



ФИЗИЧЕСКИ ФАКУЛТЕТ СУ "Св. Климент Охридски"



Ontodidactical Aspects of Integrating Internet Technology in Physics Education

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Content

I. Introduction.

1. ICT in education.

2. Distance education:

- *Case-technology;*
- *Internet-technology;*
- *Telecommunication technology;*

3. Ontodidactics.

II. Constructivist approach in education.

**III. Ontodidactical aspects of integrating internet-technology
in physics education.**

IV. Conclusion.

ONTODIDACTICS

- The *ontodidactics* (*onto*-essence, nature) is a new field of didactics which considers the interaction between science and educational subjects (discipline). The science-cognitive and didactics circuit is “*science <> educational discipline <> education (teaching, training)*”.
- Ontodidactics deals with the transformation of scientific knowledge and laws of a science and their conversion with the help of a new structure in the content of the educational discipline.
- The science has its content, system, structure and logic. The educational discipline has the same elements too. The difference is: in the volume of knowledge and skills and in the logic of the structure and content.

[Sokolovskii, J. Vestnik Vishej Shkoli, (1973), N 3, 7-13].

ONTODIDACTICAL TECHNOLOGIES

- Ontodidactical technologies are educational technologies.
- They use different methods, tools and procedures for the transformation of scientific knowledge into educational knowledge.
- The role of ontodidactical technologies in information-educational university environment is determined by the educational paradigm.

RESULTS

Ontodidactical technologies in the formation and development of the physics concepts.

1. *The first theoretical model* is based on the tree characteristics of concept - content, volume, relation to other concepts.
2. *The second theoretical model* is based on the activity approach.
3. *The third theoretical model* is based on the summary plans of action .

Remote experiment – *Oscillations*.

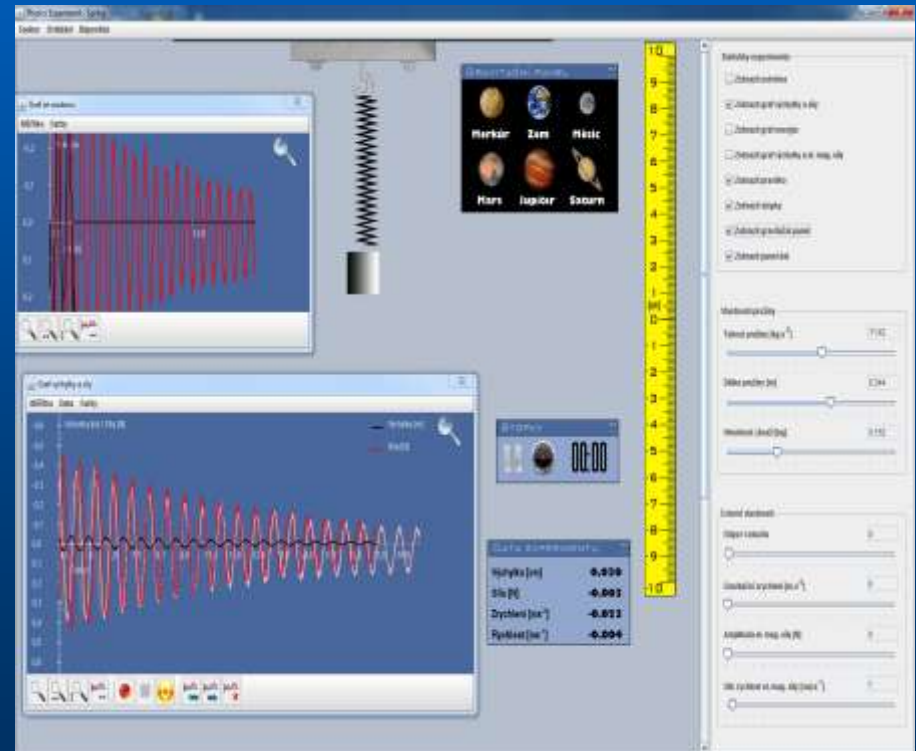
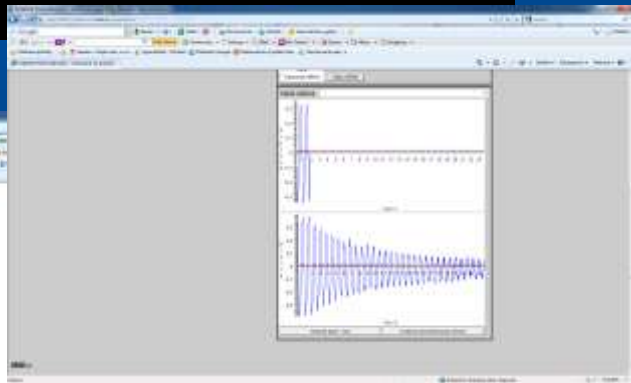
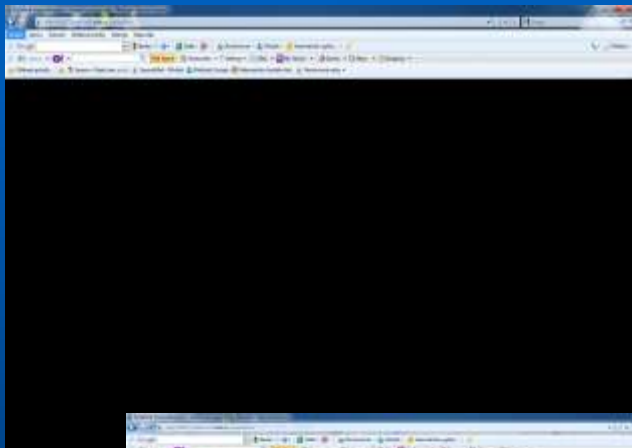
<http://kdt-17.karlov.mff.cuni.cz>



