The use of analogy and experiments - harmonic oscillations damped by a constant force

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Apstrakt. Harmonic oscillations are important part of secondary school physics course. The topic enables establishing connection between theory and experiments. At experiments, in all cases we evidence some energy loss. In this contribution, we analyse oscillations damped by a constant force. We provide a simple explanation of this type of energy loss using the analogy with a vertical spring-mass system. The predicted result, a linear time reduction in the amplitude of oscillation, can be confirmed in the classroom. We show two levels of the experiment – the basic and the advance. The first one is adequate for general use in secondary school physics teaching, the second one is more appropriate for highly talented students for physics. During the exercise, students distinguish different energy loss mechanisms in harmonic oscillations and measure the values of physical quantities associated with energy loss using a simple analytical procedure.

The contribution is strongly connected with the publication:

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