz). The data for beta and theta were also recorded; they later turned out to be non-significant.

For each test (5 min. duration), the following dimensionsless parameters were calculated:

$$A_{ti} = I_{ti}/I_{pi}; \quad A_{ci} = I_{ci}/I_{pi}$$

where I_{ti} is the mean value of the EEG power spectrum during the epoch of the sender's influence; I_{pi} is the mean value of the EEG power during the pre-stimulus epoch (baseline); A_{ti} characterizes the magnitute of sender's influence, and A_{ci} characterizes changes in the EEG power spectra during control periods (everything is set-up the same way as the test period but no sender attempts "distant influence"). This approach to the analysis made it possible to compare the results obtained during different days and to minimize the error, making the error in the control no greater than 3%. A_{ai} and A_{ii} were calculated signifying mean values for activation and inhibition trials, respectively.

The data are presented below:

Short-distance tests, changes in alpha

	control	inhibition	activation	influence
Number of tests	53	21	21	56
Mean	0.869774	1.09624	0.734714	0.874214
Variance	0.0650086	0.0798939	0.0621056	0.102312
Mean square diviation	0.254968	0.282655	0.24921	0.319862
MSQ of the mean	0.0350225	0.0616804	0.0543821	0.0427433
Lower quartile	0.686	0.954	0.544	0.623
Upper quartile	0.979	1.331	0.913	1.1045
Interquartile range	0.293	0.377	0.369	0.4815

The level of significance for changes of alpha:

	The left hemisphere	The right hemisphere
Activation	$p < 0.019$	$p < 0.004$
Inhibition	$p < 0.067$	$p < 0.012$

The results are also presented in Figs. 6-10.

About 140 long-distance trial were performed from September 10, 1992 to November 25, 1992 with the same two subjects. The duration of the trial was 2.5 minutes. The senders, working for only one or two days, were excluded from the analysis; only the trials with two longer-working senders were included. There were 105 trials subjected to analysis: 53 were control trials and 52 test trials. However, the senders did not specify which trials were activation and which were inhibition; thus, the analysis could

not be performed the same way as above. However, the changes in variance and interquartile ranges indicated the non-uniformity of the samples (see Fig. 13).

There is a more detailed discussion of the analysis of the results in the text, which will be included in a complete translation of the paper.

