# RESEARCH LABORATORY WORK IN A PHYSICS COURSE AT A TECHNICAL UNIVERSITY

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Observation, and experiments - the basis of knowledge of nature and the development of natural sciences. In the course of physics at a technical university, laboratory work, demonstrations of phenomena are an important component in learning. Distance learning has led to the need to use virtual resources. Despite the greater number and variety of digital resources, virtual laboratory work and demonstrations (we also actively use them in a number of situations) they still cannot replace field studies. Moreover, even the work performed in the training laboratory is also model, in artificially created conditions.

The purpose of the work is to show the possibility of including experimental tasks performed outside the educational laboratory in a laboratory workshop in physics, possibly at home, regardless of the study mode. The tasks with which we supplement the workshop are based on the study of real objects (as close as possible to the areas of study of students.

The following works are considered as examples:

1. Many students are interested in music, process, compose. And for the direction of "Information systems and Technologies", it is the work on recording and analyzing audio signals using computer programs that is suitable.
2. For chemical directions, tasks for the analysis of reflective crystal surfaces (glare or "sparks") are given as an example.
3. For students of the fields of mechanics and materials science, tasks related to deformations of thin films, the formation of periodic structures, instability were offered as independent experimental studies.

Conclusions: the inclusion in the laboratory training workshop of elements of independent observation and study of real objects accessible and understandable to students provides an understanding and the role of physical laws; makes it possible to practically draw up a research plan, process measurement results, expand the understanding of physical phenomena, the practical use of physical laws. Many of these studies were subsequently accompanied by mathematical formulation of problems, computer modeling and formed the basis of scientific works.