

Title: Physics demonstrations for upper secondary school students – video study

Author: Bc. Alexandr Nikitin

Department: Department of Physics Education

Supervisor: RNDr. Marie Snětinová, Ph.D., Department of Physics Education

Abstract: Experiment is a key element not only for physics as science, but also for physics education. Even though attention has been lately focused more on students' hands-on experiments, demonstration experiments still play an important role in today's education. Department of Physics Education (Charles University, Faculty of Mathematics and Physics) has been performing physics demonstrations for upper secondary school students for more than 30 years. Seven different topics are currently offered by the Department.

A survey conducted on a population of est. 5,100 students showed that the perception of these topics by students varies quite significantly, especially considering their intrinsic motivation and subjectively perceived value and usefulness of a given topic. The questions at hand are whether parameters that influence students' perception in negative or positive way do exist and how they are related to the choice of the experiments themselves or the lecturer's work with the audience.

Aim of this thesis is to present a video study conducted on video recordings of all seven aforementioned topics of physics demonstrations. This paper includes methodology of development of the categorical system of behaviours used in this study, results of the conducted study and comparison of the topics based on chosen parameters.

Keywords: demonstration experiments, video study, categorical system