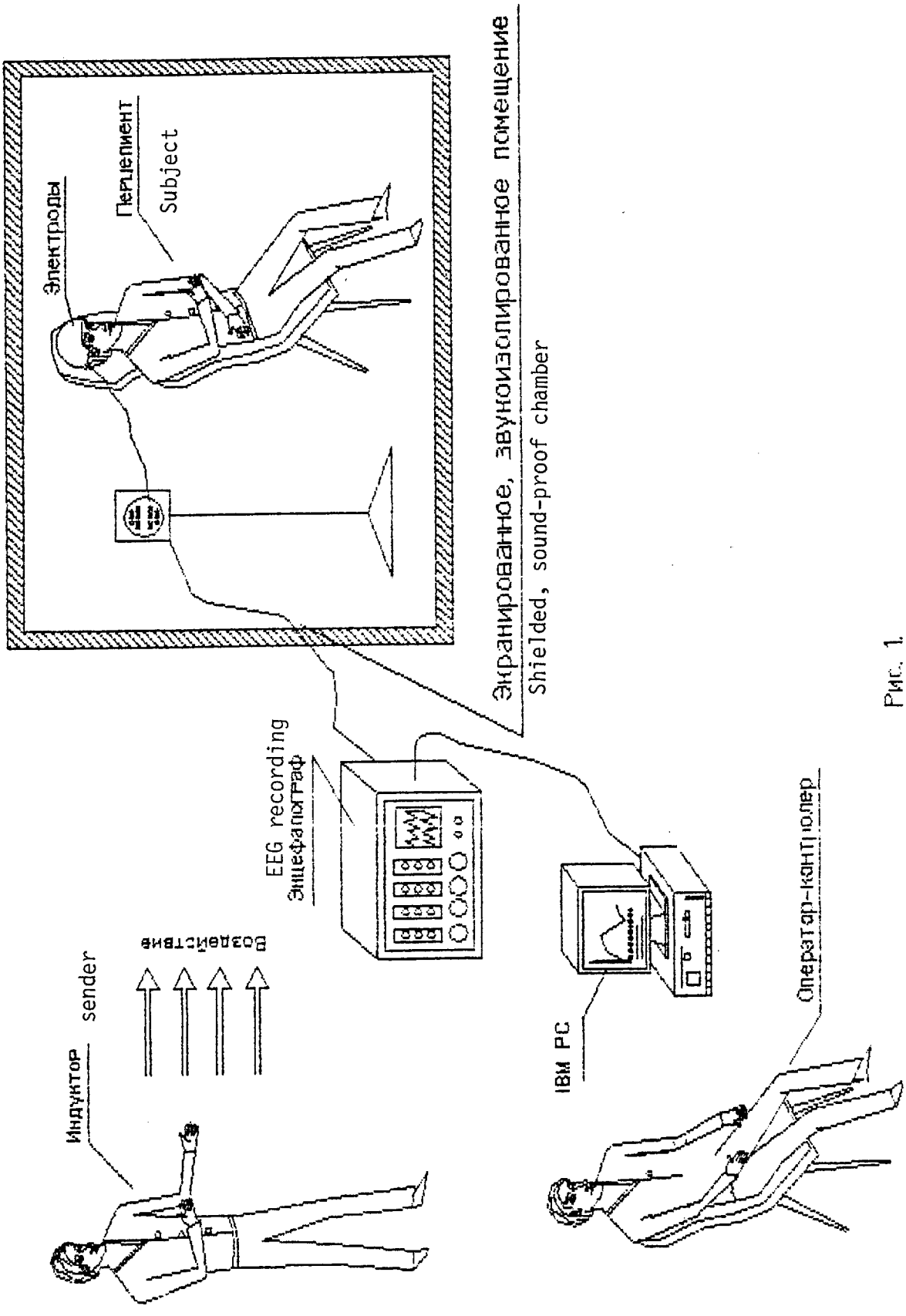
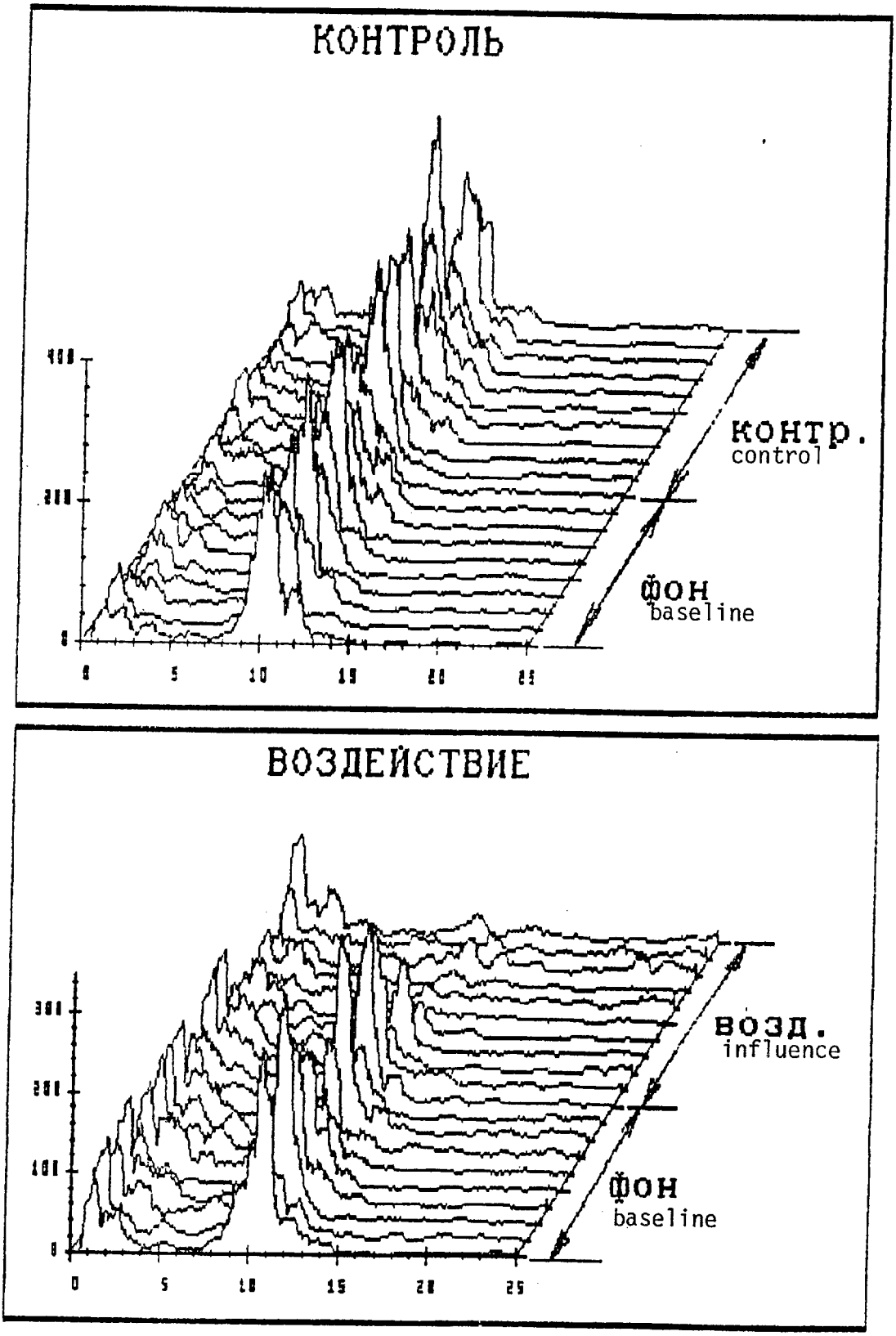


