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The problem of signal detection with a noisy background is one of the most important in statistical engineering when attempting to process ultrasonic signals. Many solution approaches to problem are known. They are based on testing a simple statistical hypothesis. Specifically, they are based on the decision function which is represented by comparing the relationship to any other value. This value is chosen from quality criterions (Bayes criterion etc.). Such criterion we shall name probability, since in their basis there are the error probabilities of the first and second kind.

In probability theory and mathematical statistics of random variables it is possible to describe quantitatively in two ways: either with the implementation probability determination of this or that event, or with the help of rougher quantitative measure of random variable numerical characteristics - such as expectation, dispersion etc. Criterions, based on decision function moments usage, shall name the moment a *s* criterions. Algorithms construction for signal detection with a background Non-Gaussian noise on probability criterions causes some difficulties. Consideration of other methods for solving of this problem is of great interest. The new method to construct decisive rules, based on log likelihood ratios in stochastic polynomials is offered in this work. The optimum coefficient of such decisive rules are obtained by new criterion asymptotic normality with the help of moment and random variables cumulant description.

Obtaining optimum coefficients a decisive rule error probability decisive rules is shown, the extracted information quantity concept about the difference between hypotheses is entered. The given method gives the opportunity to receive better characteristics for of ultrasonic signal algorithms development detection with a Non-Gausisan noise background.

Key words – stochastic polynomials, moments, kumulants, ultrasonic signal detection, Non-Gaussian noise.