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MPTL 13th Workshop

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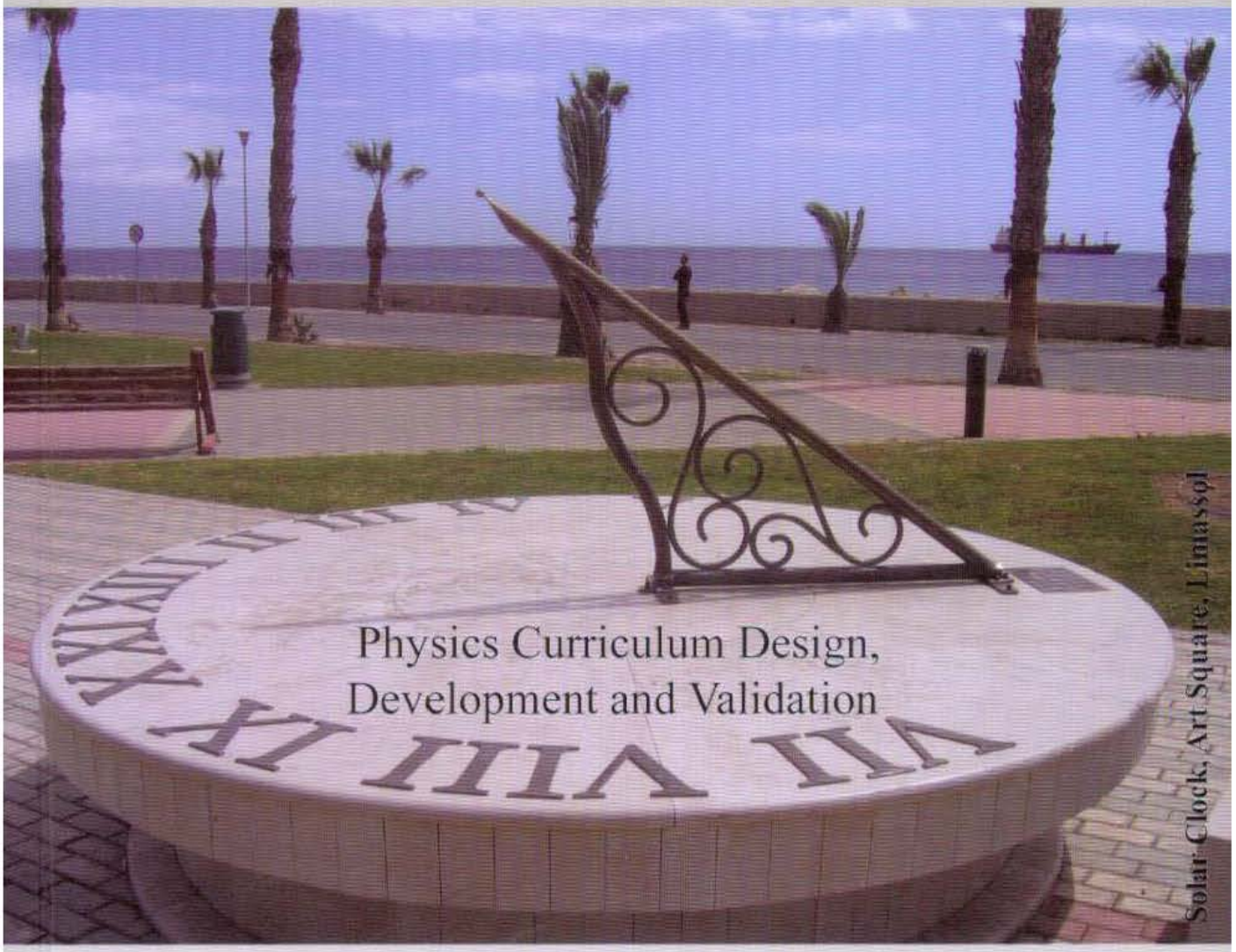

Solar Clock, Art Square, Limassol

Program and Book of Abstracts

August 18 - 22, 2008, Nicosia, Cyprus

Learning in Science Group

University of Cyprus

A project-posed approach to real body dynamics: the role of constraints in elastic wave propagation

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Our contribution will present some results of a project-posed approach to the teaching of mechanical wave propagation focused on observations and measurements of wave properties in solids and on modelling of these properties by using different simulation tools. In particular, the propagation speed of sound waves in metallic rods is studied by using simple experimental arrangements based on the measurements of contact times between a small body and long metallic rods with which the body can collide. An interesting effect of this approach is the revision of students' ideas about the rigid body model, studied at high school or college level and usually hardly followed by deepening on the fundamental role of wave propagation in the motion of real, elastic bodies. In particular, the performed experiments can stimulate students to reflect about the role of constraints in wave propagation and the general meaning of the constraint concept with respect to the dynamics of a real, elastic body. The approach has been developed in the context of a workshop on Mechanical Wave laboratory of the two-year post-graduate school for physics teacher education of Palermo's University. Some experimental results obtained by prospective teachers during lab activities and considerations about observed modifications in their attitude in utilising experiments and modelling to build pedagogical activities will be discussed.

Invited Workshop 7.1, 13:30 – 15:30 **Room A011**

MOSEM: Teaching minds-on experiments on electromagnetism in secondary schools

Grzegorz Karwasz [1,2], Andrzej Karbowski [2], Marisa Michelini [3], Rossana Viola[3], Wim Peeters [4]

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While the Leonardo da Vinci project SUPERCOMET2 produced top level digital on-line materials on electromagnetism and superconductivity, packed in 9 modules, the MOSEM project (8 countries, 27 partners) introduces real experiments for class room use. Inspired by the Physics is cool project of the University of Antwerp [2],

both low-tech and easy to do, and high-tech series [3] of fascinating experiments are worked out in several experimental kits. All experiments aim at an in depth understanding of physics phenomena. They are divided in 8 topics, each linked to the online digital materials of the SUPERCOMET2 project. In this workshop the format of the teacher seminar, based on the results of SUPERCOMET2 and adapted to minds-on experiments is presented in detail. The more than 30 low-tech state-of-the-art experiments of MOSEM and the teacher support materials are also discussed. A combination of elements of both is used to give participating teachers a good idea of the way in which teaching electromagnetism with these materials could be carried out. They will experience how to teach these topics using active teaching methods, one example of how a sequences of experiments, logically can lead to better conceptual understanding of physics phenomena and how to organise this in a class room situation and how some simple experiments also enable to gather real numerical data ready for quantitative analysis. Throughout the workshop the participants will be invited to discuss the suggested strategies among each other and with the project participants. They will get all information available at that moment on both SUPERCOMET2 and MOSEM projects.

Symposium Session 7.2, 13:30-15:30 **Room A018**

The new national high school physics curriculum in Turkey

The purpose of this symposium is to explain how Turkish national high school physics curriculum was designed and developed.

Currently there is an ongoing curriculum reform in Turkey starting from primary school curricula. The curricula for Grades 1-8 are being implemented. The new science and technology curricula for Grades 4-8 are currently being implemented in a step by step way. Grades 4 to 7 began using the new curricula; and starting from 2007-2008 a pilot implementation is done for Grade 8 to be followed by whole country implementation in 2008-2009 school year.
The curriculum reform is now being extended to secondary education. Inevitably, high school physics and other science subjects will have to follow the new science and technology curriculum and build on top of where students were left at grade eight. The high school physics curriculum development effort has begun in January 2006. The new physics curriculum for Grade 9 has been developed and is to be implemented in 2008-2009 school year. Then every consecutive year a new grade will begin using it.