Рис. 1



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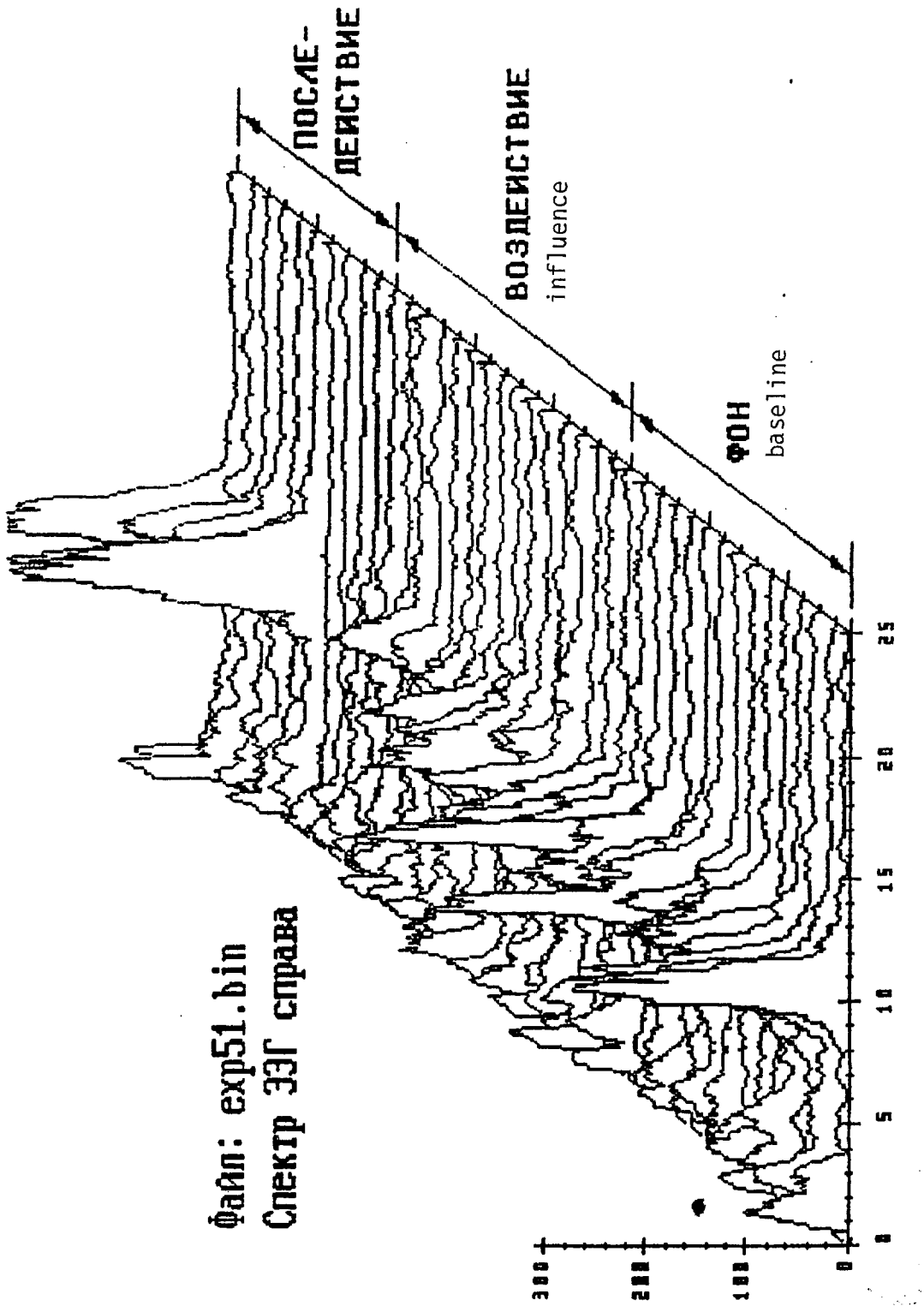