Integrace vzdálených a virtuálních laboratoří

1. Vzdálený experiment
2. Simulace

<http://kdt-17.karlov.mff.cuni.cz>



Integrace vzdálených a virtuálních laboratoří

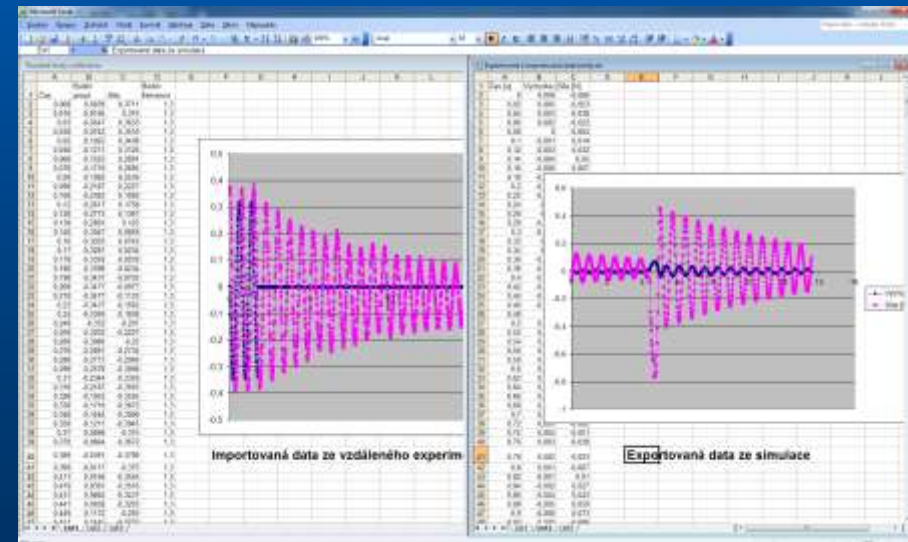
Simulace experimentu s **IMPORTEM DAT** ze vzdáleného experimentu !

- Import dat ze vzdáleného experimentu
- Export dat z virtuálního experimentu

The screenshot displays a virtual laboratory environment. On the left, there are two graphs showing oscillatory motion. The top graph shows a red sine wave, and the bottom graph shows a black sine wave. In the center, there is a 3D model of a spring and a yellow ruler. On the right, there are several control panels and a list of planets (Mercury, Earth, Mars, Jupiter, Saturn). A data window in the foreground shows the following table:

