



- [First page](#)
- [Registration](#)
- [Program](#)
- [Proceedings](#)
- [Information](#)
- [Participants](#)
- [Announcements](#)
- [Accommodation](#)
- [Location](#)
- [Proceeding MPTL](#)

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12th International Conference on Multimedia in Physics Teaching and Learning

MPTL 12

13-15 September 2007

**Institute of Experimental Physics
pl. Maksa Born 9
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organized by



Institute of Experimental Physics

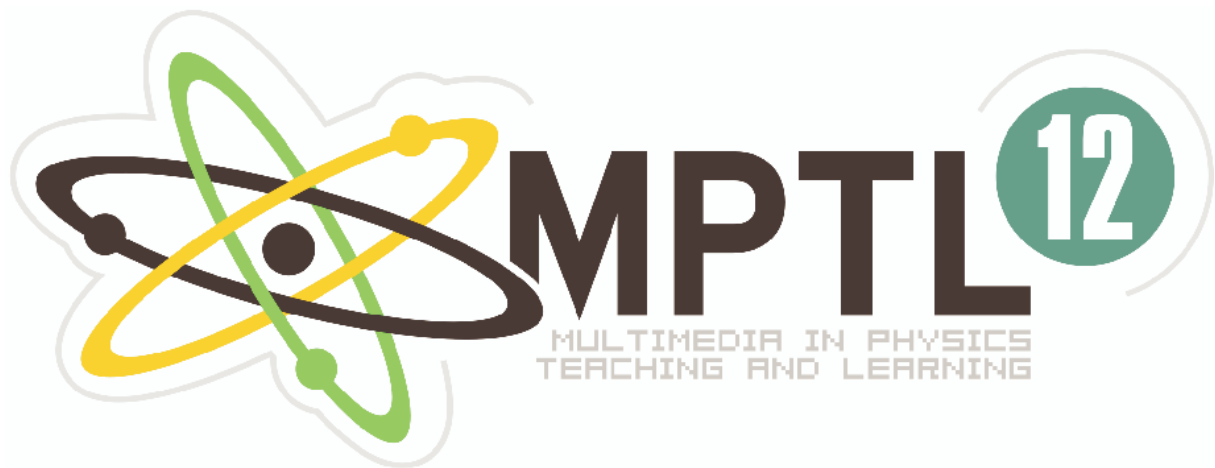
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Book of Abstracts

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explain students the connection between forces, velocity and acceleration in motion. We present and discuss the animation of elastic ball falling on the floor. It is fascinating, how many different kinds of linear motion can be observed in such a simple phenomena. This animation can make explanation of velocity and acceleration changes in different kinds of linear motion much easier.

E-Learning Course Based on Programming Learning Technique

We present the course of kinematics and dynamics, placed on ZamKor e-learning platform and accessible via internet. On the example of this course we discuss "e-learning implementation" of programming learning technique first proposed by the behaviorist B. F. Skinner.

13. **Tomasz GRECZYŁO, Tadeusz Lewowski**
University of Wrocław, Wrocław, Poland

Ice Crystals Exhibit Great Beauty

The interactive poster presents real time experiment on ice crystallization. Natural ice on Earth exhibits a hexagonal structure and crystallizes frequently in delightful, geometrical forms, such as in snowflakes and hoarfrost found on windowpanes. During the presentation the authors intend to show their 'live' observations of the kinetics of the growth of ice microcrystals, for water, Pepsi-Cola and beer employing polarized light. The authors will also discuss the experimental procedure with the use of digital camera transformed into a polariscope, computer and home made, easily accessible set-up. The accurate description of the experiment was published in "Physics Education" vol. 41, No. 4 2006.

14. **Anna HAJDUSIANEK**
Wrocław University of Technology, Wrocław, Poland

The Short Films in Teaching of Physics

The short films (1-5min) are very important in teaching of physics. Showing the short films and experiments make lectures more interesting and exciting. It is very important, especially for the younger students. Some experiments are very long and take a lot of time. Some are to complicated and not convenient to doing and showing to students, and some are to dangerous for the audience. Instead of this experiment we can show the films and take students in world of physics. Showing films with the experiment in the same time is a good idea for lectures. The short films are very useful to teacher and helpful for the students to make physics more friendly. Today e-learning seems to be very popular and one of the important way to teaching, therefore the short films are necessary and the only way to show experiment in e-learning system.

15. **Jozef HANC**
P. J. Safarik University, Kosice, Slovakia

Simple Quantum Approach to Electromagnetism and Optics

The contribution deals with a gentle introduction to Feynman's quantum theory ideas describing quantum electrodynamics, which together with powerful symmetry principles and interactive software based on EJS (Easy Java Simulations) can allow us to derive e.g.

Coulomb's law about interactions between electric charges or postulate about constant speed of photons. Thanks to PC, mathematics needed in our instruction is only at high school level. Physics used in the examples provides a nontraditional look at the classical electromagnetism and optics.

16. **Hermann HÄRTEL**

ITAP-Institute for Theoretical Physics and Astrophysics, Kiel, Germany

Nickels-an Open Source e-Learning Platform

Based on WEB-technology the e-learning platform Nickels has been developed in Germany and is used at different German universities in quite different environments. The platform offers the usual facilities for user administration, authoring, templates for testing and learner feedback, manoeuvring support, discussion platforms a.o. Special care has been taken to facilitate the translation of user interface and content to other languages. The major features of Nickels will be presented and discussed in comparison with other platforms.

Reference: <http://www.e-learning-service.de/>

17. **Fu-Kwun HWANG**

National Taiwan Normal University, Taiwan, Republic of China

Enjoy the Fun of Physics with Java Simulations

Several hundreds of physics related java simulations in different topics are freely available at NTNUJAVA Virtual Physics Laboratory web site (<http://www.phy.ntnu.edu.tw/ntnujava/>). Registered users, who logins to the forum, will find "Get files for offline use" button while browsing the simulation web pages. User can choice either download file directly or let server send files in ZIP format to user's email account. There are two different types of java applets on our server: 1. TNUJAVA simulations: This refers to simulations I have created between 1995-2000 with JDK1.0.2. There are 88 mirror sites (28 countries) host the same applets around the world. You might have seen some of those in CDROM distributed with physics textbooks. You are welcomed to translate strings in the simulation into local language format. Please send us copy of translated work so that we can share it with more users. 2. Simulations created with Easy Java Simulations (EJS): EJS is a modeling and simulations generating tool created by Francisco Esquembre. I used EJS to create all the simulations after I had found this great tool. There are many new features when viewing simulations generated with this tool on our server. a) Click 'snapshot' button will generate snapshot image of the simulation on a popup window, and the same image file will be sent to user's email account at the same time. Teacher can use this feature to find out how student is playing with simulations on our server. b) Click 'save simulation state' will save the current simulations variables on our server. When you click 'setup' button, all the saved records will be listed as URL links. The simulation will be restored to the previously save states when you click one of those links. c) You can also find out how the simulation was generated with EJS (i.e. find out the physics model behind the simulations: defined variables with initial values, relations between variables...etc.). However, you will need to allow browser to load EJS into your browser as a signed applet. You can save EJS source code (as xml file) locally. You can also modify model or view (GUI elements) in the simulation and generate new simulation with your browser. The only requirement is your browser need to support Java Run Time. If you need a new simulation which is not available on our server, please describes it in detail and we will try to create one for you! I hope you will enjoy the fun of physics while playing physics simulations on our server.