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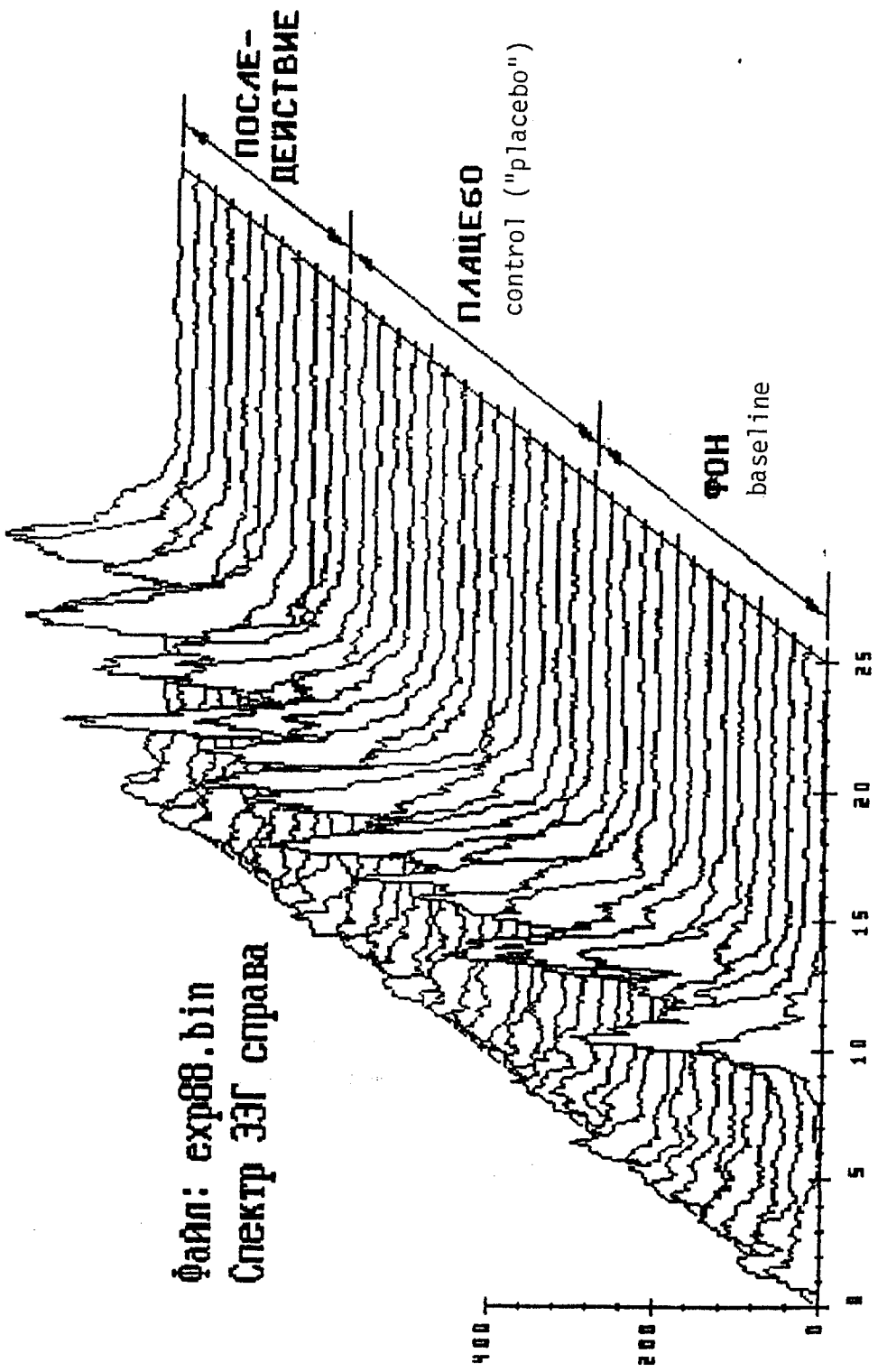
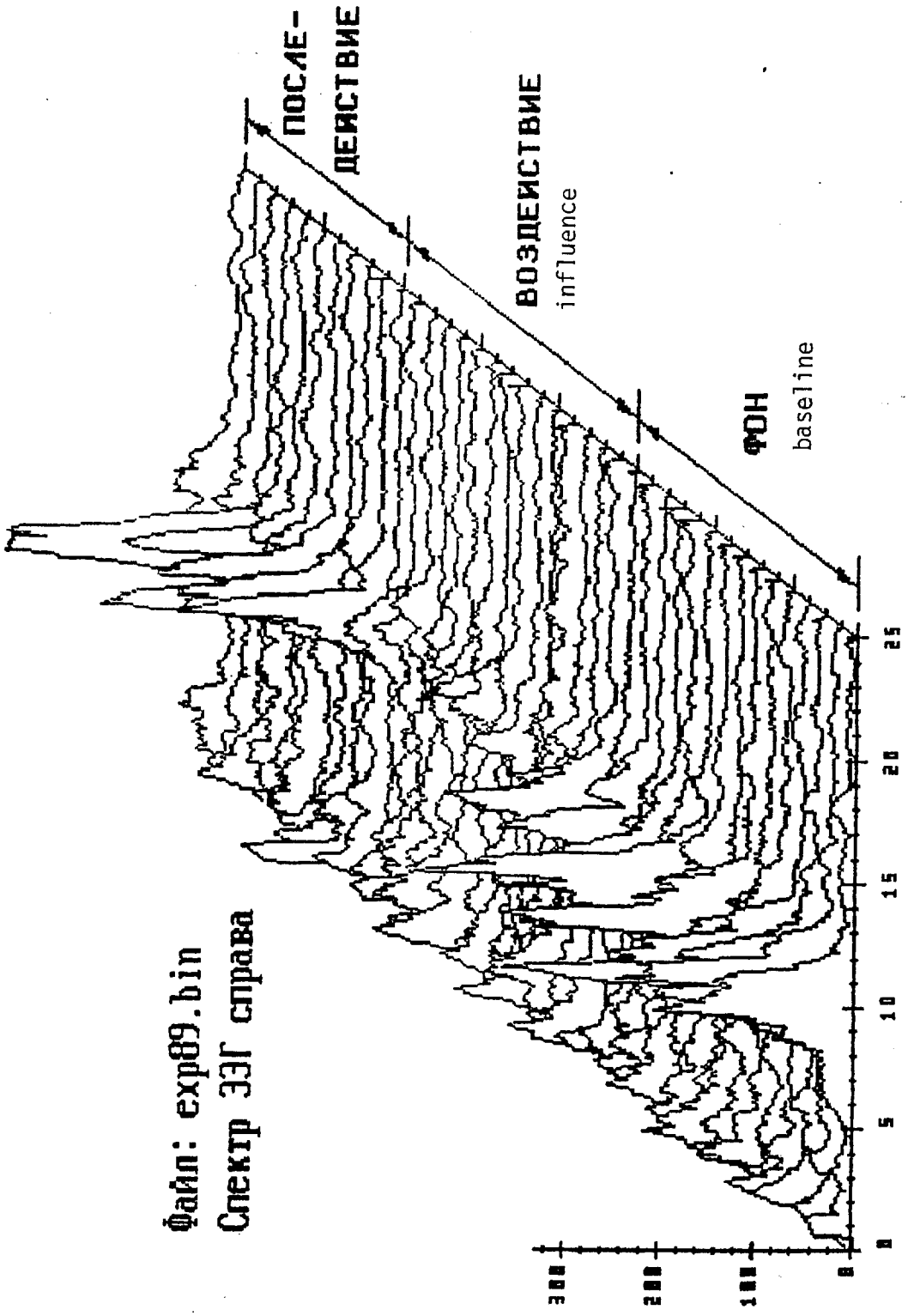


