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METHODOLOGICAL APPROACHES TO ASSESSMENT OF TIMING DATA DURING RESPONSE AND RECOVERY OF AGRICULTURAL MACHINERY

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This work does not claim to originality. It was created under the influence of monograph by Academic Sydorchuk O. V.

The variance characterizes the speed of decrease of probability of error with increasing magnitude of this error.

To estimate confidence intervals of magnitude – coefficient Student.

Along with the General improvement of the quality of laboratory works it is necessary to pay attention to the culture of processing of experimental material. Currently, only the statistical processing of the measurement results can no longer be considered sufficient. Necessary to analyze the operation as a whole and the individual instruments, or considering all possible systematic errors. It is also necessary to pay attention to the common culture of the experimental work, and in particular, on the culture of reporting. Completely, it is necessary to note wide use of a great number of programs for processing of experimental data.

Probability theory, mathematical statistics, measuring instruments and Metrology elements, which form the basis of mathematical processing of measurement results.

Fluctuat – often there are extreme values.

Approximately a normal distribution has a random size, which represents the result of simultaneous impact of a large number of random factors, each of which in its influence does not exceed the visible image of the other.

The Chebyshev Inequality. When an unknown type of probability density function, however, failure secondary mathematical expectation and standard deviation.

The above hypothesis will be performed at the significance level of the criterion in percentage of cases. If the level of the test is close to unity, then there will be almost a certainty event.

1. The opportunity to observe the main phenomena. observation helps to cultivate physical intuition.

2. Acquaintance with the basic appliances.

3. You need to be able to pick up the necessary equipment and assemble the setup to conduct measurements with the required accuracy to take into account the influence of different types of errors and to assess the accuracy of the final result, to draw the right conclusions from the experiment. Recording the results of measurements and calculations reproduced the course and logic of work and was neat and concise.

If the analysis of systematic errors has not been conducted, then this should be noted in the conclusions of the report on the experiment.

Branch of mathematical statistics – design of experiments.

All the matter is that mathematical statistics or, more precisely, its mathematical foundations develop, as a rule, mathematicians who do not know the experiment. Their logic is often little understood okazyvajutsja the experimenter. Complex, fairly modern mathematical apparatus, which makes the task of statistics is so attractive to mathematicians, often only deter experimenters. From the perspective of experimenter often the most important and interesting okazhutsya those aspects of mathematical statistics which from the perspective of mathematics seem to be quite minor. This is because the mathematics involved in the development of mathematical statistics, while there are very little taken aback by the possibility of practical application of their ideas and methods.

The purpose of our research is to look through the eyes of the experimenter on the development of mathematical statistics, and especially on the development work in the planning of the experiment. It seems to us that the experimenter is important to know that a fundamentally new that made mathematical statistics in the methodology, or if you want, even in the philosophy of experiment. From the perspective of the experimenter we want zaglyanuli logical development of ideas of mathematical statistics.

One of the most remarkable phenomena, which is observed today in science, is the desire to move from the study of well-organized systems (where it was possible to highlight the phenomena or processes of a physical nature in their reliance on very small number of variables and as a result of the study – well interpretation functional relationship, which is attributed to the role of some absolute laws), poorly organized – diffusion systems, or Nullam and Simon, go to learning tasks with poor structure. The diffusion system shall take into account the effect of quite a few dissimilar factors that are different in nature but closely connected processes. Therefore every technological process can be seen as an example of such a chaotic system.

The prediction of the frequency was possible, but the results are still not very reliable, which depend on many factors, the nature of which is not fully known. Most of the factors have been able to stabilize to such an extent that they began to give contributions are approximately of the same order in the margin of error. The problem of increasing the reliability and versatility of prediction of the periodicity and a residual resource, nevertheless, has not been withdrawn. She tried to study by conventional methods because of the mechanics used to study well-organized system. Decades were spent on the study of physical bases of reliability of agricultural machines. wrote hundreds of articles and much intellectual blood has been shed in attempts to prove that any one of the physical processes has a dominant role. As a result, corestauti traditional methods failed to build a quantitative theory that describes the behavior of the system and prognozuoti the behavior of its transitions from one component to another, although obviously it leak processes, which, when taken separately, are well known to engineers. That is, I can say that the system was too diffusive – here it was not possible to distinguish between the different nature of the phenomenon.

Methods of multidimensional mathematical statistics, the Fisher – approach is purely empirical – vary simultaneously the largest possible number of variables when finding the optimum in some measure the conditions of the process.

Mathematical models which are used to describe the behavior of diffusive systems is not absolute. That is, the mathematical model can only give some idea about the behavior of the diffusion system. The same aspects ViewCam system can be described by different models, at the same time having a right to exist. It is possible to say that some of these models in some sense good, the second bad. Always it is necessary to stipulate how and with what criteria were used to assess the model.

The model, which is defined by differential equations, such models describe separate, maybe even the most interesting phenomena occurring in a complex and diffuse system. However, there is no attempt to describe the system as a whole and is not considered all possible interactions between the individual processes in the system.

The resulting model must be well to explain a significant plurality of the known facts, to reveal new, not yet observed phenomenon, to some extent, to predict their further development and that probably is the most important, you have the burden of the researchers to new problems.

Local-integral (membrane nominal) model. The regression coefficients (polynomial coefficients) can be interpreted as the coefficient of the Taylor series, i.e., as values of partial derivatives at the point around which the decomposition of the unknown function, which is given by the solution of unknown differential equations.

What criteria distinguishes between deterministic and random phenomena?

Intuitively on a heuristic level.

For example, pay attention to the fact that statistical research is often misused by the hypothesis about the normal distribution. You moving it often in force, notably General considerations, sometimes simply as a result of insufficient knowledge of the doctrine of distribution functions. Away this hypothesis is not rejected if it is not contrary to some moves the content of observations that are often performed in a narrow range of variation. However, it is not considered that the data were observed in a narrow range, it is possible as well to agree with some of the second law, which was not included in consideration simply due to lack of awareness. If passed then the law of normal distribution is used to extrapolate outside the study area, it can lead to significant errors.

It is important to choose distribution functions in problems of reliability where you need a far extrapolation was based before all on a deep understanding of the physical mechanism of the phenomenon that is being studied.

In any study it is extremely important formulation – formulation of hypotheses and their rationale.