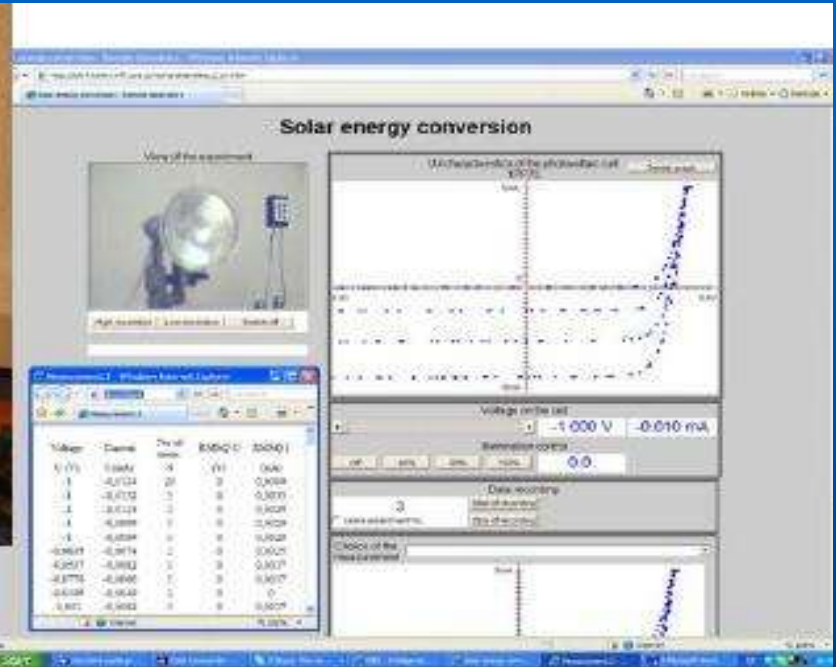
Čas [s]	Vychylna [m]	Síla [N]
0	0,000	-0,000
0,02	0,005	-0,053
0,04	0,003	-0,038
0,06	0,002	-0,022
0,08	0	-0,014
0,1	-0,005	0,014

Below the table, there are options for 'Ověřovač' (set to 'Tabulátor'), 'Decimální tečka (ne čárka)', and 'Export dat ve podobě' (set to 'Exportovat').



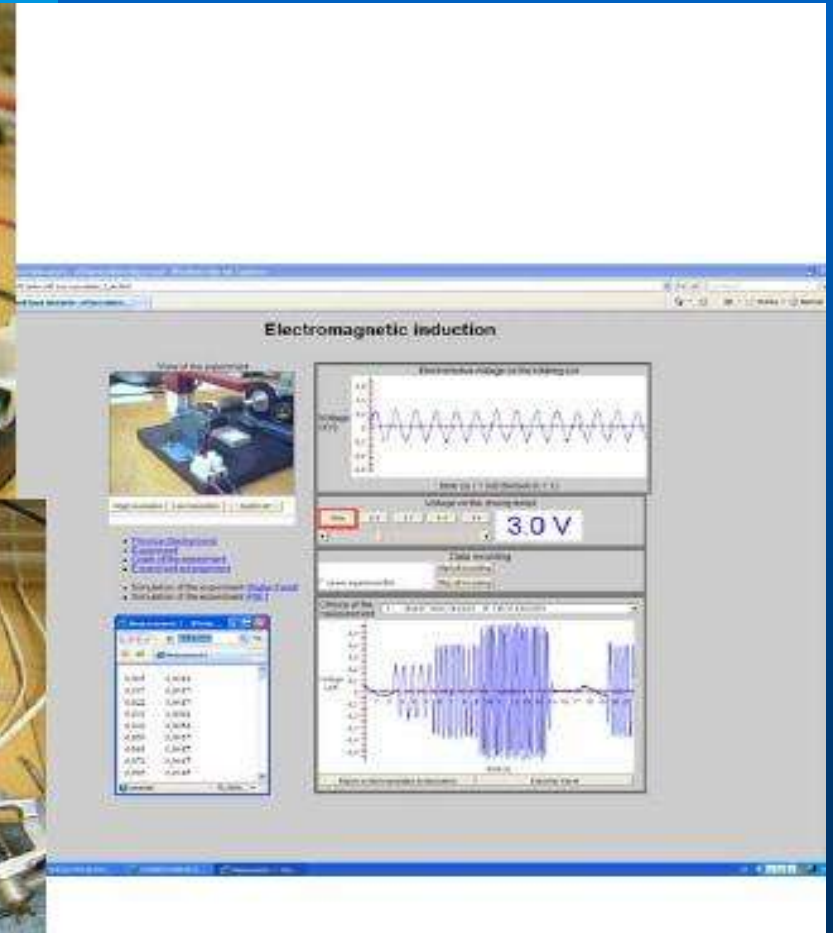
Remote experiment – *Photovoltaic cell.*

<http://kdt-4.karlov.mff.cuni.cz>



Remote experiment - *Electromagnetic induction*

<http://kdt-20.karlov.mff.cuni.cz>



Děkuji za pozornost

Благодаря за вниманието