Фиг. 6.



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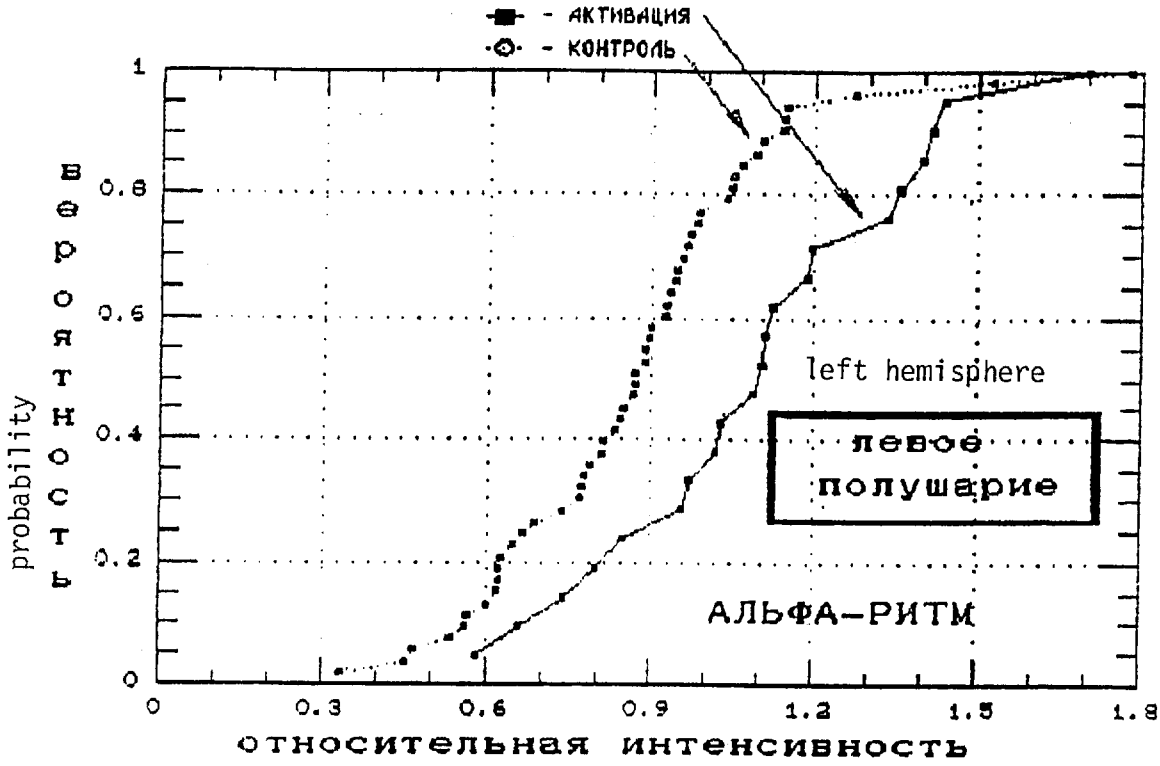

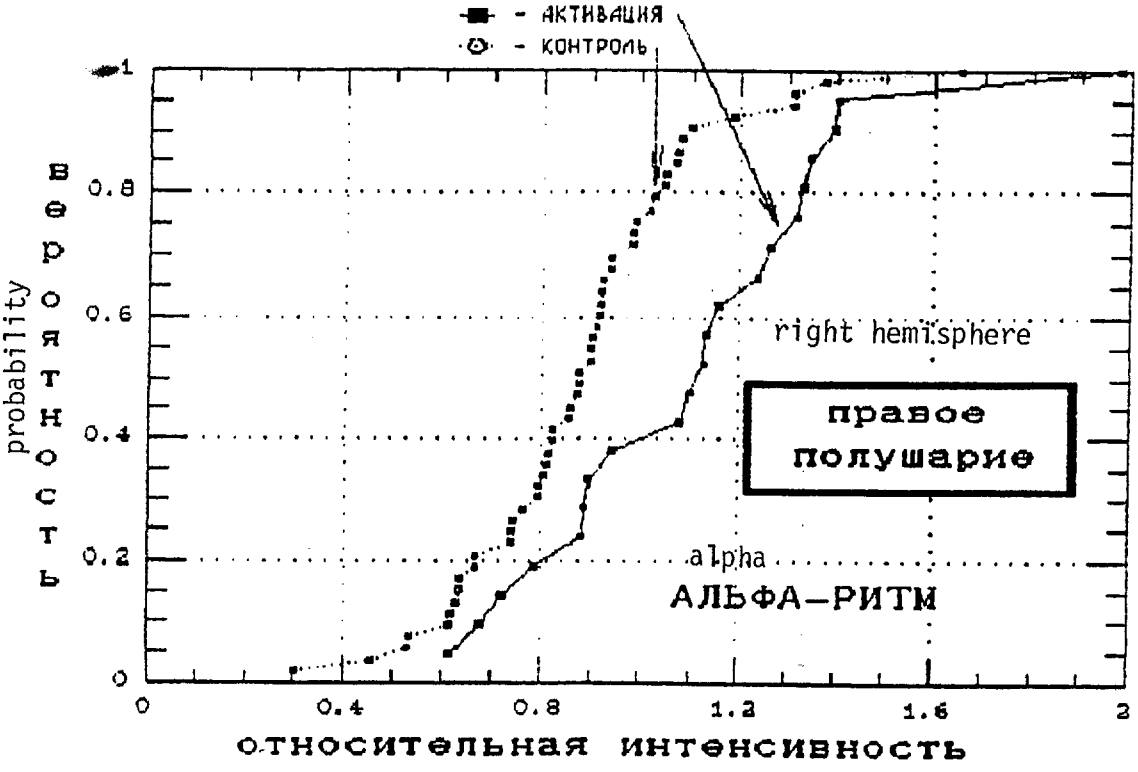

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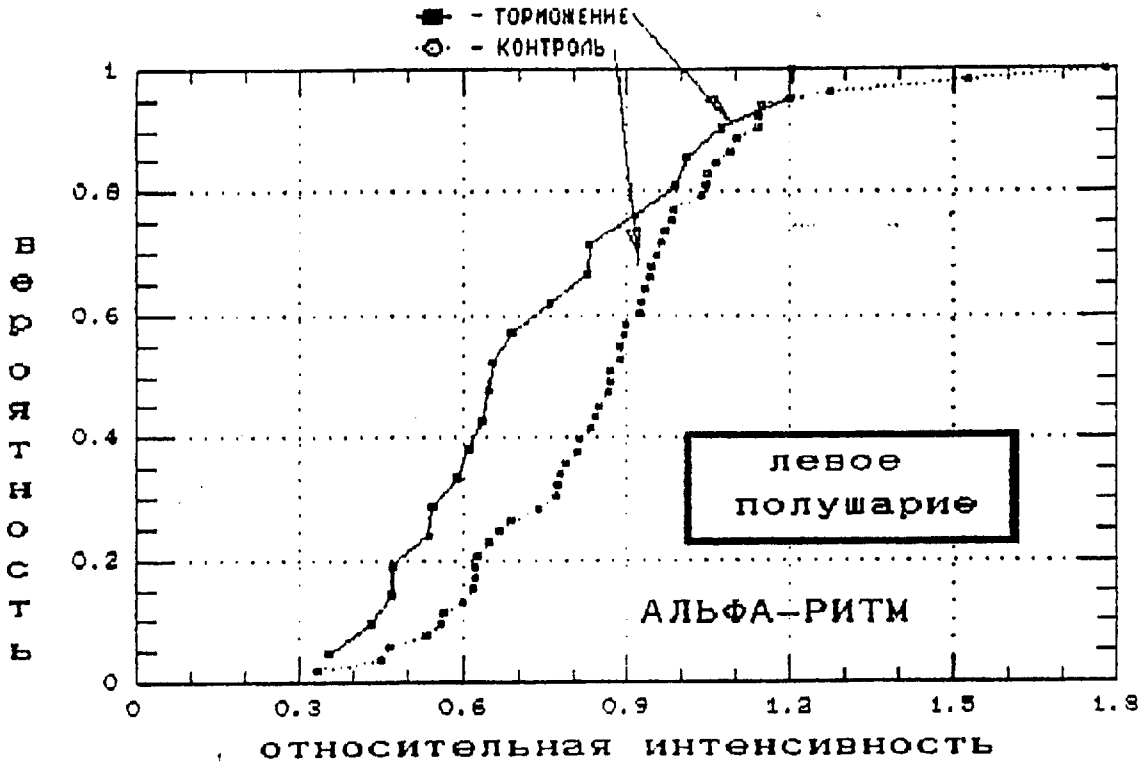

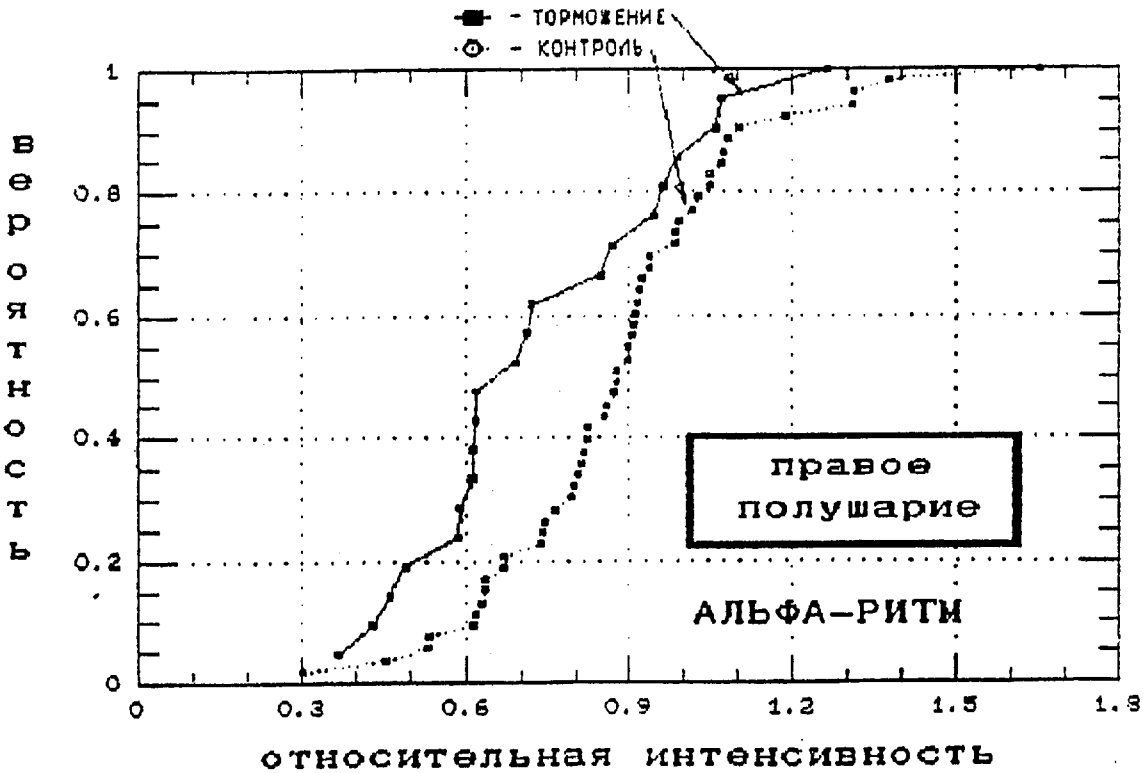

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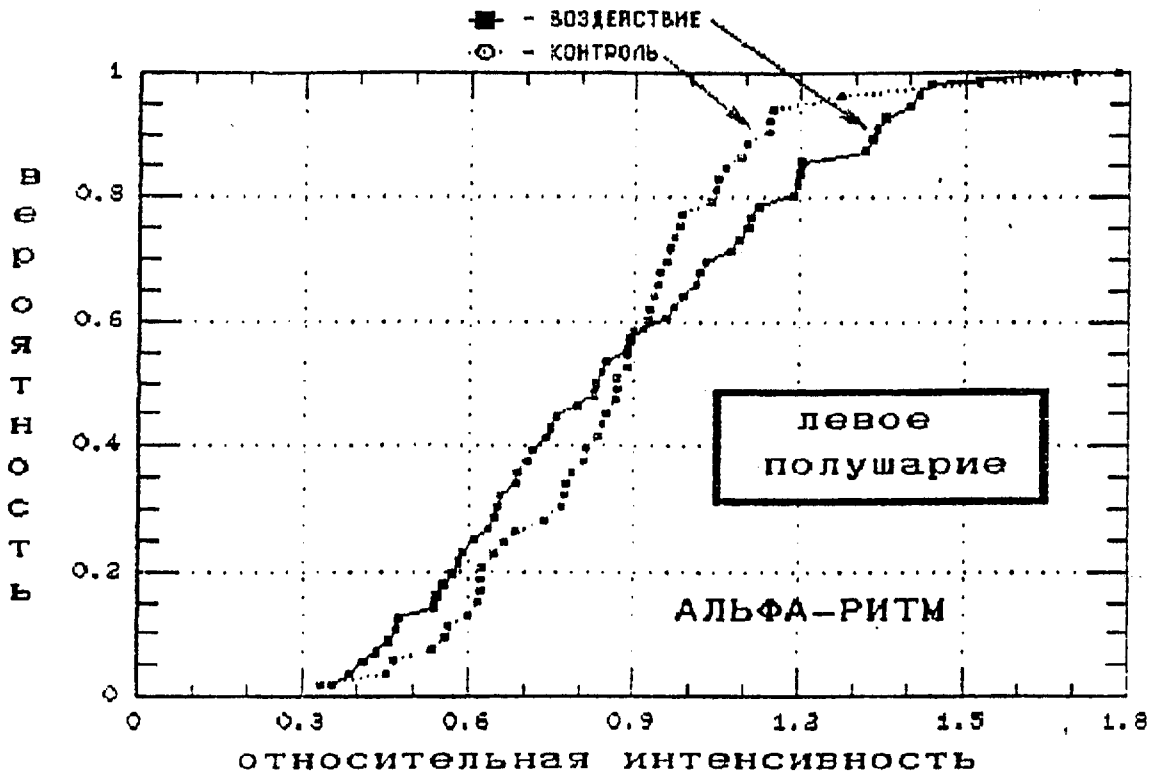

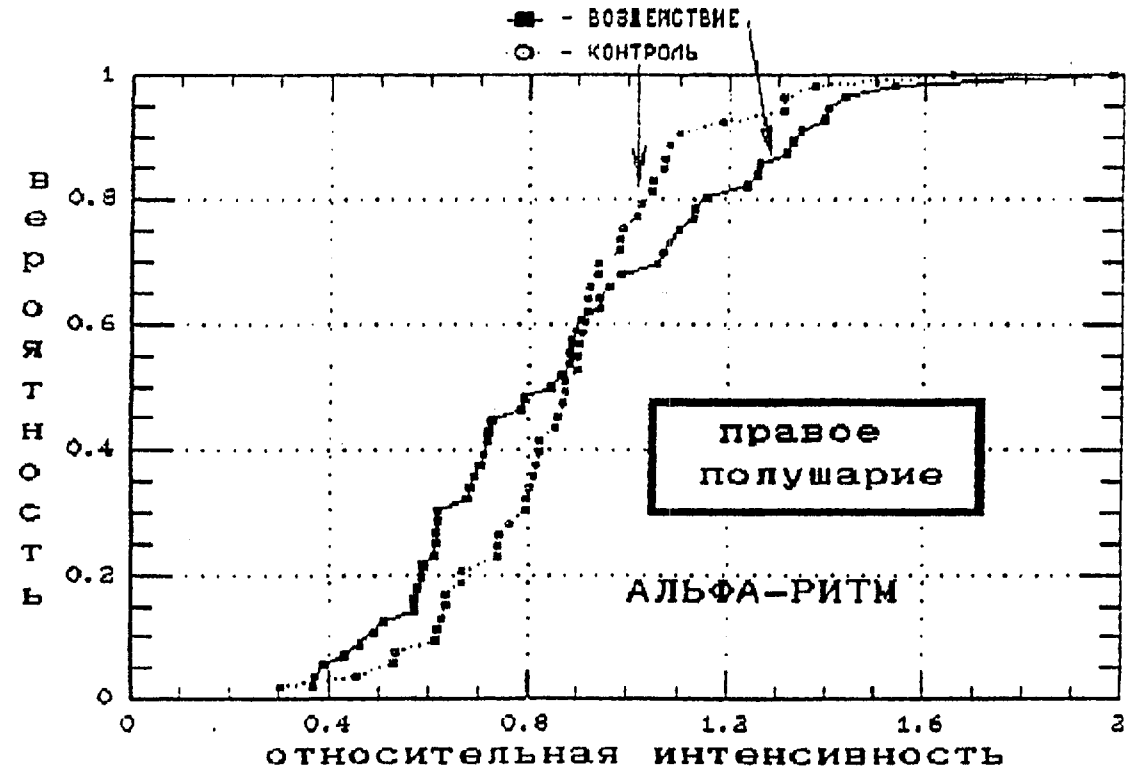

Рис. 10.